





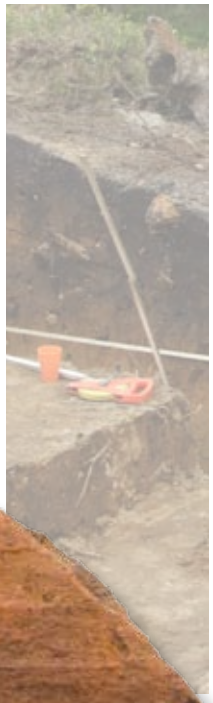


IRON AGE ECHOES

PREHISTORIC LAND MANAGEMENT AND THE CREATION OF A FUNERARY LANDSCAPE – THE "TWIN BARROWS" AT THE ECHOPUT IN APELDOORN

edited by D. Fontijn, Q. Bourgeois & A. Louwen

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Preface

On the chatty *Echo* girl and her forgotten barrows

David Fontijn

Once upon a time, there lived a nasty little demon in the *Aardmansberg* (Goblin's mound) of *Apeldoorn*. A holy terror he was, prowling about on the endless heaths and forests of the *Veluwe*, he enjoyed scaring people who passed by at night. But one day, this awful demon fell in love. He met *Echo,* daughter of Light and Earth, a beautiful girl whose only problem was that she could not stop talking. Unbelievable as it may seem, the demon and Echo went to live together in his dark hole deep under the *Aardmansberg*. At first, everything went fine, but after a while, the demon got sick of her endless chatter and locked her up in his hole and forbade her to say anything at all, unless someone asked her. This proved to be a terrible punishment for poor *Echo* and she suffered enormously. In the end, only her voice remained, which can only speak when someone asks something. And this is what still happens if someone raises his voice in the deep well that was built over her hole deep in the ground- an echo answers.

This is the folk story that used to be told when one visited the *Echoput* in the forests of *Apeldoorn (*Wall-Perné [1917] 1968). The deep, early 19th century man-built well indeed seems to have a marked echo, and was one of the first touristic attractions in the Netherlands. The story, undoubtedly invented to fuel a desire to give this place a mystic fairy-tale aura, does not mention another peculiarity of the *Echoput* hill: on its top, just behind the well itself, there are two old barrows. These are only two out of many in the forests of the *Kroondomein Het Loo (*the Royal Estate). Virtually nothing is known on these mounds. We do not know how old they are, why they were built in this place, and nothing is known on the landscape they were once built in. In 2007, the Ancestral Mounds project of the Faculty of Archaeology set out to explore the elusive barrows of *Apeldoorn*. Together with the municipal archaeologist and with many help from the keepers of the Royal Estate, we managed to carry out archaeological research on the *Echoput* barrows. This book reports the scientific results of the partial excavation of these mounds and their environment. It will be accompanied by a book aimed at a wider readership, written by Evert van Ginkel.

Chapter 1

Barrow excavations at the *Echoput* - Problem, research aims and methods of the 2007 fieldwork campaign

David Fontijn

1.1 Introduction

Why did we choose the barrows on the hilltop near the *Echoput* for excavation? This chapter will provide the reader with the background to the archaeological investigations of 2007. I will give a brief overview of barrow archaeology in the Netherlands until the 1980s, of the new questions that came up later, and of the reasons for a new research project devoted to prehistoric burial mounds. I will go on by setting out why we chose *Apeldoorn* as a research area, and what made us select the *Echoput* site for our first excavation there. After a description of the site, I will list the research aims, as well as briefly describe the general research method that we followed. The chapter ends with an overview of the organization of the rest of the book.

1.2 Barrow research in the Netherlands: cold case?

In Europe and the adjacent parts of Asia, there are hundreds of thousands of prehistoric burial mounds. Without any doubt, barrows are the most common monuments of prehistoric times. For that reason, it is hardly surprising that these burial mounds are among the first types of monuments that were investigated by archaeologists in large numbers. In barrow-rich countries like the Netherlands many barrows have been investigated from the start of the 20th century onwards (Fig. 1.1).

As a result of the intensity of research, an enormous amount of knowledge on barrows became available. This was the time when large numbers of the Dutch burial mounds were about to disappear due to large-scale heath reclamation, the rapid growth of villages and towns, and the development of heath into training-grounds for the army. In the Central part of the Netherlands, P.J.R. Modderman excavated dozens of burial mounds in the early 1950s in order to gain as much information as possible on their dating, way of construction and the burial remains in it before they would disappear forever. In 1952 alone, he excavated no less than 34 barrows in the municipality of *Ermelo* (Modderman 1954). The large amount of data yielded many insights on prehistoric burial practices, usefully described in overviews like those of Van Giffen (1943), Glasbergen (1954a and b), Modderman (1954) and Waterbolk (1954). In the 1960s and 1970s, the number of excavations decreased, but burial mounds were still investigated, often as fieldwork training for students (*e.g.* Verwers 1966). The huge amount of data

Fig. 1.1 Holwerda's excavation of barrows in Hoog Soeren (municipality of Apeldoorn) in 1906 were the start of a long period in which hundreds of barrows were excavated by professional Dutch archaeologists. Source and copyright: National Museum of Antiquities Leiden (Rijksmuseum van Oudheden). Used with permission.

collected in the earlier part of the 20th century, together with the insights of their excavators, provided the basis for new interpretations in its last decades. Both Eric Lohof (1991), Erik Drenth (Drenth/Lohof 2005) and Liesbeth Theunissen (1993; 1999) used the barrow evidence as a source of information for research of social structure in Late Neolithic and Bronze Age times.

Legislation on archaeological heritage made it possible to protect barrows since the 1961, though in reality they rarely were under statutory protection (Klok 1972, 87). It was much later (during the 1980s) that a growing number of still extant barrows were assigned as protected State Monuments, and rescue excavations of barrows became less often necessary (Klok 1988). Barrows even became the most ubiquitous type of protected archaeological monument in the country. This was nowhere as obvious as in the province of *Gelderland*, where *Apeldoorn* is situated. In his 1972 publication, Klok mentions a number of 841 barrows that were assigned as "monuments" in the Netherlands, of which 541 are within *Gelderland* (Klok 1972, 89). Protected monuments were predominantly situated in nature reserves.

From the beginning of the 20th century up until the 1970s, large numbers of barrows had been excavated in a more or less professional way. With the growth in knowledge on barrows came the impression that the limits of insight were more or less reached. Research focused on the by then badly known contemporary prehistoric settlements. One of the first Bronze Age settlements investigated, *Elp* in *Drenthe*, was even discovered as a result of a barrow excavation (Waterbolk 1964) One could say that when a considerable part of the Dutch burial mounds finally achieved the status of protected Archeological Heritage (in the 1980s), there was hardly any need to carry out new barrow excavations.

1.3 Reasons for new barrow research

In 2004, the construction of a new road near *Oss* (the *Zevenbergen* site) necessitated the first excavation of a group of barrows in the Netherlands since the 1980s[1]. This excavation yielded several new insights (Fokkens *et al.* 2006) and stimulated the interest for barrows among a generation of young archaeologists who never participated in the burial mound excavations of the past. At the Faculty of Archaeology, University of Leiden, I set up a pilot project entitled *barrow landscapes* where barrow evidence was inventoried in a digital database for research (2005-2007). A large part of the inventory was done by drs Quentin Bourgeois, then RMa student at the Faculty of Archaeology. With Leiden students, new research of old finds and field documents in museums were carried out. Some of it led us to conclude that several of the assumptions on burial mounds do no longer seem to stand up to scrutiny (*e.g* Bourgeois/Arnoldussen 2006; Bourgeois/Fontijn 2008; Fontijn 2007a and b). At the same time, we regularly received questions on barrows from estate owners and archaeologists working in the public domain. Often, they wanted to know more on "their" burial mounds either for the development of cultural tourism, or for adequate heritage management. Questions asked included "when were they built?", "what did the prehistoric environment around the mounds look like?", "what can be told to the public on the meaning such ritual monuments had in the past?" We discussed such questions many times with the National Heritage Agency (*RCE)*, but we agreed that good answers could not always be given. In barrow-rich regions like the *Utrechtse Heuvelrug*, or the municipality of *Apeldoorn* (one of the largest municipalities of the country) the number of investigated burial mounds was so low that not much could be said on the age or nature of the large numbers of still-remaining mounds that never had been researched. In an attractive and well-informed recent tourist guide to the natural reserves in the centre of the Netherlands, burial mounds are frequently mentioned. However, in most cases no more can be said than they are prehistoric burial mounds that are 4000 years old[2]. In actual fact, in most of the cases even that dating is no more than an educated guess. This is regrettable, particularly if we realize that barrows are the most common visible archaeological monument in the centre of the Netherlands. On the *Veluwe,* 479 are indicated as such on maps and some 235 out of a total recorded as 643 have been officially registered as (different kinds of) heritage (Table 1.1; Klok 1988, 44)[3].

With regard to heritage management, the situation around barrows is even quite problematic. In the past, it was only the barrow itself that was excavated. Only rarely did archaeologists excavate beyond the mounds. Therefore, not much could be said, let alone predicted, on the prehistoric cultural landscape of which the burial mounds were part. Were they, for example, part and parcel of the cultivated farming land, or were they situated within a separate "burial" or even "ceremonial" landscape, or do none of these descriptions of land orderings apply?

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1 Here, the term "barrows" refers to sites where the original mound, or parts of it, are still standing. Leveled remains of barrows have been uncovered regularly, particularly during excavations of areas covered by clay or *plaggen* soils between the 1980s and 2000 (for example: Meijlink 2001; Tol 1999).

2 For example: *Mooi Gelderland. Handboek Geldersch Landschap, Geldersche Kasteelen* (Van der Genugten/Jos 2003).

3 These comprise both groups of barrows and isolated barrows, and vary from official State Heritage (*Rijksmonument*) to objects that are registered as of "(high) archaeological value" on maps in the Archis Database. A recent query yields slightly different numbers, but these partly relate to removal of barrows that no longer appeared to exist, or result from a new division of heritage tasks between municipalities and the State. In *Apeldoorn-Spainkbos* for example, one mound is on private property, whereas the others are on municipal property; we are dealing here with one group of burial mounds, however.

Actually, hardly anything is known on the archaeological features that may still surround burial mounds. In the few cases where excavation extended beyond the mounds, surprising and deviant features were found. The best example may be the *Oss-Zevenbergen* site, where several post alignments appear to have flanked the barrow row (Fokkens *et al.* 2006). Apparently, this was a separate funeral area with features that are unknown from other contexts. Heritage managers many times attempted to protect areas around barrows (*cf.* Klok 1988 for examples), but the areas were rarely selected on the basis of knowledge of the distribution of archaeological features beyond the barrows themselves. This is understandable as there simply was often no opportunity to prospect such areas, let alone to excavate them without clear indications that the archaeological features were threatened. After all, most of the barrows in the centre of the Netherlands existing today are situated within dense forests and natural reserves. Although one may expect that the area around burial mounds is of archaeological value, we can rarely predict the nature and extension of archaeological features around it. Already in the 1960s/1970s, it was often almost standard practice that if a barrow was assigned as protected heritage, a zone of 10 m around the mound was also protected (Klok 1972, 43). Why this protected environment had to be a 10 m zone has not been stated but probably goes back to legal decisions once made and followed ever since. It was evidently not based on predictions deriving from systematic prospection or excavation of areas around burial mounds: such prospections never took place and only for an estimated 5 % of all Dutch barrows excavations of their surroundings have been done (usually coincidentally as part of other – settlement- excavations). During a recent evaluation of protected areas around barrows (*Actualizering Monumentenregister*), the protected area around barrows was sometimes reduced to a circle of 10 m in diameter around the mound. As this was usually done without research of the area, we are at risk here that relevant archaeological features that were protected before are now threatened or dug away without anyone knowing. It follows that it becomes important to get a better understanding of the nature of the area around burial mounds. How were barrows situated within the prehistoric cultural landscape? Can we observe patterns in the way barrow landscapes were organized, and can such patterns be used to predict where relevant archaeological features are to be expected around burial mounds?

1.4 New barrow excavations and the birth of the *Apeldoorn* barrow research

Obviously, such questions could not be solved by investigation of literature, finds and field documents alone. New field research was necessary as well. In close collaboration with the National Heritage Agency (*RCE*), the Province of *Utrecht*, and estate owners, we decided to carry out a small excavation. The site that we chose for research was the barrow group of the *Elsterberg,* near *Elst* (municipality of *Rhenen)*, at the ice-pushed ridge of the *Utrechtse Heuvelrug*[4]. In 2006 a five-day excavation of small parts of two mounds was done here. An important goal of this excavation was to gain insight in the immediate surroundings of the mounds via pollen analyses and study of the many amateur finds done in and around the mounds. It led to the unexpected conclusion that here, people had been living very close to the mounds during the Bronze and Iron Age. The situation at *Elst* appeared to be very different from the one at the "model" site *Oss-Zevenbergen*, where barrows were built in a separate landscape that seems to have been solely

4 Its results are described in Fontijn 2010a (scientific report in English) and in a booklet aimed at a broader public (Van Ginkel/Van Koeveringe 2010).

dedicated to funerary and other ritual practices. Even if we could not excavate beyond the mounds here, it was clear that the area (a forest) surrounding the mounds was full of archaeological features and finds. As much as this excavation brought new and exciting results, it also raised significant new questions. It proved particularly important to gain more information on the environment of the barrows by means of excavations. After all, true excavation of the area surrounding the mounds was not possible here due to the dense forest. Also, the pollen preservation in *Elst* appeared to be very poor and we definitely needed better pollen data in order to reconstruct past landscapes and their changes. Another unexpected result of the *Elst* excavations was that we found indications that important changes in the barrow landscape took place during the Middle and Late Iron Age (Fontijn 2010b, 149-151). Large numbers of pottery sherds indicate the area surrounding the mounds was intensively used (inhabited) by then, and traces of contemporary farmyards have been found at less than one kilometer away. However, activities also seem to have taken place on top of at least two by then already very old mounds, including the digging of a deep ditch in the top of one mound. An Iron Age mound, comparable in shape and size to the Bronze Age barrows, was added to the much older barrow group (Arnoldussen/De Kort 2010). During the later Iron Age, Bronze Age mounds thus seem to have been respected places in a by then thriving agrarian landscape, and the ordering of those much older burial monuments was still followed when new ones were added.

Also in 2006, another opportunity to revive barrow research presented itself. The author came into contact with drs M. Wispelwey, who was the municipal archaeologist of *Apeldoorn* at that time. This is one of the largest municipalities of the Netherland, situated in the heart of the *Veluwe*. Dozens of burial mounds still exist in that region. As shown in table 1.1, Apeldoorn is the second barrow-rich municipality of the *Veluwe*, after *Ermelo*[5]. However, in marked contrast to the latter, where almost half of the mounds has seen professional excavation, in Apeldoorn between 10 and 15 % of the mounds was ever excavated. For the majority of the cases, these excavations took place a very long time ago (at *Hoog Soeren* and the *Uddelermeer* some 100 years ago; Holwerda 1907; 1909; 1911; 1912). Research of the documentation and surviving finds of these old excavations learnt us that they cannot really be used to answer many of the research questions we have now[6]. *Apeldoorn* happens to be a region where the municipal archaeologist often received questions on burial mounds from estate owners and interested laymen. For that reason, Wispelwey had already organized that an environmental reconstruction was made of a number of barrows that are now in the *Spainkbos* (part of the *Loolaan* barrow group/urnfield; Verlinde/Hulst 2010, site XXIX) on the basis of a pollen sample from one mound (De Kort 2006).

After several discussions, the University of *Leiden*, the municipality of *Apeldoorn* and the National Heritage Agency (*RCE*) decided to intensify the already existing collaboration. An official document was signed by representatives of the three parties at 15th of June 2007 amidst the barrows of the *Spainkbos*.

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5 We learnt that the precise numbers of still-existing barrows are still not exactly known, and that the figures in table 1.1 are in need of revision. A number of the mounds thought to have been vanished are now retrieved (including the *Echoput* mounds that are the subject of this book). A large number of possible barrows have not been prospected and we do not know for sure if they are really burial mounds. Also, by studying the Dutch Digital Elevation Model (www.ahn.nl) we were able to identify new barrows during the last few years (e.g. the three barrows at *Apeldoorn-Wieselse Weg*).

6 We studied finds and documents of the *Uddelermeer*, *Hoog Soeren* and the *Goudsberg* area excavated by Bursch (documentation at the *Leiden* Museum *RMO*).

1.5 The N.W.O. funded research project: *Ancestral mounds*

Building on the results of the pilot project, a grant application for a broader research project was written and sent to the Dutch Science Foundation (*N.W.O.*), entitled *Ancestral mounds. The social and ideological significance of barrows, c. 2900-1100 BC* (Fontijn 2007b). This was accepted for funding at the end of 2007, allowing us to start the project mid 2008. It will run until 2013 and be carried out at the Faculty of Archaeology, University of Leiden. Two research questions are central to this research

1. What was the social and ideological significance of barrow graves?
2. What was the role of burial mounds in the prehistoric landscape?

We will investigate these problems using the rich barrow evidence from the southern and central Netherlands for the Late Neolithic-Middle Bronze Age period (2900-1100 BC). The research will be carried out at three spatial levels, each one subject of a PhD thesis.

K. Wentink (Mphil) will study the social identity of the dead in barrows by investigating the life-cycles of all artifacts in burial inventories by means of sourcing and use-wear analyses.

Drs Q. Bourgeois will seek out how and why barrows came to form entire barrow landscapes.

Drs M. Doorenbosch will reconstruct the environment of barrow landscapes by means of pollen analysis, to find out how the land of the dead was interwoven with the world of the living.

Although the focus of the research is on the earliest period of burial mounds, later developments (Late Bronze Age and Iron Age,) as well as the prelude to barrows (Middle Neolithic) are dealt with by the present author, who as project leader will try to place the developments in the Dutch study region in a broader spatial and temporal framework (*e.g.* Fontijn 2010a; Fontijn 2011). Prof. dr A.L. van Gijn and prof. dr C. Bakels are supervisors of the research of Wentink and Doorenbosch respectively, and will also carry out research in their field of specialization (examples: Bakels 2010; Wentink *et al.* 2011). Drs C. van der Linde is another member of the research team, responsible for the organization of the fieldwork. He is joined in his work for the project by A. Louwen (MA) and P. Valentijn (Mphil). Both took part at several of our *Apeldoorn* excavations as students and are now full team members. An important part of the field work necessary for this project was planned to take place in *Apeldoorn*. Here, first M. Wispelwey and later drs M. Parlevliet, his successor as municipal archaeologist, are taking care of the dissemination of the results of barrow research in *Apeldoorn* to the wider public.

municipalities	a	b	c	d	e	total
Apeldoorn	64	24	18	13	56	175
Arnhem	14	-	1	4	3	22
Barneveld	50	1	3	4	17	75
Ede	43	14	11	11	11	90
Epe	106	19	12	11	12	160
Ermelo	149	20	14	13	28	224
Harderwijk	2	-	-	-	-	2
Heerde	7	-	-	-	-	7
Nunspeet	55	7	2	5	11	80
Putten	97	4	-	6	7	114
Renkum	46	4	9	11	2	72
Wageningen	10	1	-	5	1	17
Total	643	94	70	83	148	1038

Table 1.1 Numbers of barrows on the Veluwe according to the inventory made by the National Heritage Agency (RCE, formerly ROB). Based on Klok 1988, 19. The same table was published by Klok 1982, 25, which states (idem, 23) that it goes back to an inventory made in 1978. For Apeldoorn, our own inventory yielded records for a total of 139 barrows (all categories together). It is unclear though, how we are to understand the differences between the earlier and later inventory.
Legend: a – existing barrows; b – vanished barrows, location known; c – vanished barrows, location not exactly known; d – presumed barrows; e- barrows according to notes in the files that can no longer be verified.

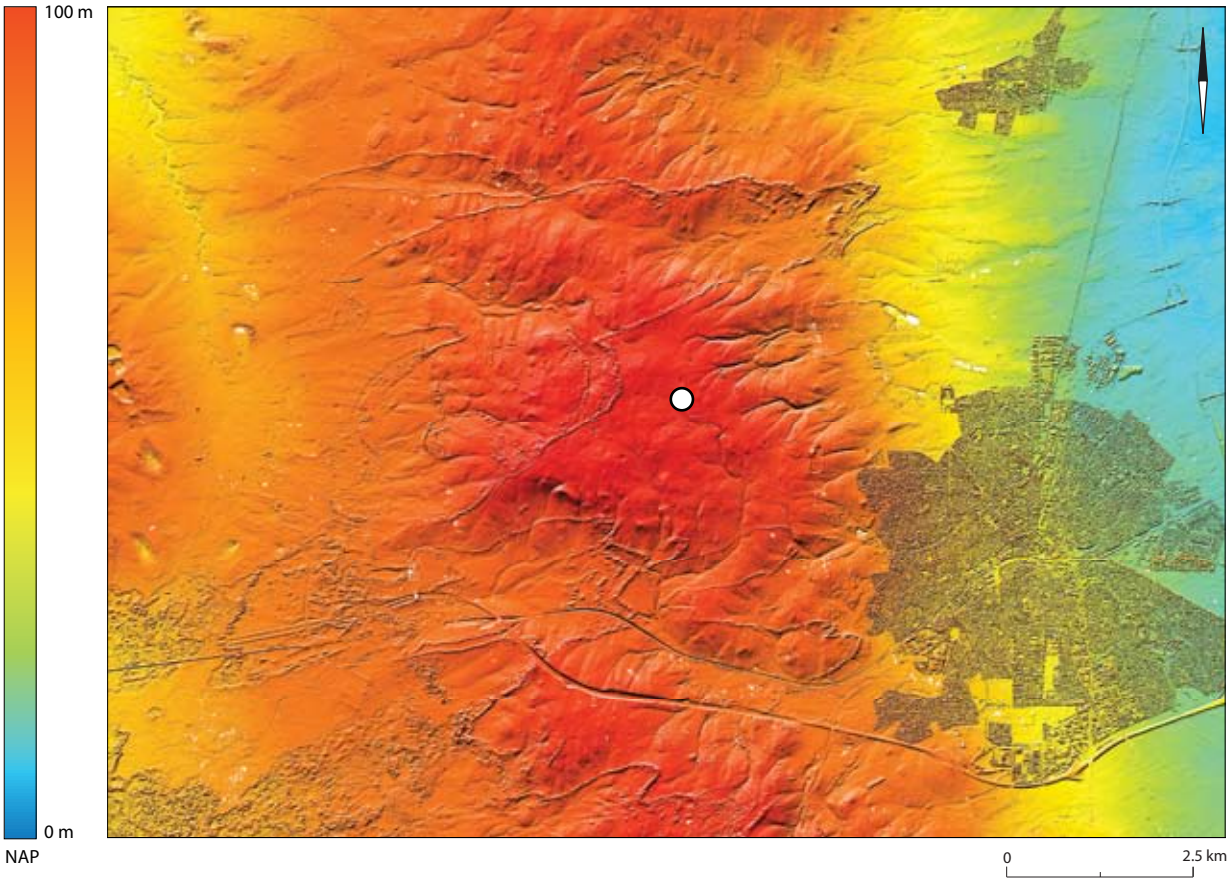

Fig. 1.2 Part of the ice-pushed ridge of the Veluwe near Apeldoorn (right, below) and Vaassen (top right). The location of the Echoput site is indicated. Based on Actueel Hoogtebestand Nederland (copyright AHN).

1.6 Why *Apeldoorn*?

Beforehand, it was clear that new barrow research ought to be carried out in the Central Netherlands. Our inventory showed that this region, comprising the forests of the *Veluwe* and the *Utrechtse Heuvelrug*, is not only the area with the largest number of still-existing barrows in the Netherlands but also the region where relatively the lowest number of barrows have been excavated (*c.* 13 % out of 1492 barrows, compared to more than 50 % in the southern Netherlands; see also Fontijn 2010a, 15-6). On top of that, the majority of these excavations were done in the 1920s and 1930s, and many of them have been poorly excavated and documented (*e.g.* Bursch 1933). This applies particularly to the eastern *Veluwe* and the *Utrechtse Heuvelrug*. As already mentioned, *Apeldoorn* is second in number of recorded barrows (Table 1.1; Fig. 1.2), but it ranks low when it comes to adequate information on those monuments (12 %[7]). There are more reasons, however why *Apeldoorn*, and its adjacent northern villages (*Vaassen* and *Epe*) are interesting for research.

1.6.1 A TRB prelude to barrow landscapes?

The burial mounds are particularly significant as it is in the *Apeldoorn* region that we might find the oldest barrows. The area is known to have been settled by Middle Neolithic TRB communities. Although these communities are best

7 Information from 2011, thus including our own excavations (*Echoput* and *Wieselse Weg*, investigation of 5 barrows). Calculated for a total of 139 burial mounds for which we could find records (including barrows that are now gone). This is much lower than the number of 175 mentioned by Klok 1988 and listed in our Table 1.1. It remains unclear how we are to explain these differences.

known for their megalithic monuments, the so-called *Hunebedden* (Bakker 2005). These are restricted, however, to the northeast of the Netherlands. That TRB communities inhabited the centre of the country as well, is less often realized. Here, however, they do not seem to have built visible, lasting monuments. The TRB settlement at *Apeldoorn-Uddelermeer* is one of the few sites where a small late TRB (early Havelte phase) flat grave cemetery is recorded (Holwerda 1910; 1911; 1912; Bakker 1979, 194-6). At the same site, Single Grave Culture barrows were constructed later on, thus evidencing the monumentalisation of cemeteries in this part of the Netherlands (Fontijn 2011). The transition from a TRB site to a barrow landscape is likely to have taken place at other sites in *Apeldoorn* as well. It might for example also be expected at the site of *Ugchelen*[8]. If we want to gain any more understanding in the question what barrows are in social and ideological terms, it is vital to study them in situations where they represent the first monumental graves. At sites like the *Uddelermeer*, it might be possible to follow the transition from non-monumental TRB graves to monumental Single Grave Culture barrows.

1.6.2 Studying the development and lay-out of barrow groups

One of the most intriguing aspects of barrows is their spatial lay-out. Burial mounds dating to the Late Neolithic up until the Middle Bronze Age are never organized into discrete cemeteries as we know them, or as they are known from the Late Bronze Age and Early Iron Age urnfields. Rather, they have to us a somewhat ephemeral distribution through the landscape. We can distinguish between 'extensively dispersed' groups (Garwood 2007), and aligned barrows. The first comprises seemingly arbitrarily scattered barrows (Fontijn 2010a). It has so far been very difficult to make sense of the prehistoric logic behind such ephemeral groups, but the observation that they do not subscribe to our sense of ordering does not mean that there was no system behind the placing of barrows in prehistory which led to such seemingly loosely scattered groups (Fontijn 2010b). We excavated parts of two barrows of such an extensively dispersed group at *Elst-Rhenen*. Far from answering the question why they were distributed in such a way across the landscape, we were able to show that this organization of barrows was closely tied to the organization of the (cultural) landscape in which they were built.

The other characteristic lay-out of barrow groups are the aligned barrows. These are very well represented in *Apeldoorn* and *Epe* and *Vaassen*. In Apeldoorn, from the barrows known today, several groups of 4 to 5 aligned mounds are known (for example the sites *Orderbos* and *Wieselse Weg*). An even much larger barrow alignment is known from *Epe-Vaassen* (Fig. 1.3; Bakker 1976; Bourgeois in prep.). Here, over a line of over 4 km, a barrow row can be followed. Recent research shows that this configuration already emerged during the Late Neolithic (Bourgeois forthcoming). The reasons behind the formation of such alignments are unclear. The conventional explanation, that such orderings are the result of barrows being positioned alongside a road (Bakker 1976) can only be part of the explanation. Interestingly, within the sizeable region of the *Apeldoorn* municipality, barrows are known from a large variety of places: in valleys, along lakes, on the

8 At *Ugchelen*, Bakker (1979, 196-7) interpreted three finds as remains of two TRB burial places (at *Kooiberg* and *Heidehof*) and one TRB settlement. The *Heidehof* site is at a distance of *c.* 1 km of barrows at *Koppelsprengen*, of which one probably dates to the Late Neolithic (Waterbolk 1954, 95, Table 8; *cf.* Hulst 2010, 155: site III). The lack of proper dating of the barrows and excavations of the area between *Heidehof* and *Koppelsprengen* prevents us from seeking out possible links between the TRB and Late Neolithic burial sites.

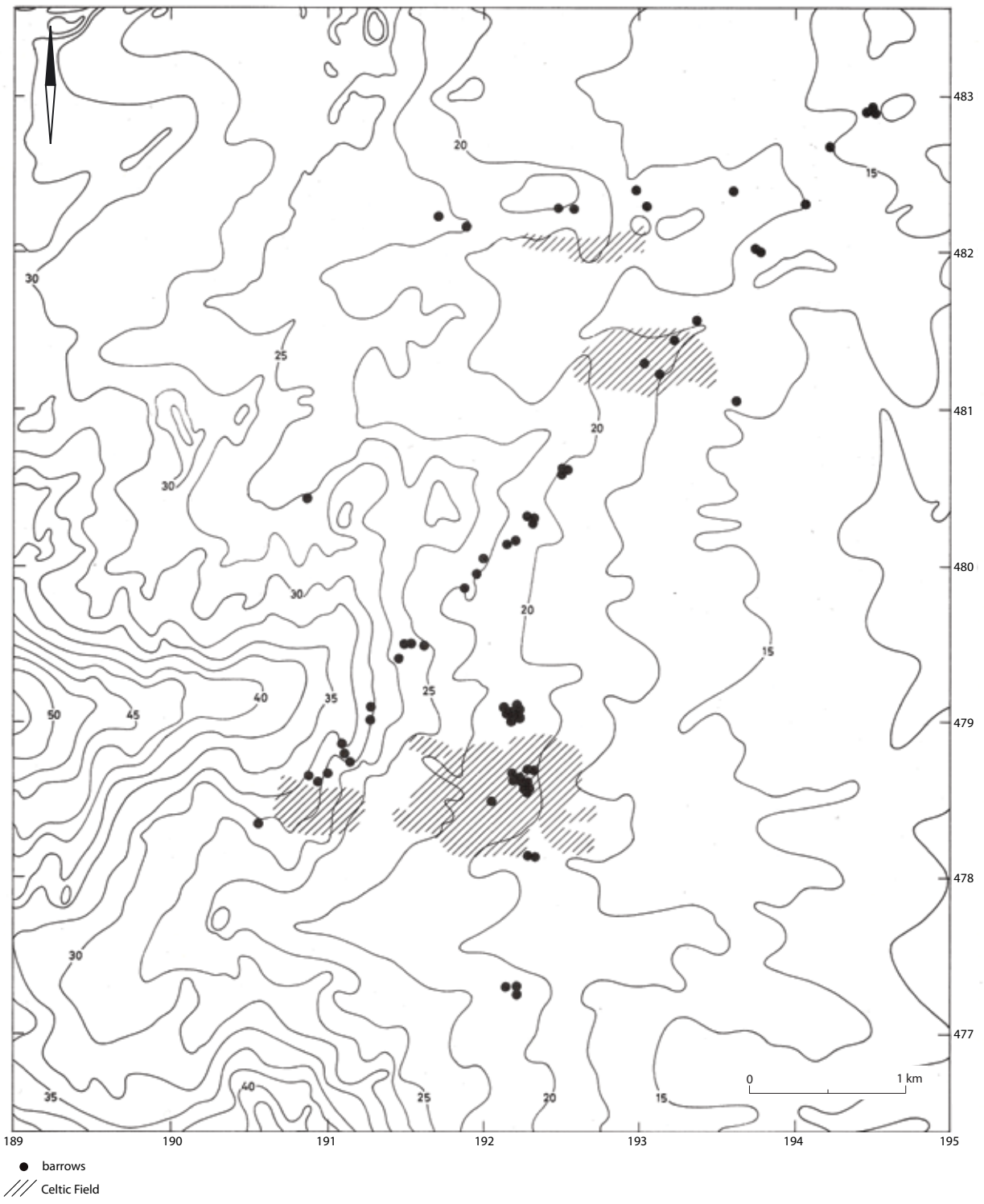

Fig. 1.3 Barrow alignment between Epe and Vaassen. Black dots are barrows, Iron Age Celtic fields are hatched. Recent research by Bourgeois (F.) shows that many barrows date to the 3rd millennium cal. BC. In places, Late Bronze Age and Early Iron Age urnfields were located around older mounds. The barrows were not disturbed when some came to lie within Iron Age Agricultural fields (source: Bakker 1976, Fig. 11).

top of the highest ice-pushed ridges in the broad environment as well as along the slopes[9]. This makes it possible to study barrow distribution in relation to a variety of environmental settings.

9 Examples: stream valleys: *Koppelsprengen*; near lakes: *Uddelermeer*, on high hilltops: *Echoput, Koningseik*; gentle slopes of the ice-pushed ridge: *Loolaan-Spainkbos*.

1.6.3 The Middle Bronze Age

Barrow research particularly took place in the province of *Drenthe* in the northeastern Netherlands and in the southern Netherlands (esp. the province of *Noord-Brabant*). This research is also well-published (for recent accounts: Lohof 1991 and Theunissen 1999). It is tempting to broad-brush generalizing accounts on the general development of barrow landscapes on the basis of these excellent northern and southern regions. Whether these regions are really representative for the rest of the Netherlands, however, is questionable. In the part of the *Veluwe* that is relatively well researched, the municipality of *Ermelo*, it is conspicuous, for example, that some 50 % of the investigated barrows date to Late Neolithic. In *Drenthe*, and especially in the southern Netherlands, Late Neolithic barrows are a minority. As a matter of fact, Middle Bronze Age barrows are not that well-known in the *Veluwe* at all. Of all the barrows of the *Epe-Vaassen* barrow alignment, hardly any seems to date to the Middle Bronze Age (Bourgeois forthcoming). The Middle Bronze Age barrows that are known have some remarkable features. A small group of barrows at *Bergsham (Garderen*) yielded no less than 42 burials. One mound is reported to have contained at least 21 secondary graves, which is exceptional (Van Giffen 1937; Bourgeois/Fontijn 2008, Fig. 3.2). Also, from the *Veluwe* two barrow graves are known that contain *Wohlde* swords: *Putten* and *Bergsham* (Elzinga 1957; Glasbergen 1954b, Fig. 49). Sword graves are very rare in the Low Countries (Fontijn 2002, appendix 5.6).

There is also a conspicuous gap in our knowledge of Bronze Age landscapes in this part of the country. Large-scale excavations of Bronze Age settlements as we know them from the north and south of the Netherlands never took place on the *Veluwe* (Arnoldussen/Fokkens 2008; Van Beek 2009). Analyses of pollen from barrows from the *Veluwe* to a certain extent filled that gap, as they gave insight in land use around burial mounds (Casparie/Groenman-Van Waateringe 1980; Doorenbosch forthcoming). However, the majority of those barrows date to the Late Neolithic. Doorenbosch' (forthcoming) recent inventory shows that it is precisely for the Bronze Age that evidence is lacking. This is regrettable, particularly since Modderman (1962-63) predicted that an interesting development took place from the Late Neolithic to the Middle Bronze Age at the *Veluwe*. He remarked that Late Neolithic barrows tend to have been built on relatively fertile soils close to valleys, whereas Middle Bronze Age barrows were rather built on much higher grounds, on more unsuitable soils. He saw this as a development which took place against the background of an environment that became gradually overexploited. His model at least suggests that outspoken changes took place in the cultural landscape in which the barrows were built from the Late Neolithic to the Middle Bronze Age.

1.6.4 The history of barrow landscapes in the Iron Age

The history of barrow landscapes in the Iron Age is even more problematic. Both for the northeastern and the southern Netherlands the Iron Age histories of older barrow landscapes are relatively well-known[10]. In both regions, from the Late Bronze Age to the Early Iron Age people cremated their dead and buried the remains in so-called urnfields. In the south and the north, hundreds of such urnfields are known, each containing dozens, and sometimes over 100 burials. The remains of the deceased are often buried underneath a small mound. Probably because these mounds are relatively small and low when compared to their Neolithic

10 Northeast: Kooi 1979; for the region to the east of the Veluwe see Verlinde 1987 and Van Beek 2009. Southern Netherlands: Gerritsen 2003; Fontijn 1996.

and Middle Bronze Age predecessors, they are never labeled as "barrows" in the Netherlands. If they were, the number of registered barrows in the Netherlands, vanished or not, would be in the tens of thousands. Full excavation of urnfields, as in the north and south, did not take place on the *Veluwe*. The numbers of known Late Bronze Age-Early Iron Age urnfields are therefore much lower than in the northeast and south of the country. In a recent inventory, Verlinde and Hulst (2010) identify 42 urnfield cemeteries, of which only 7 have been (professionally) excavated. In all cases, we are dealing with small excavations. Compare this to the situation in the Meuse-Demer-Scheldt region in the south, where Gerritsen (2003, appendix 2) lists 397 urnfields, of which many have seen large-scale excavation.

In *Apeldoorn* several Late Bronze Age/Early Iron Age burial sites are known (Hulst 2010)[11]. Some represent true cemeteries (urnfields), but intriguing are references to solitary mounds dating to the urnfield period. Such mounds outside urnfields are uncommon in both the north and the south of the Netherlands, and it would be an intriguing question to seek out if they really represent solitary burials or if they are all that was left of an entire urnfield. An interesting site is the *Hoog Soeren* urnfield, which happens to be the first barrow group that was "professionally" excavated (Holwerda 1907). Here, J.H. Holwerda applied techniques to observe and recognize soil features for the first time in the Netherlands. He learnt to 'read' such features during in Germany. Hulst sees the *Hoog Soeren* site as an Early Iron Age cemetery, with one indication for a possible Late Bronze Age origin (Fig. 1.1; Hulst 2010, 150). It seems to have been built among the remains of much older burial mounds (of the Late Neolithic-Middle Bronze Age). It may thus testify to the long history of barrow landscapes in this area. Some of the finds done here would not be out of place in a Late Iron Age setting[12]. This is interesting since Late Iron Age graves are rather elusive in the southern Netherlands (Fontijn 1996; Hiddink 2003). Iron Age burials are also known from the *Epe-Vaassen* barrow rows just east of *Apeldoorn*, both from the immediate surroundings of the barrows and from the mounds themselves (Bourgeois forthcoming). This at least suggests that older barrows were respected and acted as foci for burials in the Iron Age, as is also shown for other regions in the Netherlands (*cf.* Fontijn 1996). The *Epe-Vaassen* barrow row also illustrates that older barrows could become part of extensive agricultural systems in the Iron Age, the so-called Celtic Fields (Brongers 1976). This raises the interesting question how agricultural functions were combined with the use of areas within the field system for funerary practices. As already argued on the basis of the results of the barrow excavations in *Elst*, there is evidence that a transformation of the landscape took place in the later part of the Iron Age (see section 1.4). It is an intriguing question to see what happened to the many older burial mounds, the most visible remains of the past by then. *Apeldoorn* could be one of the areas where we can investigate such developments in depth, given the large numbers of barrows and numerous indications for Iron Age habitation.

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11 For *Apeldoorn*, Hulst 2010 lists as urnfields: *Nieuw-Milligen* (his site VIII), *Meerveld-Turfweg* (IX), *Loenen* (XXVI), *Dabbelo* (XXVII), *Ugchelen-Herenhul* (XXVIII), *Loolaan* (XXIX; also known as *Spainkbos*), *Hoog Soeren* (XXX). Late Bronze Age/Early Iron Age barrows outside urnfields (list B1): *Ugchelen-Koppelsprengen* (III); secondary Late Bronze Age-Iron Age burials in older mounds (list B2): *Meerveld-Solse Berg* (V -VII); possible urnfields (no find circumstances, list C): *Loenen-Steegakker* (no. 27); *Beekbergen-Hulleweg* (28A); *Beekbergen-Kerkeveld* (28B-C); *Hoog Buurlo* (29); *Wenum-Zwolseweg* (30); "*Apeldoorn*" (31).

12 Personal observation of the author on the basis of finds stored in the *RMO* and the palace *'t Loo.*

1.7 Selecting a suitable research area: the *Echoput*-site

As set out above, one of the most urgent questions of modern barrow research is to gain a better understanding of the role of barrows in the prehistoric landscape. I argued that this is not only vital for purely scientific reasons, but just as much for heritage management purposes. Also, a new barrow excavation should have an added value when compared to the one we already carried out at *Elst* the year before. If we want to know more of the landscape in which barrows were situated, then it would be vital to have a site that

a. allows prospection of the immediate environment of the mounds
b. yields sufficient well-dated and contextualized samples of pollen for adequate vegetation reconstructions of the landscape

Being our first excavation in *Apeldoorn,* we wished to start with a small-scale excavation where we could test a number of excavation methods. Since most barrows in Apeldoorn are situated in heavily forested environments, we should find ways to excavate the environment of mounds. We were also looking for a group of mounds that was relatively small, enabling us to grasp the history of this one group within a short-field campaign. We wished to avoid sites that are registered as officially protected heritage monuments (*rijksmonumenten)*. State monuments are regularly monitored and cared for and they can be considered the best we still have. It is better to leave them. The situation of non-officially protected sites can be more worrisome. We learnt that the latter category needs more attention and, if possible, promotion to the category of better protected archaeological sites. To name one example: two years after our excavation in *Elst*, the center of another not-officially protected burial mound close to the ones we investigated was entirely destroyed (Arnoldussen/De Kort 2010). Unfortunately, this happened to be one of the few mounds of the entire group that was never investigated by archaeologists before and seems to have been rather well-preserved.

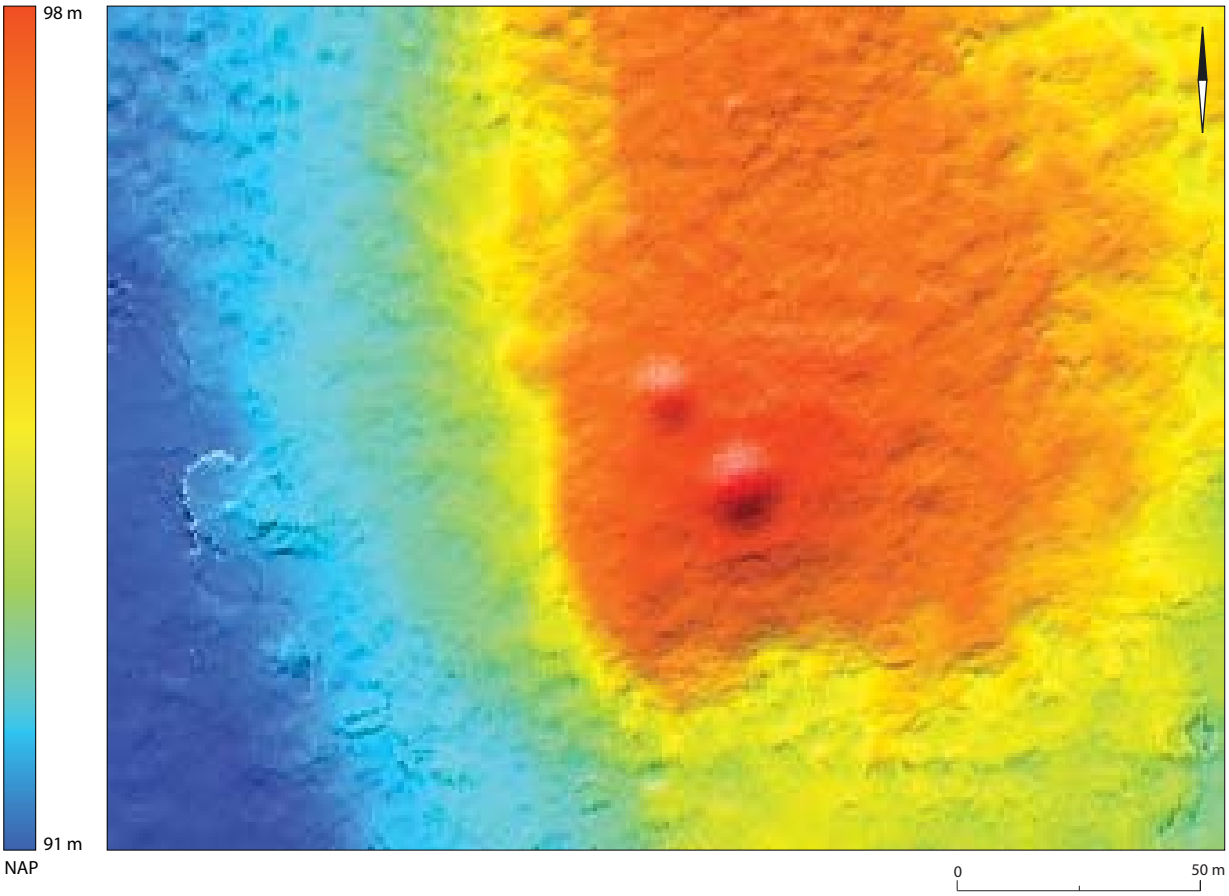
Fig. 1.4 The Echoput site as visible on the digital elevation model of the Actueel Hoogtebestand Nederland (copyright AHN).

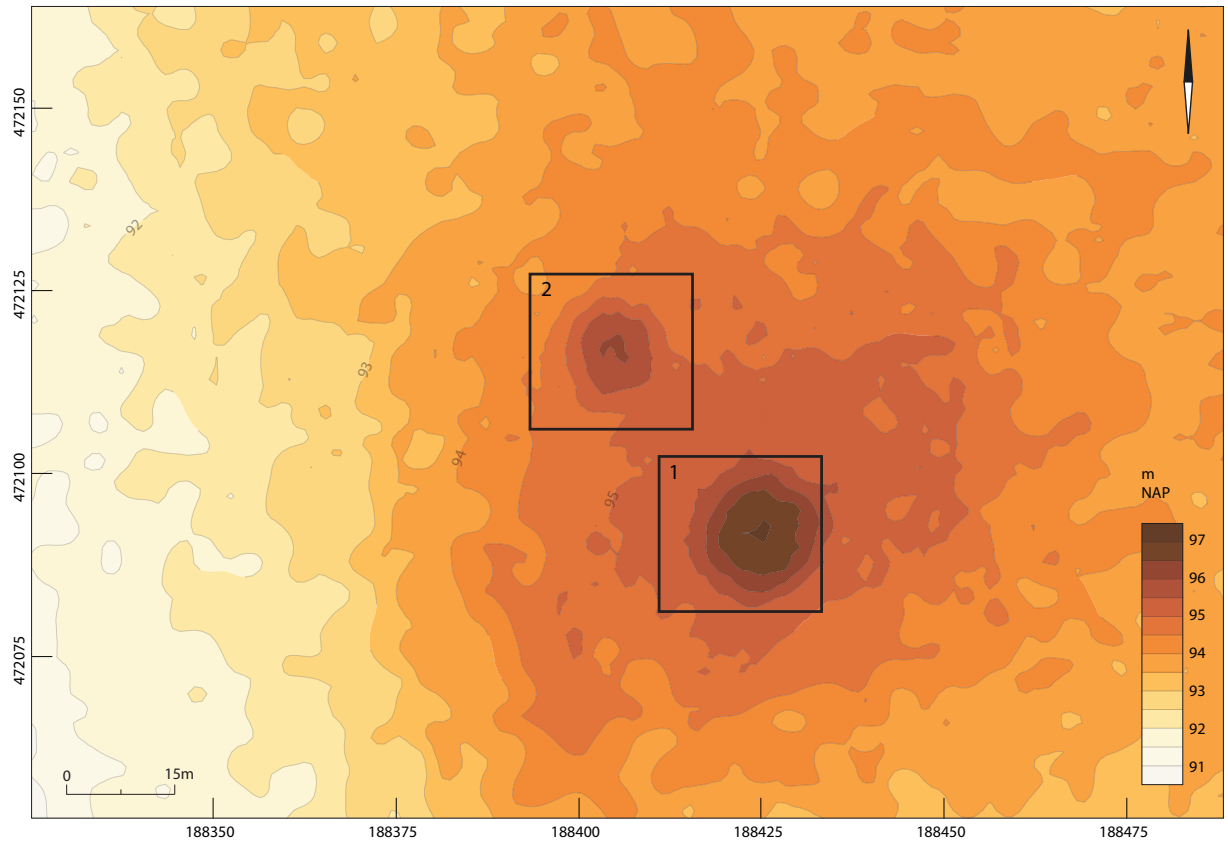
At 10 November 2006, M. Wispelwey, Q. Bourgeois and the author went on a trip inspecting a number of possible excavation sites. We used a recently compiled report that was written within the framework of the re-assessment of archaeological Heritage (Willemse 2006), to have the most recent update on the condition of a number of barrow sites. There was one site that particularly attracted our attention: the *Echoput*-site.

The *Echoput*-site is situated at the royal estate *Kroondomein 't Loo*, in the forests (*Hoog Soerense Bosschen)* immediately north of the *Amersfoortse Weg* and Hotel-Restaurant "*de Echoput*". Situated on the top of a small hill, there are two barrows, one large, one small[13] (Fig. 1.4 and 1.5). According to a recent inventory made by *RAAP* (Willemse 2006), two more mounds were seen on the Dutch digital elevation model (*AHN*). The site was probably not inspected by *RAAP* afterwards, for at the surface no elevation was to be seen apart from the two mounds already known. Around the mounds, trees had been removed to create an open area of approximately 25 by 50 m (Fig. 1.6). The clearance was carried out in 1999, when the barrows were restored by the *ROB* (now *RCE)*. Such open areas around barrows are rare in the *Apeldoorn* forests. This would make it possible to truly excavate the environment of the mound. Both mounds were made of relatively loamy sediment. This ensures that pollen are preserved. Nothing is known of these two mounds: they have never been excavated. As a group of just two mounds, situated

Fig. 1.5 Contour lines of the Echoput site as based on measurements carried out by us and the National Heritage Agency (RCE). Drawing by J. Porck. The large round mound is no. 1, the smaller one no. 2.

13 *CMA* code of the mounds: 33A-031 and 33A-032; *Archis* observation codes are 42458 and 45457. The southeast coordinates of the rectangular open area around the mounds are approximately 188475/472008, its northwest corner is 188440/472125. The Archis-database of sites gives coordinates of an area of 200 by 200 m (s.e. corner 188500/47200; n.w. 188300/472200. This means that the area would end close to the *Amersfoortse Weg.*


98 m
91 m
NAP
0
50 m


472150
472125
472100
472075
92
93
94
95
2
1
m
NAP
97
96
95
94
93
92
91
0
15m
188350
188375
188400
188425
188450
188475

on the highest place in the immediately surrounding environment (94-96 m + Dutch Ordnance Level, hereafter *NAP*), one of which is rather large, the *Echoput* site is quite remarkable. There are more barrows in the vicinity. At *c.* 1.3 km to the north, there is a group of barrows along the steep ridge of *Koningseik*. Somewhat further away (2 km) there are barrows along the *Wieselse Weg*. A separate group of three mounds was later discovered here and investigated by our team in 2008 and 2009. They appear to date to the Middle Bronze Age[14]. There are more barrows to the southeast (along the *Amersfoortse Weg)* and southwest (*c.* 1 km, along the *Kampsteeg*). None of them has ever seen archaeological research.

With regard to our two mounds on the top of the *Echoput* hill, the question forces itself upon us if we are really dealing with two isolated burial mounds, or with the last remnants of a larger cemetery (as more or less suggested in the *RAAP* report)? I already referred to the somewhat enigmatic category of "isolated" barrows identified by Verlinde and Hulst (2010) for the *Veluwe*. The *Echoput* site might be one place where we could investigate if this category is the result of selective preservation or represents a land ordering *sui generis*. If the latter holds true, what was the motivation behind the construction of just two barrows on a small hill top, when most barrows were part of larger groups? Intriguing is also that there is a large (Diameter. *c*. D. = 19 m, height 1.08 m) and a smaller mound (D. = 14.5 m; height just below 1 m). This begs the question of the relation between both barrows. Particularly if they were built at the same time, the question might be raised why their sizes are different? The situation of a large mound at locally the highest place may remind us of the Middle Bronze Age sword graves of *Bergsham* (Van Giffen 1937). Although there was no clue from previous finds in the environment, this made us suspect that we might be dealing here with Middle Bronze Age mounds[15].

Summing up, the *Echoput*-site fulfills a number of requirements set above:

- It is possible to excavate the environment of the mounds to find out more about their place within the cultural landscape: was there a separate funerary landscape (as in *Oss-Zevenbergen*; Fokkens *et al.* 2006), was it built on a settlement site (as in *Elst-Rhenen*; Fontijn 2010b), or did people live near mounds that were built in a previous period (as in several other cases: Bourgeois/ Fontijn 2008)?
- The relatively loamy sediment of which the mounds are made ensures that pollen are preserved, enabling us to combine evidence of the excavation of the environment with data on the prehistoric vegetation during the time that the barrows were constructed.
- The barrow group is so small that it is possible to gain a representative view of the entire group by means of a small excavation.
- One of the mounds stands out for its large size: this might either indicate that we are dealing with a multi-period mound, which would make pollen sampling all the more interesting as it sheds a more detailed insight into the development of the vegetation through time. The alternative would be that we are dealing with a warrior grave of the Middle Bronze Age, situated in a monumental barrow on the highest point in the environment like at *Putten*

14 Fontijn *et al.* forthcoming.

15 There are no amateur finds from this part of the forest. Of the many still existing burial mounds along the *Amersfoortse Weg* and in the large forests of the *Hoog Soerense Bosschen* we do not know anything. The *Hoog Soeren* urnfield, partly excavated by Holwerda, remains the only exception (Holwerda 1907).

Fig. 1.6 Mound 1 (front) and mound 2 (at the background, right) at the small open space in the forest, just before the excavation. Most vegetation has already been removed. Seen from the south. Photograph by Q. Bourgeois.

and *Bergsham*. This would not only provide us with more information on a possible hierarchy among burial mounds, but also with the much-needed pollen evidence from the Middle Bronze Age.

1.8 Research questions and approach

On the basis of the aforementioned considerations, we want to study the role barrows had in the landscape for the case of the *Echoput* site. If we want to do that, the following research questions will have to be answered[16].

1. When were barrow 1 and 2 built, and what is their further history of use?
2. What is the relation between the large and the small mound?
3. Are barrow 1 and 2 indeed the only barrows or graves at the top of the *Echoput*-hill?
4. In what sort of landscape were the barrows built and how did this landscape change over time? This questions can be split up into two sub-questions:
    - is there evidence for special funerary structures, or contemporary or later prehistoric settlement?
    - what was the vegetation like before the construction of the mounds and at the time that they were constructed? What can be inferred on the human impact of the landscape on the basis of the vegetation history in prehistory?

16 Written Scheme of Investigation (*PvE)*: Fontijn *et al.* 2007. Before the excavation, dr Marcel Bakker (*TNO*) surveyed the site with a ground-penetrating radar. Unfortunately, archaeological features were hardly visible. The results of this survey will be published elsewhere.

These questions will be studied by means of a partial excavation of both mounds. It is crucial to get dated profile sections for both mounds. These may provide us with sufficient information on when they were built and on their later use history. Dated profile sections, then, are a *condition sine qua non* for pollen sampling. The best way to date a burial mound is by the dating of the earliest grave that is usually found in the centre. Previous experiences learnt us that digging a small trench through the mound is not the best way to create such a section. Under the current soil and geological conditions (a Moder Podzol and heterogeneous ice-pushed sediment) important features as ditches or burial pits can be extremely hard to read, as we experienced ourselves in the barrow excavations at *Elst* (for example: Bourgeois/Fontijn 2010, 40-43). Also, if we want to get some information that can be used to study the relationship between both mounds, it is vital that we know more about the mound than just what one can find in a small trench. After all, not one of the many barrows in the vicinity has ever been excavated. If a story has to be told about these mounds, we should at least have adequate and high-quality information from one site. For that reason, we decided to excavate a quadrant of the large mound 1. For mound 2, it was already clear that the entire center of the mound was destroyed, and in order to still get a good profile section in the end, we chose to excavate the two opposite quadrants, thus creating two long sections over the damaged mound. It may be expected that the sections of both mounds, including the prehistoric soil covered by the mounds, would provide us with many opportunities for pollen sampling under controlled conditions. Now, we could not only sample the old surface, but the buried prehistoric soil as well. If we could recognize sods, they would be another interesting locus for pollen sampling, and so are pits dug into the mounds or underneath them.

In addition to this, we wished to do what has only rarely been done before: to investigate the immediate surroundings of the mounds. Given good conditions of preservation, possible traces of other (later?) graves (as suggested in the *RAAP* report), settlement traces or post alignments of the kinds found in *Oss-Zevenbergen* may have been preserved. Our strategy was to prospect with trenches first in order to detect the presence or absence of pre- or protohistoric features (Chapter 4). If features were found that may be of relevance to understanding the history of our mounds, we considered it vital not to leave it at that, but to research them more thoroughly. This might mean that trenches were to be enlarged in order to make it possible to understand the configuration of soil features. For practical reasons (time, finances and the presence of a dense forest on the slopes) we limited ourselves to investigation of an area of *c.* 89 by 100 m (Chapter 4). A full description of the exact way in which the excavation was carried out is to be found in Chapter 2 to 4.

1.8.1 Exit strategy

The time available for excavation was limited to three weeks. We wanted to avoid having to work under time pressure, as this would have negative effects on the quality of the work. For that reason, we built in an "exit strategy".

The first exit moment would be half-way the excavation. If unexpected finds would have delayed our planning, and it would look like as if we would not have enough time to excavate the quadrant all the way down to the prehistoric surface, we would change strategy. No attempts would then be made to create deeper levels, but instead a small trench would be dug in the foot of the mound (not penetrating into the centre!). Thus, sampling of the prehistoric surface would

theoretically still be possible. Dating of the mound might then be problematic as chances are low that we would find datable pre-barrow features there, and at least indirect (due to the lack of information on the primary grave). In retrospect, we now know that if this would have happened, dating of both mounds would have been extremely difficult: for both, datable finds and features were situated in the interior parts of the quadrant.

A second exit moment relates to the excavation of the primary grave. We planned an entire week for the excavation of the primary grave. One should, for example, take into account that parts of the other quadrants might then also be in need of investigation, as a primary grave could well have been situated across several quadrants. If it would look like as if we had less time, we would stop excavating and try to continue the excavation in a new campaign. The background of this decision is our experience with the excavation of mound 7 of *Oss-Zevenbergen* that we carried out two months before the *Echoput*. Here, we were surprised by the find of a very complex primary grave, containing over 1000 very small bronze items, which complicated the excavation enormously[17]. Particularly for the monumental mound 1, it was well possible that its primary grave was also of a special nature. In retrospect, the course of events was different from what we expected. One week before the end of the excavation, it was clear that the primary grave of mound 2 was largely disturbed. As for mound 1, we thought we were about to excavate the primary grave and were still on schedule. However, a primary grave was never found in the centre of the mound (see Chapter 2).

1.9 Topography, geology, soils and history of the *Echoput*-site

1.9.1 Topography

What we call the *Echoput* site is the un-official name for a small hilltop behind the hotel-restaurant '*De Echoput*'. This "hill" is actually one particular elevation on the high grounds of the *Hoog Soerensche Bosschen* that is defined by a steep slope in the east (near the knick in the *Amersfoortse Weg*) and a more gentle slope in the northwest (behind the *Aardmansberg*, the *Meervelder Bosch*). The high grounds around the *Echoput* are not a plateau but rather an undulating area defined by smaller "hills" like the one where we find our barrows. The *Echoput* hill is too small to be recognized as such on the 1:25000 contour map. Locally, it is the highest place. Going downslope to the southwest, crossing the present-day *Amersfoortse Weg*, we find the next peak on the *Hoog Soerensche* high grounds along the *Kampsteeg* (98.9 + NAP), at less than one km from the *Echoput*. Interestingly, here there are also two barrows. Unfortunately, nothing is known on their dating and nature, but it is an intriguing question if prehistoric people who built the *Echoput* mound had the intention that their barrows would be visible from the *Kampsteeg* hill and/or *vice versa*.

As can be seen on the detailed elevation map of the *Echoput* site we made before the excavation (Fig. 1.5), the burial mounds were built on a small crest of *c.* 25 by 40 m, with a height of 95 + NAP). There is a gentle slope on all sides, only the west side is steeper, flanked by what can be interpreted as a Pleistocene dry valley. Height differences are less outspoken on all other sides.

The hill is part of the pronounced ice-pushed ridges that were formed during the *Saalien* glacial (200-130 ka BP). They consist of fluvial (Rhine) sediment that was pushed up by land ice, and have a rather heterogeneous lithology (Berendse

17 Fontijn/Jansen in prep.

2004[18]). Our own investigations showed that gravel and boulders surface at the crest of the present-day hill, to decrease significantly when one descends the slopes (Chapter 4). Both burial mounds were built on the most gravelly outcrops. A tiny gravel layer at less than a meter underneath the surface was also only observed in the highest parts of the hill (Chapter 4). The sediment at the top contains some loam (presumably also of fluvial origin[19]). This is not indicated on the relevant soil map 1:50.000 (33 West Apeldoorn), where loam fractions have not been determined during the soil survey[20]. Loam is practically absent in the ice-pushed sediment of the site of the burial mounds of *Apeldoorn-Wieselse Weg* that we excavated in 2008 and 2009, less than 2 km to the north of *Echoput*. It is probably due to the local presence of loam that the site is remarkably wet. When it rained at the *Echoput*, the water could remain for days, and during the excavation we often saw toads at the site.

According to the map, the soils on the higher grounds of the *Hoog Soerensche Bosschen* are classified as a Moder Podzol gY30 developed in coarse sand with a median sand fraction > 210µm and loam fraction undefined, with gravel underneath the surface at 40 to 120 cm[21]. In the Dutch system for soil classification, this is called a *holtpodzol* (brown Podzol soils in the European system, *podsolierte Braunerde* in German). Such soils have a humus top soil of less than 30 cm and lack the leached-out, eluvial A2 or E horizon that characterizes Humus Podzol soils. Mean ground water level is more than 80 (highest) or even 160 (lowest) cm below the surface (code *Gt VII*[22]). The local presence of a fraction of loam, however, makes it more likely that the soil at the top of the *Echoput* site could perhaps better be classified as *g*Y23, a *holtpodzol* on loamy sand (see *Toelichting Bodemkaart* p. 67*).* Another problem with this classification is that this type of soil has a humus top soil of less than 30 cm. At other places with similarly classified soils, this top layer is invariably thin (10-15 cm). Here, humus layers characteristically thicker than 20-25 cm, sometimes even thicker than 30 cm (Chapter 4). Such soils are usually classified as *loopodzolgronden*, with the thick humus layer originating from anthropogenic additions dating from the Late Medieval and later periods (so-called *plaggen soils*). That would have important implications for our understanding of what happened at the *Echoput* in historical times. As will be set out in more depth in Chapter 4, we did not find convincing evidence that the thick humus layer represents an anthropogenic addition related to agricultural use. Rather, it has to do with the special, perhaps even unique situation of preservation at this site. Most *holtpodzol* soils on the ice-pushed ridges today are in areas that were used as heaths for a very long time. This means that the top soil was removed from time to time for sod cutting that were mixed with manure and placed on agricultural fields (the so-called *essen* or *enken*). The *Echoput* belongs to the oldest parts of the royal estate. It has been a forest at least since the 18th, and probably 17th century *AD* (Bleumink/Neefjes 2010). Most of our present-day forests were heaths up until the end of the 19th century, when they were transformed

18 At the geological map of the Netherlands 1:200000, coded as G1, which means non-morainic fluvial sediment that was distorted and placed diagonally by push force and pressure of the ice.

19 Theoretically, we could be dealing with löss deposited during the *Weichselien* glacial (it is known from the ice-pushed ridge west of *Dieren* for example, *cf. Bodemkaart van Nederland 1:50.000 toelichting kaartblad 33 west Apeldoorn*, p. 67. This is less likely, however, as the loam fraction was present throughout the sediment of the top soil.

20 Dutch: "geen indeling" ("0" in soil unit *g*Y30; *Bodemkaart van Nederland. Schaal 1:50.000. Toelichting bij de kaartbladen 33 West Apeldoorn en 33 Oost Apeldoorn,* Wageningen, 1979, p. 27. This is probably due to the fact that lithology is extremely heterogeneous, and the soil prospection is too general to allow the sort of local information that we need.

21 *Bodemkaart van Nederland 1:50.000 toelichting kaartblad 33 west Apeldoorn,* p. 27, 67-8.

22 *Idem*, p. 22-3 and p. 67-8.

into forests. This implies that at the *Echoput* (and probably other parts of the *Hoog Soerense Bosschen* as well) soils had a much longer time to develop and were not regularly truncated as happened at heaths. This may explain the more pronounced humus top soil.

1.9.2 History

There are hardly any records of archaeological finds done on the *Echoput* and its immediate surroundings. Particularly in the 19th century there was some archaeological interest in this region. In this period, many burial mounds were excavated, as is still evidenced by prehistoric urns in the old collections of antiquarian societies like *Felua*. This happened for example with mound 2 of the *Echoput,* although we do not know who dug into this mound, when it happened and what was found in the central grave (see Chapter 3). Generally, details of the find circumstances are lacking. The first professional fieldwork carried out in the vicinity of the *Echoput* was done at the request of queen Wilhelmina in 1906. This is the excavation of the *Hoog Soeren* barrows already mentioned before.

This means that for the prehistory, we will mainly have to work with the results of our own excavation. I will briefly give an overview of historical developments in this area that may be of relevance.

The *Veluwe* is north of the Roman *limes* and never was part of the Roman Empire after 47 *AD.* There are indications that people lived here during the Roman Period, however, as is evidenced by finds from a 1st-3rd century *AD* settlement at *Kootwijk* (Heidinga 1990, 9). The *Veluwe* is probably one of the few regions in the Low Countries that remained inhabited into the Early Middle Ages. In Carolingian times, it became an important centre for iron production (Heidinga 1990, 10). The defended site at the *Uddelermeer* (9th?-11th century AD) to the west of the high grounds of Apeldoorn may have been related to this industry. Iron production sites, or sites where production debris from this period was found are known from several places in *Apeldoorn*[23]. It is unknown if such activities also took place at the high grounds near the *Echoput*. Bleumink and Neefjes (2010, 32) refer to a historical source dated to 814 that mentions the use rights of a forest near a settlement at *Hoog Soeren*. This indicates that there was a settlement on the high grounds by that time, and at least suggests that there was also a forest near it. In the Late Medieval Period, settlements on the lower grounds became important, and the forests on the high grounds increasingly disappeared to be transformed into heath for sheep. In places, some forests (used for agricultural purposes) remained part of the landscape, as becomes clear from a historical source around 1600 (Bleumink/Neefjes 2010, 31). The boundaries of such forests are not very well known, but it is well possible that the *Echoput* site was in it. *Stadhouder* Willem V (predecessor of the Royal family) bought the forests that were by then known as the *Hoog Soerense Bosschen* in 1766 and here we know that it includes the small hill with the two mounds that are the subject of this book.

An important phase in the history of the area is the time of the French occupation (1795-1813). Under the leadership of Napoleon's brother, Louis Napoleon, the old sand road from *Amersfoort* to *Deventer* was paved in order to facilitate movements of the French army. This *grande route* would be the first paved road in what would become the Netherlands. This is the present-day *Amersfoortse weg*. Along this road, a well was built to provide the soldiers' horses with water. This well was almost 60 m deep. Due to a slight knick it gave a strong echo when one

23 *Hoog Buurlo, Orderbos, Asselsche Heide*. A useful and accessible overview can be found in *Speuren naar IJzer in Apeldoorn, themaboekje gemeente Apeldoorn*.

yelled in it, for which it would later become known as the *Echoput* ("echo well"; Bleumink/Neefjes 2010, 84 and pers. comm. H. Bleumink). As such it was probably already a touristic attraction in the late 19th century, and the folk tale about the chatty girl Echo probably dates from that time[24]. The *Echoput* remained a popular place for families and school children on excursion for long after the war, but is now closed. A less pleasant moment in its history was at 17th of April 1945. At the end of the second World War, the *Echoput* was the scene for skirmishes between retreating German soldiers and troops of the first Canadian Army who tried to break through to *Uddel* via the *Amersfoortse Weg*.

For a period of more than 2000 years, the burial mounds of the *Echoput* were there on that small hill. Yet, they are not mentioned in any of the folk tales by Wall Perné [1917], even though both the *Echoput* and the nearby *ruitersgat* loam pit figure in them, and burial mounds are frequently mentioned in such tales. The hole dug into the centre of the small mound shows that at least a few people knew about these mounds. However, inventory lists of barrows on the *Veluwe* made in 1978 by the *Rijksdienst voor Oudheidkundig Bodemonderzoek (ROB* now *RCE)*, only one mound is indicated at the *Echoput*. The symbol used to indicate it says that this is a "barrow according to notes in the files that can no longer be verified" (Klok 1988, 19). Apparently, inspection in the field showed that there were two barrows there. Pictures show that they were entirely overgrown by trees and for that reason probably hard to recognize. In 1999, the *ROB* removed all trees from the mounds, backfilled holes dug in the barrows (like a large pit in the centre of the small mound) and created an open area around them. During a heritage assessment of the region, this site was indicated as *terrein van zeer hoge archeologische waarde* (of very high archaeological value).

1.10 Organization of this book

This book is about the results of the excavation that we carried out at the *Echoput* site from 16th of July to the 3rd of August 2007[25]. To facilitate reading, discussion of features and finds are in separate chapters. Chapter 2 is about the largest of the two barrows, "mound 1" in our excavation record. It describes how and why we investigated this mound, and what we learnt about the construction, nature and age of this monumental barrow. Chapter 3 does the same for the smaller mound, no. 2. Results of the excavation of the environment of the mounds are presented in the next Chapter 4. Study of the environment is also the subject of Chapter 5, where the prehistoric vegetation before and during the time of the burial mounds is reconstructed on the basis of pollen evidence. The finds from the two mounds, then, are described and interpreted in Chapter 6, followed by a chapter on the results of the analysis of the cremation remains. All the results are brought together in the final Chapter 8, where an outline of the history of this small barrow landscape will be presented.

24 Wall Perné [1917] 1968, 50-54.

25 At 29th and 30th of July we inspected a small part of profile 1.9 again in order to reassess our interpretation of the soils together with dr J. Boerma.

Chapter 2

Mound 1 - A monumental Iron Age barrow

Cristian van der Linde and David Fontijn

2.1 Introduction

The southernmost barrow is the most conspicuous one. It is the largest of the two *Echoput* mounds, and with a present diameter of 22 m (diameter of peripheral ditch is around 19 m) and original height of 108 cm (after restoration 130-146 cm; Fig. 2.1) it ranks among the larger mounds of the Central Netherlands. It is registered under the code *monumentnr* 8788 in the *Archis* database. In our registration, it is referred to as mound 1. We excavated one quadrant, which is registered as "trench" (Dutch: *put)* 1. We selected this quadrant because it would allow us to link its north-south profile to an intermediary profile running from mound 1 to the north-south profile of mound 2. In this way, the stratigraphy of mound 1 and 2 and its immediate environment could be studied within one and the same profile. The quadrant in mound 1 links to that of trench 4, which in its turn connects to the profiles mound 2 (Chapter 4, Fig. 4.5).

Fig. 2.1 ***Mound 1 just before*** *the excavation started. View to south-southeast. Photograph by Q. Bourgeois.*

Nothing was known of this barrow before the excavation. There is no evidence that it was ever investigated and there are also no indications that it was dug out by treasure hunters or local historians in the early days of archaeology. Goal of the excavation was to gain insight in the general history of this conspicuous barrow. Size and location (see Chapter 1) suggested that we might be dealing here with a monument beyond par in the environment, and for that reason of crucial relevance to the interpretation of barrow landscapes in this part of *Apeldoorn*. As argued in Chapter 1, there were reasons to expect that the barrow might cover the burial of a Middle Bronze Age warrior's grave as known from *Bergsham* and *Putten* (see previous chapter). Alternatively, its relatively large height may also imply that we are dealing here with a multi-period barrow. Both the possible Middle Bronze Age dating and its potential multi-period character made mound 1 an interesting site for pollen analysis. The second goal of the excavation was to prepare adequately dated profile sections that could be sampled for pollen analysis. To this end, we wished to sample the earthen sods with which the mound was once constructed (Dutch: *plaggen*), the prehistoric surface covered by the mound and the B horizon beneath the old surface covered by the mound (see Chapter 5).

This chapter will describe the archaeological features we recognized in the course of the excavation of mound 1, as well as the finds done in the mound. As its restorated state had some important implications, both for the course of our excavations and the preservation of features, we will start by describing what was done during the June 1999 restoration of this mound (section 2.2). Then, we will discuss the how and why of the excavation strategy employed (2.3). General information will be given on the mound's stratigraphy as well as on administrative layers and find units used during the excavation from top to bottom in section 2.4. This is done in order to make it easier for the reader to find his/her way through the individually discussed archaeological features in the next section 2.5. We will describe all archaeological features that were recognized in the course of the excavation of mound 1, from top to bottom. We will also pay attention to important natural features if necessary (the original surface in particular). Features that later on appeared to be of natural origin are mentioned in passing. All associated finds are mentioned if relevant to the interpretation of the stratigraphy. For a full description of all finds, the reader is referred to Chapter 6. Having gone from top to bottom through the mound, section 2.6 will give an account on the precise chronology of mound 1. The implication of the described features and finds will be brought together in section 2.7, to provide a basis for reconstructing the history of this burial mound.

2.2 State of preservation – the 1999 restoration

The barrow site was restored by the *ROB* (now *RCE*) in 1999. Trees were removed from the mound with a chain saw, leaving the lowest parts with roots in place. The top and the highest parts of the flanks of mound 1 were then covered with white sand, in order to prevent new trees from colonizing it. This cover of white sand was relatively thick; on average it measured 30 cm, with a maximum of 40 cm. It was particularly thick at the top of the mound. This was apparently done to create a barrow with a rounded shaped, as this was thought to be the general shape of a burial mound. Our excavations would show, however, that in this particular case the barrow's original shape appeared to have been different.

The restoration activities were carried out using a heavy type of mobile excavator *c.* 10-12 t and a dumper truck *c.* 14 t (fully loaded possibly 25 t). Photographs of the restoration show the machines standing at mound 1. In retrospect, the type

of machine used was too heavy for the relatively loamy soil of the mound. Deep tracks were formed, that partly destroyed features in the top layers of the burial mound.

Before we started the excavation, the high ferns grew on the mound's top. These were kindly removed for us by foresters of the Royal Estate *Kroondomein Het Loo*. The quadrant excavated by us was mostly covered with grass. On the highest part of the mound, some shallow pits were visible that were dug out by wild boars.

2.3 Excavation strategy

2.3.1 Reasons to excavate an entire quadrant and the use of 'exit strategies'

It was decided to excavate an entire quadrant. This would provide us with enough large profiles to get to grips with the mound's stratigraphy. Experience with excavating a smaller quadrant that avoids the central grave learnt us that this still leaves a number of stratigraphical problems unresolved (Bourgeois/Fontijn 2010). The central grave usually provides one with the best material to date the mound. As we had more time to excavate at the *Echoput* than we had at *Elst-Rhenen* (15 instead of 5 days), this time we chose to excavate an entire quadrant. We could not afford, however, to run into a situation where at the end of the campaign a complex central grave would come to light that was partly situated in this quadrant, and partly in the three unexcavated quadrants. In order to overcome this, we located the quadrant in such a way that the centre of the mound was conveniently situated in it, allowing for a variety of grave types with diverse orientations. In retrospect, this did not really help us, as will be set out in detail in section 2.5.11.

The other lesson learnt, was not to follow an inflexible approach, but to allow for unexpected finds and features. We built in so-called 'exit strategies' in the work plan (Fontijn *et al.* 2007), stating that if pre-defined progress was not made at a certain point of time, we would not proceed in uncovering the area around the central grave, but leave it for future research. In the end, unexpected things were indeed uncovered, but we never found a central grave.

2.3.2 Excavation in artificial horizontal levels

In the excavation of the quadrant, eleven intermediary horizontal levels were created, starting with a relatively small one on the top of the mound (level 3 for examples measures 6 by 6 m), and ending with a fairly large one (12 by 12 m) situated below the original prehistoric surface that was covered by the mound (level 11). Excavation in horizontal arbitrary levels was first tried out in our excavation of *Elst-Rhenen* (Bourgeois/Fontijn 2010, 34), and later at *Oss-Zevenbergen* Tumulus 7 (Fontijn/Jansen forthcoming). It appeared to work much better than the alternative of following stratigraphical layers, as was done at the *Oss-Zevenbergen* excavation in 2004 (Fokkens *et al.* 2006).

The digging from one level to another one was done manually, in order not to miss small finds and to be able to detect significant changes in the soils or lithostratigraphy as soon as possible. The vertical distance from one level to a new one was opted to be 10 cm. In reality, this worked out quite well as can be seen from the table 2.1. Fig. 2.2 shows the size of the levels depicted on drawings in this chapter. If the new horizontal level thus created was cleaned and showed significant differences to the former it was documented with photographs and 3D-measurements of the surface. Coordinate points for photogrammetry were placed every 2 or 3 m,

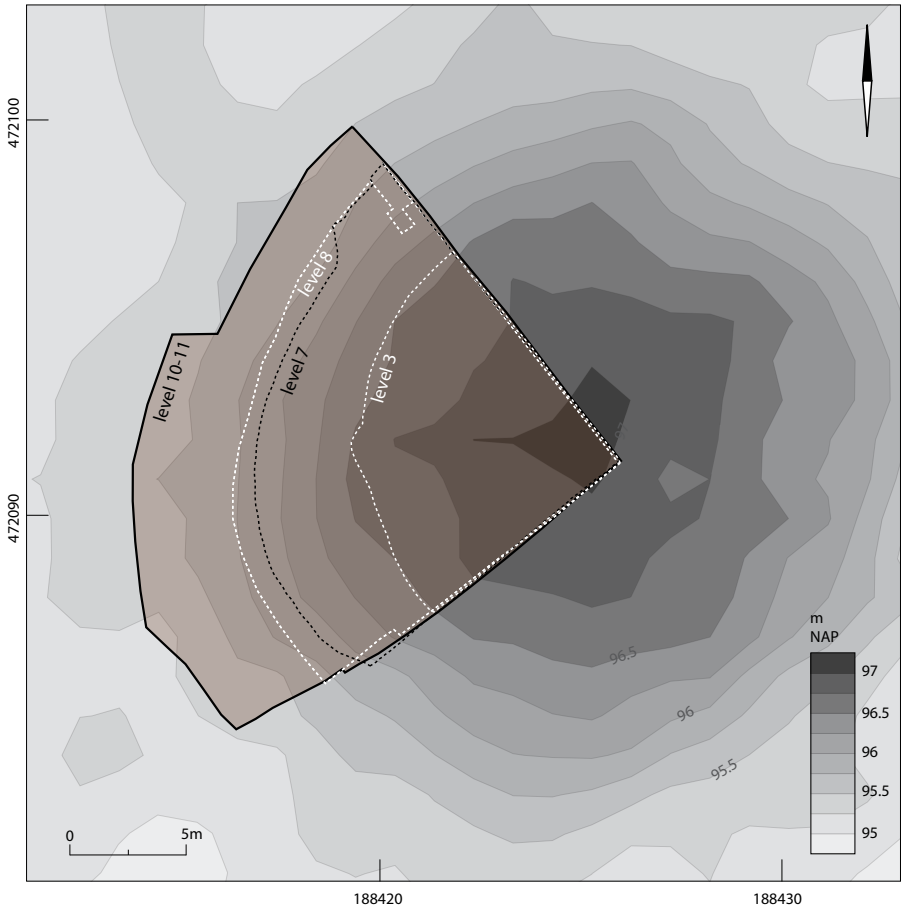


Fig. 2.2 Extension of levels that are depicted in this chapter. Drawing by J. Porck.

height measurements were taken every meter. In our view, the following observed changes always necessitated the full documentation (including drawings) of a new level: the presence of new pedological horizons and the presence of archaeological features and/or find concentrations. It follows that certain levels always had to be drawn. There is always a level in the top of the mound which is informative on the rate of disturbance of the mound (here: level 3). There will also always have to be a level which documents the structure of the mound (in this case level 7, which provides us with a fine view on the mound construction by means of sods). Then, one also always needs a level which documents the prehistoric surface covered by the mound (here: level 9), as well as a level created underneath that surface (here: level 10). The significance of this last level must not be underestimated, as we learnt that certain prehistoric features are not visible at the level of the prehistoric surface itself, but due to soil processes *only underneath it*. As we shall see, this appeared to be the case in both burial mounds of the *Echoput* site. If it was not for this last level, we would have missed those crucial features entirely! As is clear from table 2.1, in addition to these quintessential levels, we also decided to draw additional surfaces. Level 4 was drawn because of the presence of features, and level 6 and 8 because of the fact that the sod structure was very well visible there, and a combination of 6, 7 and 8 would provide us and future archaeologists with a much better opportunity to reconstruct the way in which the mound was built. In excavations of the past, the ordering of sods in barrows was not always documented, or not in a detailed way. The position of individual sods was often sketched (personal communication H.T. Waterbolk) or only documented in profiles. There are exceptions, however, like the excavation of *Hijken - Hooghalen* (Van der Veen/Lanting 1991) and *Mol-Grenspaal* (Beex/Roosens 1963). We took these as an example.

Level	Aims	Activities	Height	Drawing	Remarks
1	To inspect original top of mound	Mechanically removing white sand of restoration	96.50- 96.78 m +NAP	no	Disturbances visible of tree trunks and traces of excavator machine tracks that were used during restoration
2	To inspect lower part of A-horizon on top of mound; to observe disturbances	Manual removal of upper part a-horizon and troweling + sieving S 1	96.48-96.67 m +NAP, generally around 96.60 m,	Only detail drawing of find concentration S 1	idem
3	Investigating context of cremation grave S2; recording of disturbances and soil horizon on flanks	Level created just below A horizon in d. brown top of mound. Cremation grave laid bare under tree trunk (S 2) and recorded	96.38- 96.53 m +NAP, generally around 96.50 m	yes	Surface 6 by 6 m; still considerable disturbances by tree trunks and machine tracks visible
4	Recording of several poss. Features (f.i. S 8) and patchy soil colors which were thought to be traces of sods	New level inspected for possible features and sods; tree trunks removed, incl. last remnant of grave S 2	96.25- 96.36 m +NAP, generally *c*. 96.30 m	Yes	Surface 7 by 7 m; machine tracks no longer visible, impact tree disturbances decreased
5	Gaining a better insight in the position of individual sods at surface	Creation of surface where position sods is visible; removal oftree trunk; profile section on S 8; check to inspect poss. remnants of grave S 2 at lower level	96.16- 96.25m +NAP, generally *c*. 96.20m	Only detail of S 8 and environment	-
6	First clear identification of position of sods; in d. brown parts still no sods visible	Detailed inspection of position of sods	96.02- 96.13 m +NAP, generally *c*. 96.10 m	Yes	Surface now 8 by 8 m
7	To record position of sods at this level	At this level, sods are now visible everywhere; new detailed drawing of position of sods	95.83- 95.98 m +NAP, generally *c*. 95.90 m	Yes	Surface 8.5 by 8.5 m
8	To record position of lowest part of sod layer; to record vertical sod construction in profile section	New detailed drawing of what represents base of sod layer in surface	95.67- 95.87 m +NAP, generally *c*. 95.75 m	Yes	Surface 9 by 9 m
9	To record old prehistoric surface underneath barrow	Recording finds, drawing of final sections over S 8 followed by their removal	95.53- 95.73m +NAP, generally *c*. 95.65 m	Yes	Surface *c*. 9 by 11 m
10	To inspect surface just beneath old prehistoric surface (*i.e*. B and C horizons) for the presence of features	Manually deepened and carefully inspected; 1 m trench in front of profile for final drawing and sampling of profiles	95.16- 95.52m +NAP, generally *c*. 95.35m	Yes	Surface 12 by 12 m; a start was made with deepening with a mechanical excavator, but this was brought to a halt after the discovery of new features, invisible at level 9
11	To inspect C horizon for further features, invisible at level 9 or 10	Digging of profile trench, detail examination of S 20; inspection of surface after further mechanical deepening of surface	Generally 95 m + NAP	Detail of S 20	Inside peripheral ditch no new features; two features found during construction of trench for profile; no inspection outside ring ditch at this level, except for trench 4

Table 2.1 Height of all levels created and specification of activities carried out at each level.

Only level 11 was partly deepened mechanically. At this level, no new features were to be expected. Here, in front of the profile sections, a small trench (width 1 m) was dug to facilitate the inspection of the stratigraphy and pollen sampling deep into the C horizon. Unfortunately, time did not allow us to create a level at the same depth as level 11 beyond the peripheral ditch.

2.3.3 Recording

All levels have been drawn at a scale 1:50, cross-sections and details of archaeological features like traces of posts or a secondary burial were drawn 1:10, long profiles 1:20. All levels were photographed and 3D- measured with the theodolite Sokia 4 B Total Station (measurement error 5 " = 1.5 mgon). All finds and features were 3D-measured. Only levels 1, 2, 5 and 11 were not completely drawn, as their surface was not really different from the previous one. They were photographed and measured though. Detail drawings of features on level 2, 5 and 11

Fig. 2.3 "Grave" S 1 is being investigated. All ground is investigated using trowels and sieves. As can be clearly seen here, the feature is situated just below the thick layer of white restoration sand. View to the south. Photograph by Q. Bourgeois.

were made, however. All levels, including those that were not entirely drawn, were systematically surveyed with a metal detector by our experienced metal detectorist Mr A. Manders. Because of the negative result of our previous experiments with sieving of a part of the mound material at our barrow excavations in *Elst-Rhenen* (Bourgeois/Fontijn 2010, 36) and *Oss-Zevenbergen* Tumulus 7 (Fontijn/Jansen forthcoming), we decided not to do this anymore. Extensive troweling was done in a *c.* 1 m wide zone around feature S 1 (level 2; Fig. 2.3), as by that time we were thinking that the black top of the mound might represent a different mound period. Also, ground samples were taken. Following that train of thought, S 1 would represent a feature on an old surface. However, after several profile inspections, it dawned upon us that the black top layer is not a lithologically distinct layer, but a soil horizon. Cremation grave S 2 was laid bare with brushes and *c.* 1 m by ½ m ground was sieved using the 2mm mesh size.

2.3.4 Tree trunks

As is indicated on table 2.1, six large and two smaller tree trunks hindered the excavation of the highest parts. They were largely removed by hand: once they were laid bare at the surface, they were sawed off or cut to be removed with chains attached to the mechanical excavator. As all trunks were remainders of trees already removed during the excavation of 1999, this could be done quite easily. The position of each tree trunk was documented and drawn. This was done because around tree trunks there tends to be a different type of soil formation (locally more heavily podzolized). Also, tree trunks may hide undisturbed profile sections and even features. Cremation grave S 2 was actually found underneath such a trunk.

2.3.5 Connecting the mound to trench 4

After the topsoil of the mound was stripped, we started to make a very small (*c.* 50 cm wide) trench in the northern foot of the mound. Effectively, this was to connect the N-S profile section of the mound to the profile of trench 4 which in its turn connected mound 1 and 2. Immediately, a few features were recognized in the southernmost part of trench 4, as well as at the place where trench 4 connects up with mound 1. Using a hand soil auger, a few corings were set in the mound to get some idea of the build-up of the mound. We now had the opportunity to immediately relate these initial observations on the soils within the mound to soil evidence from the fresh profile section of trench 4. The most outstanding feature was the thick dark (humus) layer on top of the mound, and in the top soil of trench 4. As such a thick dark soil seemed uncharacteristic for a Moder Podzol, we suspected that this layer represented an additional mound layer, concealing an original prehistoric surface covered up by a secondary mound layer. This was fuelled by our discovery of feature S 1, which we initially interpreted as a grave (see section 2.5.4). Later, we were able to refute this interpretation of the dark top layer (see section 2.5.3). We did not penetrate further into the mound from trench 4 than 30 to 40 cm.

2.4 Mound stratigraphy and excavation administration of mound layers and finds

We will now give a brief overview of the mound stratigraphy from top to bottom of the mound. This will serve as an introduction for a more detailed discussion of the several features in the mound in the following sections. Feature numbers were only given to phenomena that could reasonably be expected to represent human disturbances (from a remote past), informative on the barrow's history[26]. They are indicated with the letter "S" (from Dutch *spoor* which means feature). See also Fig. 2.4.

The top soil of the mound is made up of the white fine-grained sand of the restoration, containing the remnants of many tree trunks. The rest of the mound consists of coarse sand, occasionally containing small pebbles. The sand is relatively loamy. Beneath the white restoration sand, there is a rather thick black humus layer (observed at level 1 and 2, and at level 3 in depressions caused by the

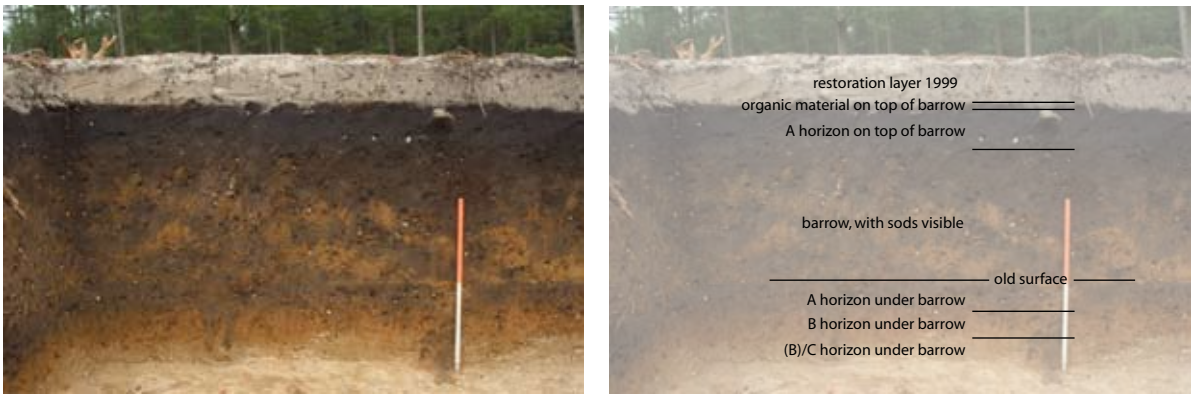


Fig. 2.4 Profile section through the mound (view to the southeast, profile no. 10. For description, see text. Photograph by Q. Bourgeois.

26 At the *Elst-Rhenen* barrows, the top soil, the mound itself, and the prehistoric surface and subsoil beneath it all were recorded with separate feature numbers (Bourgeois/Fontijn 2010; Fontijn *et al.* 2010). We decided not to do this here, as it only led to an accumulation of the administrative work without serving a clear purpose.

use of the heavy mechanical excavator in 1999). The interpretation of this remarkable layer was at first unclear, yet can now be seen to represent the developed and undisturbed A horizon of a so-called Moder Podzol soil (Dutch: *holtpodsol*, see section 1.9). Cremation remains were buried into the top of the mound (feature S 2). Below the B horizon of the top soil, stacked sods are clearly visible (particularly at level 6 to 8). The sods represent one phase of mound building. They were placed on top of an old surface that was not leveled or truncated. Below the sods a thin, dark A horizon is visible at level 9. A few pits were dug into this prehistoric surface (S 16 to 21). They were only visible at the lowest levels 10 and 11. These pre-date the construction of the burial mound. Traces of the peripheral ring ditch enclosing the mound were also recognized at these lowest levels. The surface at which the mound was built contains relatively coarse sand and gravel deposits. The concentration of pebbles and gravel larger underneath the mound than in the surroundings, and the original surface is slightly higher here than outside the mound.

2.5 Features

2.5.1 General 'readability' of features

The "readability" of features in the burial mound itself was surprisingly good. The barrows we excavated at *Elst-Rhenen* in 2006 and *Apeldoorn-Wieselse Weg* in 2008 and 2009 were both also situated on ice-pushed ridges with a Moder Podzol soil. However, features inside the mound were much easier visible in the *Echoput* mounds than in the other cases mentioned. The sods with which the mounds were built, for example, could be recognized only in the mounds of the *Echoput*. Comparing mound 1 and 2, the sods were best visible in the larger and higher mound 1. However, it was very hard to recognize features underneath both mounds. As a matter of fact, traces of pits like S 20 were invisible at level 9, and could only be observed at lower levels (*i.e.* underneath the original surface) because their fill contrasted with the coarse sediment matrix there. Features S 16 to S 19 were only recognized because of the charcoal in their fills. The low visibility of those features suggests that they were formed at a time when the surface was not intensively used or covered with settlement debris, and when soil formation did not yet have much of an impact. By contrast, traces of Middle Bronze Age pits and posts found underneath the otherwise hardly 'readable' burial mound "Delfin 190" at *Elst-Rhenen* were very well visible (Fontijn *et al.* 2010).

2.5.2 Top soil: recent additions and disturbances: the 1999 restoration

The top of the mound and the higher parts of the flanks were covered with 40 m^3 white sand during the 1999 restoration. The idea behind this was that this would prevent trees from growing on top of the mound. As the intention was to create a mound with a rounded form, the flat top was raised 30 to 40 cm, whereas on the flanks smaller amounts of sand were placed. According to the notes stored at the *RCE* on the restoration, a pit 'measuring several metres' in the centre was also filled with white sand. We did not retrieve this pit in our quadrant, which was undisturbed except for damage done by trees growing on top of the mound.

The restoration sand was brought on the mound with a mechanical excavator. Unfortunately, it was too heavy for the loamy mound, and pressure of the machine caused disturbances in the higher parts of the mound. At level 1 and 2, traces of its two tracks (white sand and recent debris) are clearly visible (Fig. 2.5 and 2.6). In

its tracks, the ground was pushed and compacted. Deeper disturbances, visible at level 2, show that the machine turned around at this place. The pushed-in mound material is visible at level 3 as well, and even at level 4, dark brown rectilinear features represent mound material which subsided because of the pressure enacted upon the mound. These disturbances are visible up to *c.* 40 cm below the original top of the burial mound. Severe damage was done by the machine to the flank of the mound. By the track traces preserved, we could infer that the machine climbed the mound at least four times, thus disturbing the loamy lower flank of the mound. During our excavation it appeared that the mound's flanks are a notoriously watery place, where rain water could not easily get away. This makes the flanks all the more vulnerable to pressure and movement of heavy machines. When we investigated the traces of the peripheral ring ditch here, they appeared to have been partly disturbed by the activities of the heavy mobile excavator.

In the traces of the machine tracks we found a fragment of brick (V 24; dating to Late Medieval or more recent periods), and a copper coin (V 41). Next to the tracks there was one fragment of an iron object (indet.; V 28). Immediately below the tracks a fragment of bronze was found (V 53), again probably dating to recent periods. Since such finds have only been done in association with the tracks of the mechanical excavator, and nowhere else on the site, they must represent intrusions brought here during the restoration. Finds are discussed in Chapter 6.

It is advisable that heavy mechanical excavators like the one used in 1999 (10-12 t) are not to be used anymore for driving on loamy burial mounds. However, the much lighter mechanical excavator we used during our excavation (4 ¾ t) can be used without damaging the mound. In any case it is better to use tracked than wheeled vehicles because of their more favorable ground pressure distribution.

2.5.3 The thick black top soil of the mound

Underneath the white restoration sand, there is a thick black humus layer (*c.* 25 cm). The lower part contains less humus than the top[27]. There were no features visible within it. It surfaced at levels 1 and 2, and at level 3 in the depression caused by the machine tracks (Fig. 2.5 to 2.7). Moreover, it remained visible at the lower levels also at the sides of the quadrant (compare for example Fig. 2.7, 2.10, 2.22 and 2.23). A humus layer on top of a mound may be interpreted as an A horizon, a normal feature of any soil. What surprised us in the first week of the excavation, however, was its thickness. Humus A horizons of 25 cm thickness are uncommon among the Moder Podzol soils that are found on the ice-pushed ridges. For that reason, we originally toyed with the idea that this layer represented a separate mound addition, and it was investigated accordingly, particularly when some artifacts were found in it (see 2.3.4 and below section 2.5.4 and 2.5.5). However, in the course of the excavation many trenches were dug in the immediate environment of the burial mounds, and it became clear that such a relatively thick humus layer is characteristic for all soils present at the *Echoput* (Chapter 4). As set out in Chapter 1, it became clear that we are not dealing with a separate deposit on top of an older soil (like a Late Medieval *plagge*n soil), but that the thick humus black top is an original part of the sediment which result from a specific process of soil formation. We are dealing with a *holtpodsol* soil where the top has never been truncated or leveled (*cf.* section 1.9). This is quite uncommon, as most Moder Podzol soils on the ice-pushed ridges were truncated due to heath cutting or modern forest ploughing. For example, this is what happened at the

27 Top: *c.* 8-10 % humus; bottom *c.* 3-4 % humus. Based on observations in the field by dr J. Boerma.

Fig. 2.5 Level 1, view to the east-southeast. The vegetation and loose top soil has been removed, including the thick layer of white restoration sand at the top of the mound. Visible are depressions filled with white sand marking the tracks of the mobile excavator used during the restoration. Another filled- in depression is visible to its left. Photograph by Q. Bourgeois.

Fig. 2.6 Level 2 view to the east-southeast. The top has now been deepened somewhat into the thick black top soil. The depressions caused by the mobile excavator are still visible. The white markers near the tree trunk indicate the find location of bone and metal fragments found in "grave" S 1. Photograph by Q. Bourgeois.

Fig. 2.7 Level 3, view to the east-southeast. Most of this level is now underneath the thick black top soil. Traces of the tracks of the mobile excavator are faintly visible (cf. Fig. 2.5). The plastic cover just underneath the large tree trunk in the centre of the picture indicates where the cremation remains of grave 2 were found. Photograph by Q. Bourgeois.

other site we excavated in the vicinity, *Apeldoorn-Wieselse Weg*, only 1 ¾ km away from the *Echoput*. A *holtpodsol* soil also developed here, but the humus layer here is clearly much thinner (*c.* 15-20 cm). The special condition of the *Echoput* soil is probably due to the uncommon history of this particular place, which has been a forest since centuries, whereas most modern forests developed in areas that had been used and maintained as heaths until the beginning of the 20th centuries[28].

Both at level 2 and 3 a number of finds were done. They are described in more detail in Chapter 6. Here, we only refer to them because of the information they provide on the integrity of the uppermost layers. Apart from the finds mentioned above that probably ended up here due to the restoration, at level 2 the remains of what seem to have been a (prehistoric?) whetstone were found (V 8), and two tiny prehistoric sherds (V 23 and 29), the former dating to the Iron Age, the latter could not be determined. At level 3, four small, weathered sherds were found some of which displaying gnawing traces by animals (V 35, 60, 61, 76). They are too small to allow further determination. Two pounding/polishing stones are probably prehistoric (V 30 and 56). All these sherds may either have been part of the material with which the mound was built, or ended up in the ground due to bioturbation (tree roots, animals digging holes, wild boars disturbing the mound top). The latter option seems the most likely, as the lower part of the mound itself is almost entirely devoid of any artefacts. Possibly, such finds represent debris of activities taking place at the top of the mound[29]. However, the fact that we also found sherds of a Post-Medieval clay pipe (V 42) at level 3 makes clear that these finds represent activities from very different periods.

28 We are grateful to dr. J. Boerma and prof. dr. Th. Spek (University of Groningen) who discussed the soils with us in the field, and provided us with useful information.

29 At *Elst-Rhenen* both mounds investigated had a find layer with Late Iron Age material at the top (Fontijn 2010a). Perhaps, the *Echoput* finds are also the remnants (displaced and disturbed by bioturbation) of such a layer. As the top is damaged by the machine tracks, the evidence is not easy to read and we should leave it at that.

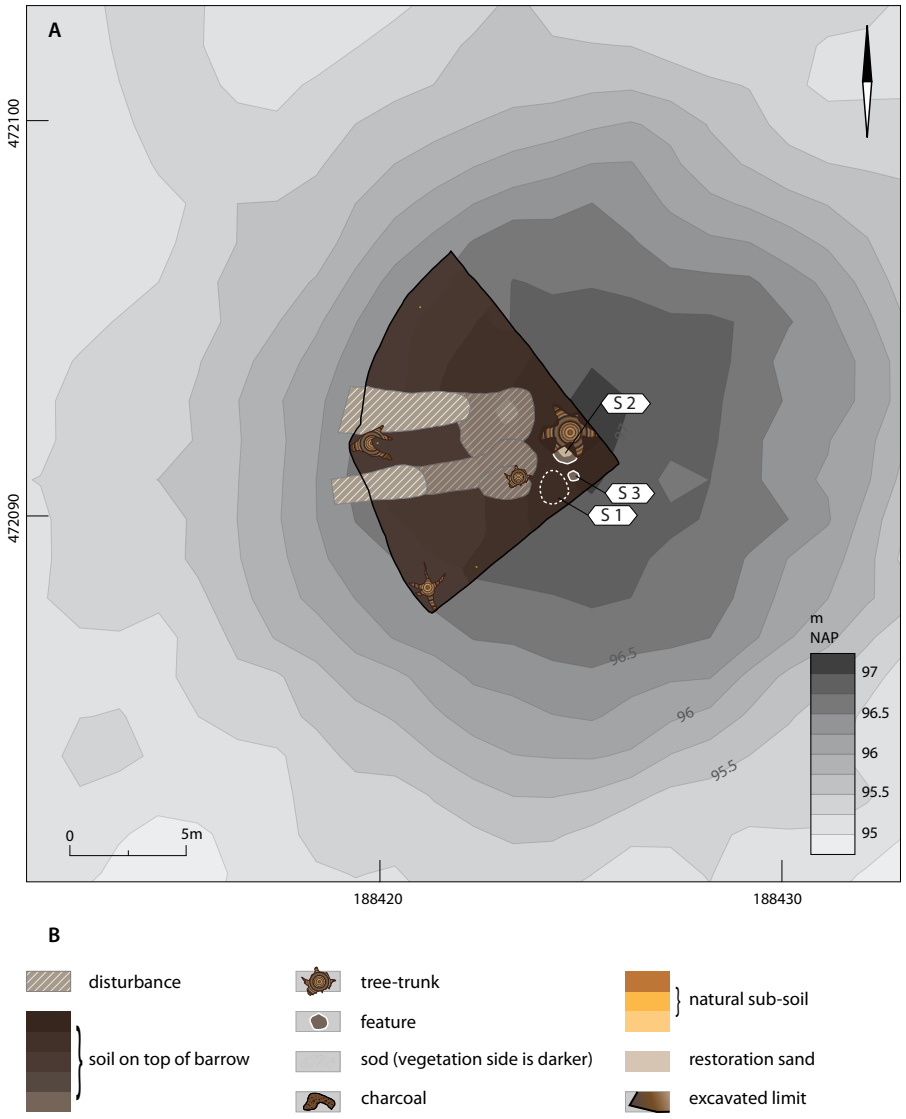


Fig. 2.8 A. Plan of the features seen on level 3, with S 1 (level 2) projected on it. Drawing by J. Porck. B. Key to symbols and colours used in this and following drawings.

2.5.4 Top soil find concentration S 1: "grave" 1

At level 2, we found a small scatter of charcoal particles and burnt (human) bones in the southeastern part of the quadrant (Fig. 2.6 and 2.8). Around it, the vague outline of a pit with a diameter of 110 cm was seen. It was recognizable as such by its brown colour in the dark black matrix of the A horizon. It became visible immediately below the most humus-rich part of the top soil. As we are dealing with a feature with a lighter colour than its surroundings and top, it cannot be a depression caused by the restoration. This feature, recorded as S 1, or "grave 1" as it was called during the excavation) was laid bare using brushes and trowels (Fig. 2.3), and its fill was sieved (using a sieve with a 2 by 2 mm mesh width). It was divided into three segments and its content was sampled[30]. Charcoal and burnt bone fragments were found throughout the fill in small quantities. Since we were by that time of the opinion that the black top soil represented a separate mound addition, we thought that this find assemblage was placed on an old prehistoric surface. Soon, we refuted this interpretation (see previous section). We found

30 collected as V 11, V 13-15, V 32.

twelve pieces of cremated bone (V 4 to 7, V 16 and V 17, in total 28.1 g), two concentrations of cremated bone (V 18 and V 20, in total 113,9 g), and concentrations of charcoal remains (V 10 and V 21). We also found two heavily corroded iron hook-like objects (V 1 and V 19). They were taken to the restoration laboratory for further investigation, but unfortunately they could not be determined (section 6.2.3). The metal type of two similar very thin pieces of sheet-metal (V 27 and 31) is yet to be identified, but is of recent date. They are probably intrusions here related to the activities of the mobile excavator used during the 1999 restoration (see further 6.2.3). The four determinable bone fragments (larger than 1 mm) are human (section 7.4.1 and Table 7.4 for determinations). The finds were found throughout the entire pit fill and there was no concentration of finds in one particular section.

A sample (12 g) of the charcoal collected as V 10 was C14-dated. This yielded the following C14-dating: 2190 ± 35 BP (GrN-32158). Calibrated at 2σ range this comes down to a date of the charcoal of 375-170 cal. BC, the later part of the Middle and the first half of the Late Iron Age[31]. Charcoal of which we may assume that it will have been used for the cremation of the deceased at best provides a *terminus post quem* date for the use of the pit. As we will see below, it is somewhat different from the dating of grave 2, nearby, and is not in contradiction to the dating of the mound itself.

2.5.5 S 2: A Late Iron Age cremation burial dug into the top of the mound

A cremation grave was found partly underneath a tree trunk at level 3 (S 2 or "grave 2"; Fig. 2.7 and 2.8). It is situated very close to the bone-charcoal concentration described above (S 1 or "grave 1") which was found at level 2. It was laid bare with brushes and spatula. All (surrounding) soil was sieved in order to find additional pieces of cremated bone or charcoal (using a sieve with a 2 by 2 mm mesh width). We appeared to be dealing, however, with a densely "packed" concentration of bone remains, which could be collected as such (see Chapter 7). Due to the presence of the tree trunk, only the lower part of the pit into which the cremation remains were placed was visible (in an improvised section between the tree roots; Fig. 2.9). Approximately, the pit had a diameter of 40 cm and a depth of 40 cm. The cremation remains underneath the tree roots were densely packed and more or less formed a ball. This can only be explained by assuming that they were originally placed in an organic container that has not been preserved. An indeterminable bronze fragment was found in the bone concentration (V 44; see section 6.2.3). In total, 835 g of cremated human bone was found. No animal bones have been identified. As will be argued in more detail in section 7.4.2 (Table 7.4.5), we are dealing here with the bones of one male individual in the age of 35-40 years. In contrast to what we saw in the case of the nearby "grave" 1, there is barely any charcoal among the remains. Also, the bone fragments are better preserved than those from "grave" 1 (see Chapter 7).

Three detail drawings were made. When all ground was sieved and documented, the roots were sawed and the trunk removed. At level 4, the same location was inspected again, and some more cremation remains were found (V 65). The lower part of the pit, visible in the surface of brown-yellowish sand of level 4 had no dark fill. This implies that at the time that the bones were dug into the top of the mound, the dark humus soil that is now so conspicuous had not developed yet. This once again demonstrates that the dark top cannot represent a separate

31 calibration program used: Oxcal 4.0.

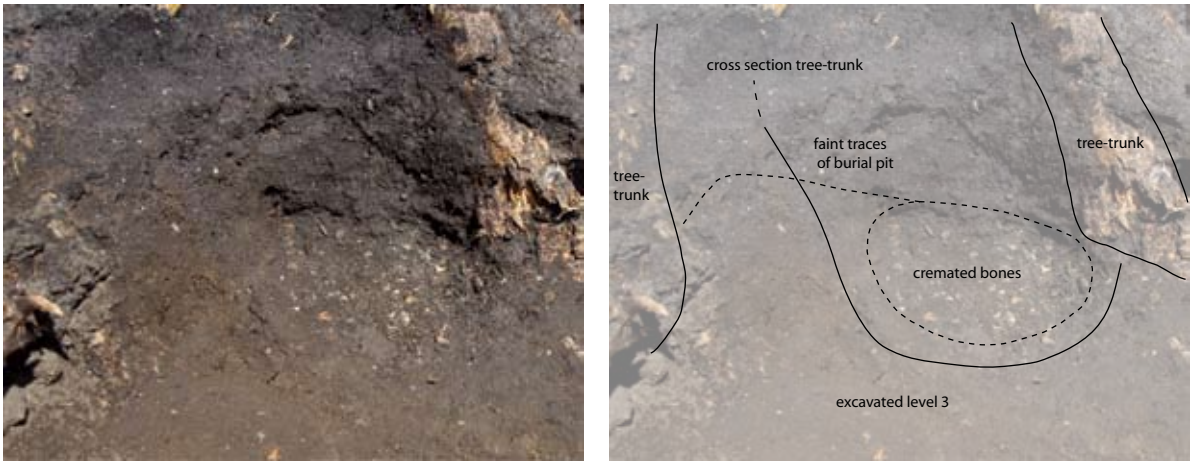


Fig. 2.9 S 2. Cremation remains preserved under the large tree trunk. Traces of the pit in which they were buried are visible. View to the northeast. Photograph by Q. Bourgeois.

mound layer, but instead represents a soil horizon that developed long after the grave was dug in. The cremation remains were identified as those of a male in the age of 35-40 (Chapter 7).

Next to the cremation pit, traces of a post were recognized (S 3). We cannot prove that the post and burial pit are contemporary, but it might be ventured that a post was used to mark the grave. A similar assumption was made by Kooi for traces of postholes next to Middle Iron Age cremation graves in *Norg-De Fledders* and *Dwingelo*. He refers to parallels in Germany i.e. *Gerkenhof-Kreis Verden* and *Doetlingen-Kreis Oldenburg*. Kooi thinks that poles like these were also placed as grave-markers (Kooi 1979, 132).

As there was barely any charcoal in this grave, one bone fragment (V 98) was sent in for C14-dating. It was dated 2075±35 BP (GrA-44412). Calibrated at a two σ range (using Oxcal 4.0), the dating range of the bone fragment is between 191-1 cal. BC, the Late Iron Age.

2.5.6 On the relationship between S 1 and S 2

Was there a relationship between S 1 and S 2? S 2 is a pit filled with cremated human bone and barely any charcoal, and S 1 only has a few remains of cremated bones (of which a few are indeed human, and most too small to allow determination, table 7.4) and a lot of charcoal. For that reason, it might be ventured that S 1 represents the remains of the pyre on which an individual was burnt whose collected bone remains were buried in pit S 2. However, the calibrated dates of charcoal in S 1 and bone in S 2 have only a small overlap in the Late Iron Age. In the case of the charcoal dating, there is a possibility that we are dealing with the "old wood" effect. There may also be problems with C14-datings of cremated bone. As recent research shows, C14-datings of cremated bone can differ from its true age due to contamination, pending on the temperatures under which the bone burnt (De Mulder 2011, 146-148). In general, bone burnt at high temperatures (that is at 800 ° C or higher, when both the inside and outside are white) suffers less from contamination than bones burnt at lower temperatures. De Mulder also argues that for C14-datings, it is to be preferred to select larger bone fragments rather than smaller fragments (De Mulder 2011, 148). When we sent in our sample for C14-dating, this was not yet known. The bone sample was very well burnt (degree 5; see Chapter 7), but it was not properly documented if it was a long fragment of the sort as preferred by De Mulder's method. So, we cannot exclude the possibility

that the cremated bone suffers from some contamination. In all, it remains possible that feature S 1 and S 2 are contemporary, but it is far from certain. Chapter 7 will show that the analysis of the bone remains themselves also does not provide hard evidence on this pyre-burial hypothesis, so we must leave it at that.

2.5.7 Mound construction: the evidence of sods

From level 4 up to level 8, it proved to be possible to document the position of individual sods the mound was constructed with. Since our excavations at *Oss-Zevenbergen*, we paid attention to the arrangement of sods in order to get an idea of the way in which mounds were built (Fokkens *et al*. 2006; Fontijn/Jansen forthcoming). This was so far rarely done during excavations in the Netherlands and abroad[32]. Sods are known to be well visible on grounds with Humus Podzol soils. However, they have rarely been recognized on Moder Podzol grounds like those on which the *Echoput* mounds are situated[33]. Most barrows on the ice-pushed ridges of the *Veluwe* and the *Utrechtse Heuvelrug* happen to have been built on such soils. Although sods were sometimes recognized in the past[34], there is so far no detailed description or note on the arrangement of sods in any burial mound on the *Veluwe*. Due to our experience with the mounds of the *Oss-Zevenbergen* barrows, we were particularly keen on recognizing sods. The entire excavation strategy with excavation in horizontal levels was also particularly designed with the aim of recognizing and documenting sods in mind.

Already at level 4, we suspected that sods could become visible among the discolorations at the surface of the cleaned level. It was only at level 6, however, that for the first time we got a good impression that we were really dealing with traces of sods, and could link the traces in the surface to those in the profile section. Sods were very well visible on level 7 (Fig. 2.10 to 2.12) and 8 as well as in the profile sections (Fig. 2.17 and 2.18). They were invisible at the highest levels 1 to 3, probably because the readability of the surface is hampered by the ongoing process of soil formation from the top of the mound and around the roots of trees. At every level, the outer rim of the excavated quadrant (where the dark humus top soil and its B horizon are cut) shows too much discolorations to allow one to recognize sods. This means that for every level, a zone of *c*. 2 m from the outer rim of the mound to its interior lacks information on sod arrangements.

The top of the sods usually is marked by a dark grey thin soil (*c*. 2 cm thick). This is the same humus A horizon that characterizes the buried palaeosol underneath the mound. The thick, dark humus A horizon that developed on the top of the mound and in the environment is absent in both the sods and the buried prehistoric surface underneath the mound. This once again shows that its formation therefore must have been a much later development. From the dark grey top downwards, the sods become more gravelly. There is often a part of a gravel deposit (Dutch: *grindsnoer*) visible. This again reflects the lithology of the soil buried underneath the mound. An important conclusion from the excavation of the trenches in the environment is that gravel is only present at the highest points of the *Echoput* hill, which is where the two burial mounds were built (Chapter 4). The further one gets from the mounds, the finer the sediment gets. This implies that the sods were taken from the immediate environment of the burial mound,

32 In the recent model excavation of the *Skelhoj* burial mound in Denmark all the sods were also individually recorded (Holst *et al.* 2004).

33 Barrows where according to Casparie and Groenman-Van Waateringe (1980) sods were (probably) recognized in mounds built on a Moder Podzol or *holtpodsol* are *Doorwerth* (Late Neolithic B; S16) and *Lunterse Berg, Lunteren* (Late Neolithic B, S23).

34 See previous note for mounds on Moder Podzols and Glasbergen 1954a for a good example of sods being recognized and recorded in profile sections on Humus Podzols.

Fig. 2.10 Level 7 photographed from above, looking to the southwest. The crossed profile section marking S 8 is still standing. Visible are the traces of many sods and a few larger zones marking local soil formation. Photograph by Q. Bourgeois.

Fig. 2.11 Level 7, same position as Fig. 2.10. The traces of sods and soil zones have now been marked to facilitate drawing. Photograph by Q. Bourgeois.

though not from the surface where mound 1 was built as here the surface was clearly left intact. Chapter 5 will come back to this, and will particularly deal with the question how much of the surface had to be stripped in order to get enough sods to build mound 1.

The sods are generally quite large and must have been rather heavy. Although each individual sod was drawn, it is not so easy to establish the average size of a sod. This is due to the fact that sods are rarely positioned in an exact horizontal position. Our horizontal levels uncover the sods in different ways. Measurements from level 8 in particular, where the basal layer of sods could be documented, probably reveals the sods in their most horizontal position. Here, the sods appear to be rectangular and the average size of sods seems to be 60 by 25 by 20 cm (= L x W x H). A sod comprises the thin humus top layer (with vegetation) up until the upper part of the B horizon. We assume that the deepest penetration of the roots more or less coincides with the bottom of the sod, as we may expect that it was the roots that held the loose sand together. As said, a gravel deposit in the subsoil is often also part of it. Cutting sods in more or less regular sizes makes mound construction easier. Leaving the original vegetation intact makes it easier to pick them up. Almost all sods were placed with their top (vegetation part; A horizon) down. We saw exactly the same in the case of other mounds we excavated where sods could be recognized (*Oss-Zevenbergen*, mound 2, 3 and mound 8; *cf.* Fokkens *et al.* 2006; De Leeuwe 2007; mound 7: Fontijn/Jansen forthcoming).

On the basis of the observations made on the position of the sods for each level and the profile sections, we get an impression how the mound was constructed. As we only excavated one quadrant, we cannot go as far as to reconstruct the entire process on how the sods were arranged. We will first describe our observations from level 4 down to level 8 (the basis layer of the sods).

Level 4 and 5

At level 4 and 5, there was a confusing array of soil discolorations visible. This is the transition zone of the dark humus top soil (its B horizon) to the yellowish body of the mound. We suspected to see the traces of sod here, but were not certain about our identifications.

Level 6

At level 6, sods could be recognized for the first time with certainty. We observed traces of some 50 sods on the surface. They were best visible near the northwest profile. The following observations could be made.

1. Most sods point towards the centre of the mound.
2. All sods were placed upside-down (A horizon, with vegetation down). All sods were stacked like roof tiles, one against the other (Dutch: *dakpansgewijs*).
3. The majority of the rectangular sods were laid out in a direction that is perpendicular to the radius of the mound. In the western zone, there are a few sods that were placed parallel to the radius of the mound.

Level 7

At the next level, much more sods were recognized (Fig. 2.10 and 2.11). Just like at level 6, the majority was placed upside-down, tipped towards the centre of the mound (Fig. 2.15 and 2.16). Most were placed in a direction that is perpendicular to the radius of the mound. The following points can be made (Fig. 2.13).

1. In a zone, 2 m wide, which runs along the southwest profile section it is not possible to recognize a consistent system in the ordering of the sods.

Fig. 2.12 Detail of level 7 between profile no. 9 and the crossed profile section marking S 8. View to the southwest. The top of the sods (A horizon) has been marked by an open line. The long line in the centre of the picture either indicates a very long sod, or, more likely, several aligned sods. Photograph by Q. Bourgeois.

2. In a zone along the northwest profile (also some 2 m wide) at least 11 sods stand out for having been neatly ordered, row on row (Fig. 2.12).
3. In between both zones (*c.* 4 m by 4 m) such a neat ordering has not been observed, but here the sods are oriented towards the centre (perpendicular to the radius of the mound).

Level 8

Level 8 represents the lowest layer of sods. It forms the basis of the entire mound. This surface was much better readable to us than the other ones (Fig. 2.14). This is probably due to the fact that it was cleaner and many sods were placed in a horizontal position (particularly in profile 10; Fig. 2.18). The higher sod layers had to fill in gaps formed by the base layer. The profile sections show that all sods were placed upside down, except for two sods in the centre of the mound (Fig. 2.17).

Sods in the sections

The information from the profile sits well with what has been observed on the individual levels. In the northwest section (zone 2; profile no. 1.9) all sods are placed upside down and diagonally placed one to the other, like tiles of a roof. Closer to the centre sods are increasingly more placed in a horizontal position (Fig. 2.17).

In the southwest profile (no. 1.10), almost all sods are inverted. On the outer rim of the mound, a few sods are diagonally placed but not pointing towards the centre but to the outer reaches of the mound (Fig. 2.18).

In the specially prepared section on S 8 (see section 2.5.8) the transition of diagonally placed to horizontally placed sods closer to the centre could be observed (Fig. 2.15 and Fig. 2.16).

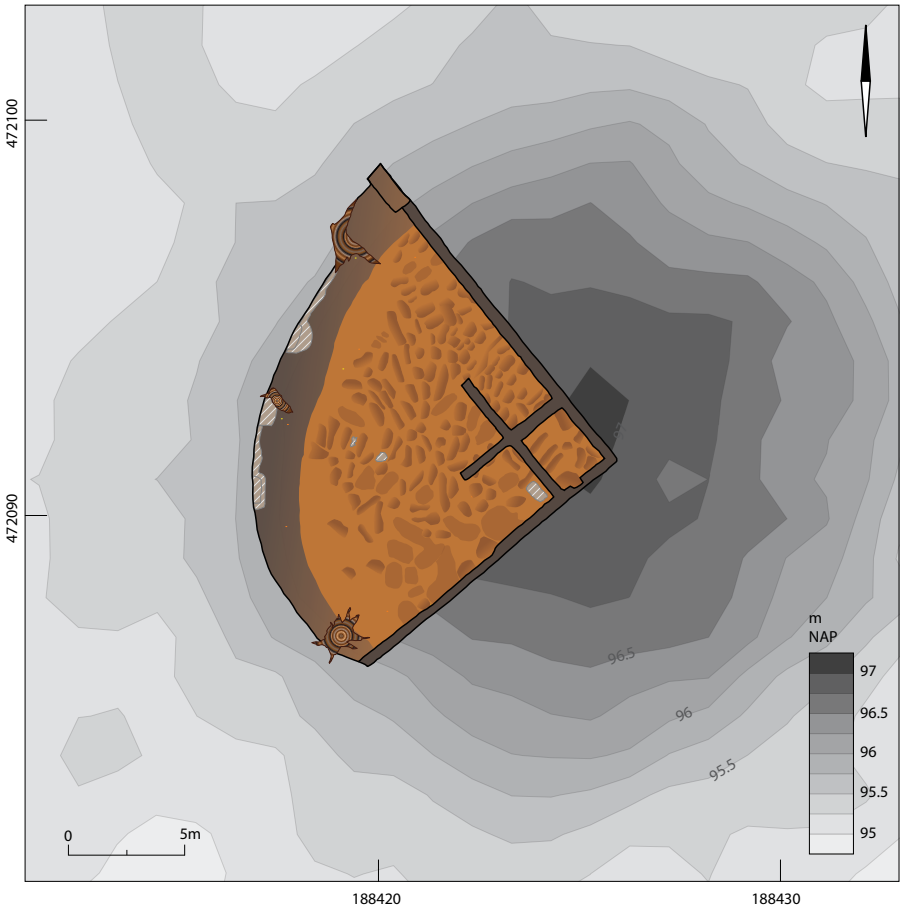


Fig. 2.13 Plan of features (sods) recognized at level 7. For colours and symbols used see Fig. 2.8. Drawing by J. Porck.

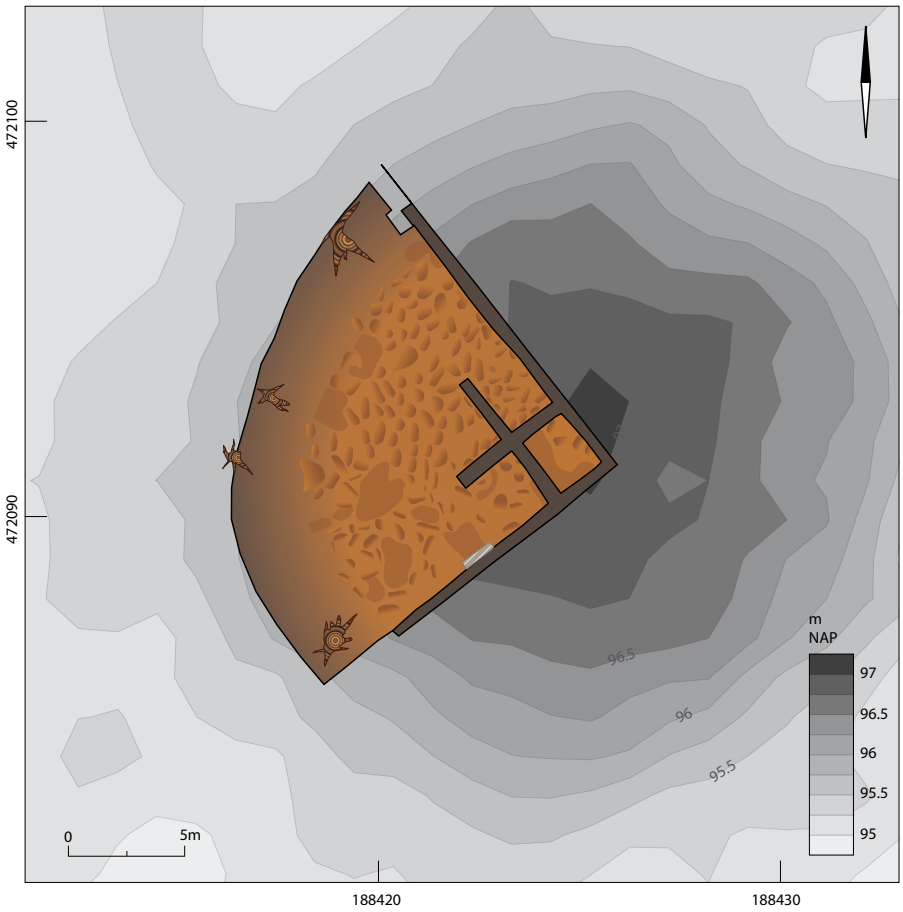


Fig. 2.14 Plan of features (sods) recognized at level 8. For colours and symbols used see Fig. 2.8. Drawing by J. Porck.

Fig. 2.15 (top) View on specially prepared cross-section on S 8, view to the east, looking at the centre of the mound. Here it can be seen how the sods were placed diagonally, like tiles of a roof. Photograph by Q. Bourgeois.

Fig. 2.16 (bottom) View on the specially prepared cross-section on S 8, viewing to the southwest. The centre of the mound is left. The sods further from the centre (to the right) are placed diagonally. Closer to the centre, they tend to be stacked horizontally. Photograph by Q. Bourgeois.

On the near absence of finds

Since sods were recognizable, levels 4 to 9 were carefully excavated. For that reason, it is remarkable that hardly any finds were done. A small, indeterminable (prehistoric) pottery sherd was found at level 5 (V 70), as well as a tiny flint flake (V 245; in profile section 9). Both finds are described in Chapter 7. The near absence of finds from the sods is striking, when compared to the number of finds done in the top levels of the mound (see section 2.5.2 and 2.5.3), and particularly to the large number of sherds found at the prehistoric surface covered by the mound (see section 2.5.10). This implies that the sods where cut from ground that did not contain many artefacts[35].

Conclusion: how the mound was built

Since only one quadrant was excavated, we cannot provide a complete overview on the way the mound was built. It is possible, however, to draw the following conclusions.

In the centre of the mound, a small core of sods was stacked horizontally. Against this core sods were placed in a diagonal position, and as noted above, in many places we could see that they were placed like tiles of a roof, pointing towards the centre. Almost all sods were placed with the vegetation side down, and usually placed perpendicular to the radius of the mound. We assume that sod

35 Small finds from barrows that were not related to pits or posts were only rarely collected and recorded in excavations of the past. Using the same manner of excavation, our investigation of the Middle Bronze Age barrow "Delfin 190" in *Elst-Rhenen* yielded much more finds of artefacts in the mound (Fontijn *et al.* 2010).

stacking started in the centre, to spread out to what would become the outer rim of the mound. This way of ordering is known from several other mounds (*Oss-Zevenbergen*: Tumulus 2 (Fokkens *et al.* 2006); *idem* Tumulus 7 (Fontijn/Jansen forthcoming; *Toterfout-Halve Mijl* Tumulus 1 and 16; Glasbergen 1954a, 32-33; 68-70). In the case of Tumulus 2 (*Oss*) and Tumuli 1 and 16 (*Toterfout*), the horizontal stacking seems to relate to the fact that there was a rectangular pit in the centre of the mound, that first had to be filled in. It is possible that this also holds true for mound 1 of the *Echoput*, but since we only excavated one quadrant and have not touched upon the central grave, we cannot know this for sure. At Tumulus 7 (*Oss-Zevenbergen*), a horizontal stacking of sods covered the remains (including charred wood) of a large pyre construction. This is also a possibility here. Either way, starting from a system of horizontal construction in the centre, a gradual transition to placing sods in a diagonal position is observable in mound 1. The observations done at level 6 to 8 show that there were nevertheless variations within one overall system: at level 7, there was one zone where sods were placed rather neatly, whereas such an ordering is lacking elsewhere. Although most sods were placed perpendicular to the radius of the mound, at level 6 we identified one row of sods that was placed parallel to the radius of the mound. Differences in sod arrangement within one mound are known from other excavations where individual sods were recorded. Examples are Bronze Age mounds in Denmark : *Lusehøj* (Goldhahn 2008, 68) and *Skelhøj* (Holst *et al.* 2004, 17). For these cases, our Danish colleagues argued that the implication must be that different groups were working on the mound at the same time, each one taking care of its own section. If this is also the case here cannot be said: we only excavated one quadrant of the mound – we have to observe the arrangement of sods in other areas to see if there really were differences in sod arrangements between section of the mound. The variations we see here are minor ones that can essentially be explained by the wish to create a smooth, stable mound with sods that are not of standard size, which means that sometimes *ad hoc* adjustments need to be made in the general ordering of sods.

Placing all the sods in an inverted position seems to be the most logical way to create a neat, well-fitting construction of sods (the vegetational side has the most coherence). The careful way in which the sods are positioned convinces us that pains were given to create a neat mound. There is no evidence for any haphazardly dumping of sods. Since they ended up with a mound with a flat platform, it cannot have been otherwise[36]. We suppose that the last layer of sods was again placed with the vegetational side upwards, to allow re-growth as soon as possible and to prevent damage from erosion and animals. In our times, it was clear that wild boar had more than once been digging in the top layers of the mound. On the other hand, for those cases where existing (Bronze Age) burial mounds have been heightened in a later use phase, we could not find clear indications that the last layer of sods had been placed with the vegetation side up (*cf.* mound 2 of the *Zevenbergen*; Van Wijk *et al.* 2006, 74-88, esp. Fig. 6.6).

Nothing indicates that the mound was constructed in different phases, as is often the case with burial mounds (for example Fokkens *et al.* 2006, mound 2). There is no evidence at all for a soil which formed on an intermediate level. The entire construction of the mound suggests that it was raised in one time, at least

36 Alternatively, if there would have been a large, deep (burial) pit in the centre, the flat top can also have been the result of compaction that took place later. This is not very likely, however: for a large part, we excavated at the location of the flat top, and therefore must have seen traces of such a large (burial) pit in the centre if it were present when we reached the prehistoric palaeosol underneath the mound.

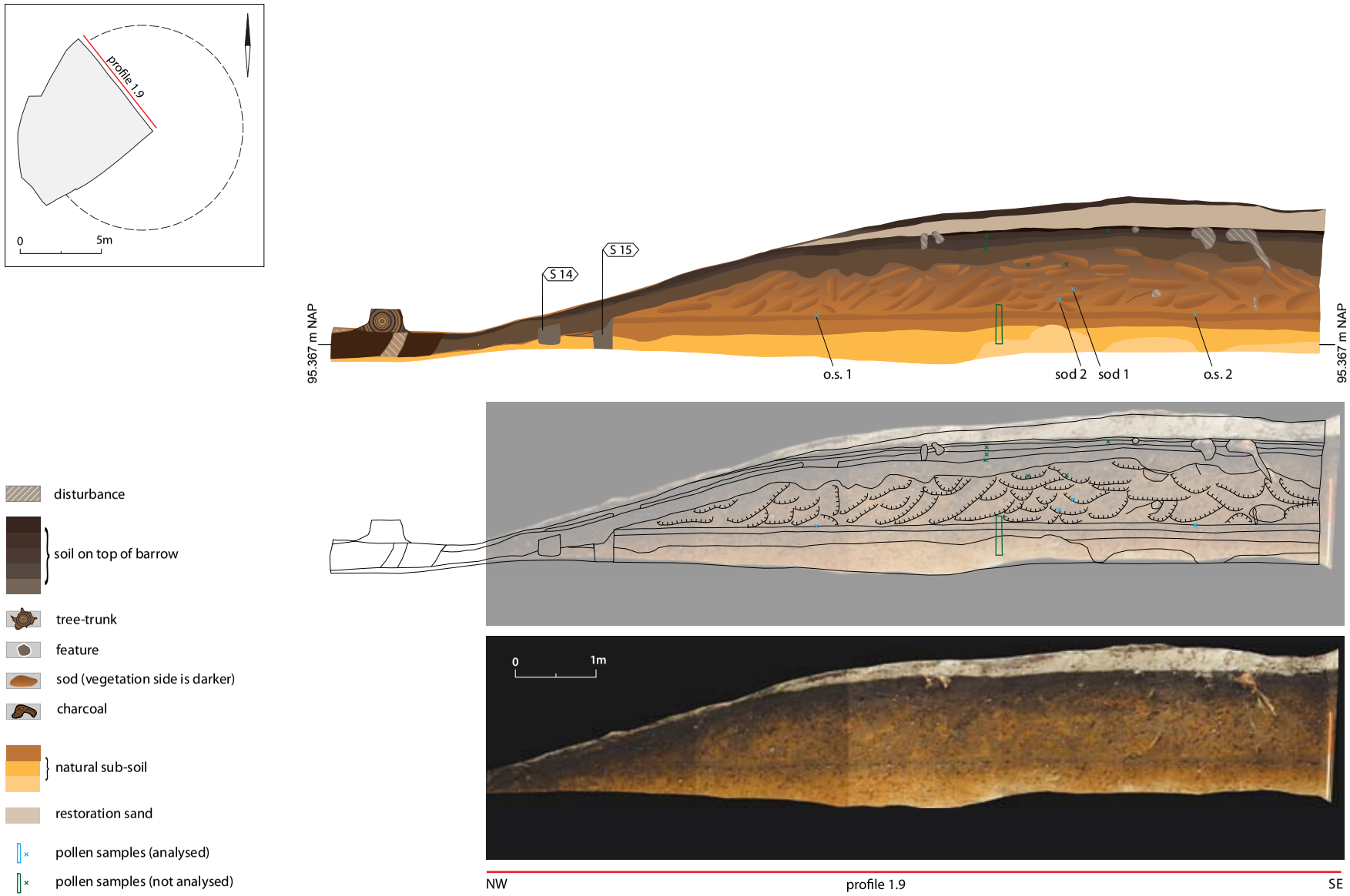


Fig. 2.17 Profile no. 1. 9 of mound 1. Photographs combined by photogrammetry and drawing . There is a small deviation from real size in the photographic compilation which causes a slight mismatch between drawing and photographs. By P. Valentijn and J. Porck.

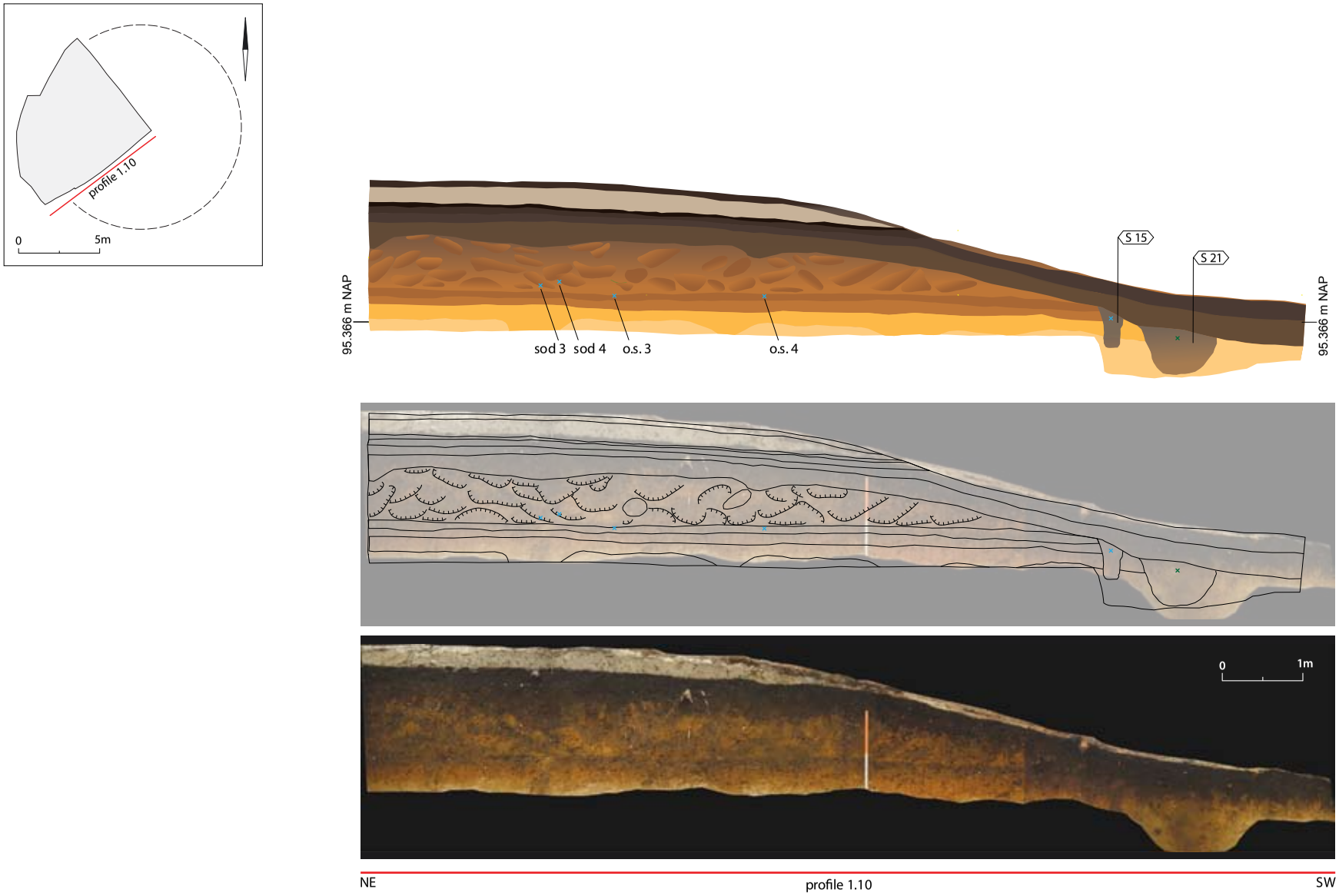


Fig. 2.18 Profile no. 1. 10 of mound 1. photographs combined by photogrammetry and drawing . There is a small deviation from real size in the photographic compilation which causes a slight mismatch between drawing and photographs. By P. Valentijn and J. Porck.

not with hiatuses in between which last as long to allow the formation of soil formation on its top (which, depending on the circumstances, can become manifest only after several generations).

2.5.8 Features that appeared to be of natural origin

In the course of the excavation, several features were recorded of which it was initially thought that they would be of an anthropogenic, prehistoric nature. All of them, however, appeared to be of natural origin or could be refuted as feature for other reasons. Apart from the S 1 and S 2 (grave, see section 2.5.4 and 2.5.5), features could not be discerned in the black top soil. It was also very hard to distinguish features immediately below the black soil, due to soil formation, tree trunks and the damage (compaction and pushing-down of sediment) done during the restoration. Immediately below the black top soil, at level 3 to 5, there were many soil discolorations. All these were thought to represent pre- or protohistoric features (S 3 to S 10) appeared to be something else, except for S 3, which clearly represents the remains of a post standing on the top of the mound next to grave pit S 2 which decayed *in situ*, It had a depth of 33 cm (Fig. 2.8). S 4, S 6 and S 7 represent bioturbation of tree roots. S 5 appeared to be blackish sand (pushed down by the force of the digging machine used for the restoration? S 9 and S 10 appeared to be part of a sod. Considerable attention was given to S 8, which seemed to represent the traces of a rectangular pit (Fig. 2.19). As we were aware that we might be dealing with another grave, it was carefully investigated. It was divided in four sections that were left standing while deepening (Fig. 2.15-2.16). Accordingly, all the sections were drawn in detail. One sherd (V 70) was found in it (prehistoric pottery sherd, indeterminable, section 6.2.1). However, checking the position of this "pit" with the traces of the machine tracks which so damaged the mound, it appeared that it was exactly situated at the end of the deepest track. The darker soil must have been pushed downwards when the machine sought position while rotating. Since all the pressure is concentrated at one side of the machine, it must be expected that at this point the sinking into the subsoil will be the deepest. Inspection of the section indeed showed that S 8 cannot classify as a pit dug by human hand. The darker soil is only a few cm deep and no indications for digging activities are to be seen in the profiles. The sherd found might have got into it secondarily (from the dirt attached to the tyres of the machine), or have been included in a sod when the mound was built.

Fig. 2.19 Level 4. View to the east-southeast. Indicated is S 8 when it first became visible. This was initially thought to be a prehistoric feature. At lower levels, a cross section over this feature remained until level 8. It appeared to be soil pushed downwards during the 1999 restoration. Photograph by Q. Bourgeois.

2.5.9 S 15: A peripheral ditch

The traces of what turned out to be a peripheral structure were only discovered at level 10 (Fig. 2.20 and 2.21). We actually expected that such a feature – if present at all – would already be visible at level 9, but this was not the case. In retrospect, this can be explained by two factors. The first is that the flank of a mound has a more complex soil genesis than at its top. This is because normal soil formation (top-down) interferes with additional soil formation caused by transport of organic material downslope (Modderman 1975, 17). The second factor relates to the damage caused during the restoration in 1999. The too heavy machine that was then used particularly damaged the foot of the mound. Nowadays, it can be seen that this is a watery place, where after rain pools of water remain for days. Riding a heavy machine uphill will particularly cause damage to these weaker, watery parts. Deep disturbances and compaction of sediment were observable at a zone of 1 to 1.5 m wide. Another reason why the discovery of a peripheral ditch came as a surprise, is because we did not see anything of it in the small trench created at the northern foot of the mound to connect the mound profile with trench no. 4. That nothing was visible at that moment is simply due to the fact that this trench was not dug down deep enough (because we immediately recognized other man-made features and decided not to go deeper: the traces of posts in trench 4).

Underneath the zone with increased soil formation at the flank of the mound, the traces of a ring ditch were discovered at level 10. This ditch fill is recorded as S 15. It describes a slightly flattened circle. If this circle was constructed from the centre, it is clear that the real centre of the mound is not the inner corner of our quadrant, but must be situated *c.* 0.5-1 m in the unexcavated area. The reconstructed diameter of the circle can be determined at 18.2 m (inner side) and 18.7 m (outer side of the ditch). The width of the ditch at the surface is 20 to 25 cm, measured in the profile 26 to 30 cm. Its fill has the same color as the top of the prehistoric surface underneath the mound (light grey). In order to investigate the way it was filled in, and to detect the presence of posts, it was divided into six segments which were sectioned longitudinally, and four sections that were positioned perpendicular to that direction. The ditch appeared to have an irregular depth (probably local occurrences of gravel were omitted). Registered depths are 27, 34 and 35 cm. In the northwest profile, its maximal depth is 66 cm measured from the prehistoric surface itself. In the southwest profile this is 52 cm. Its fill is patchy and displays considerable lithological differences (presence/absence of gravelly sediment). Although the depths are irregular, there is no indication whatsoever to assume that posts had been planted into this ditch.

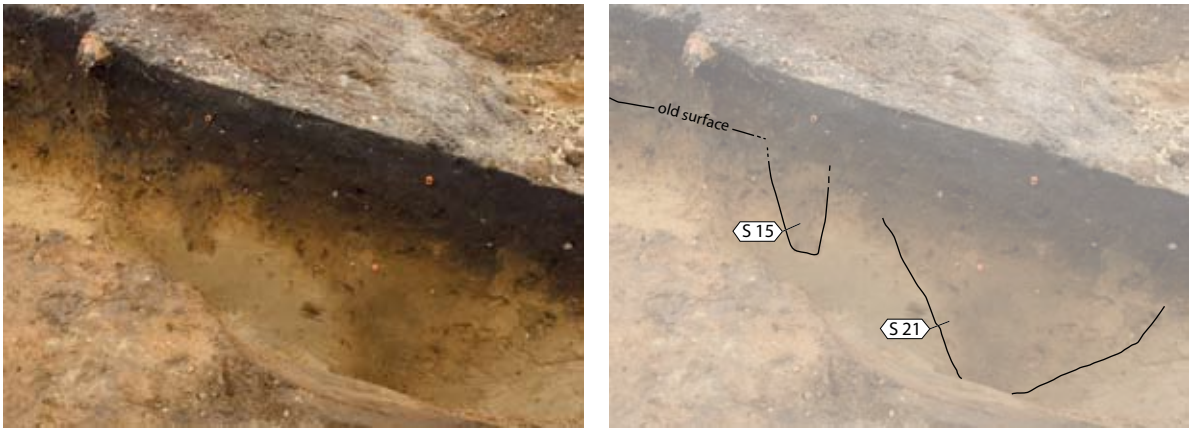


Fig. 2.20 Detail showing S 15 (peripheral ditch) and S 21 (profile 10). View to the southeast. Photograph by Q. Bourgeois.

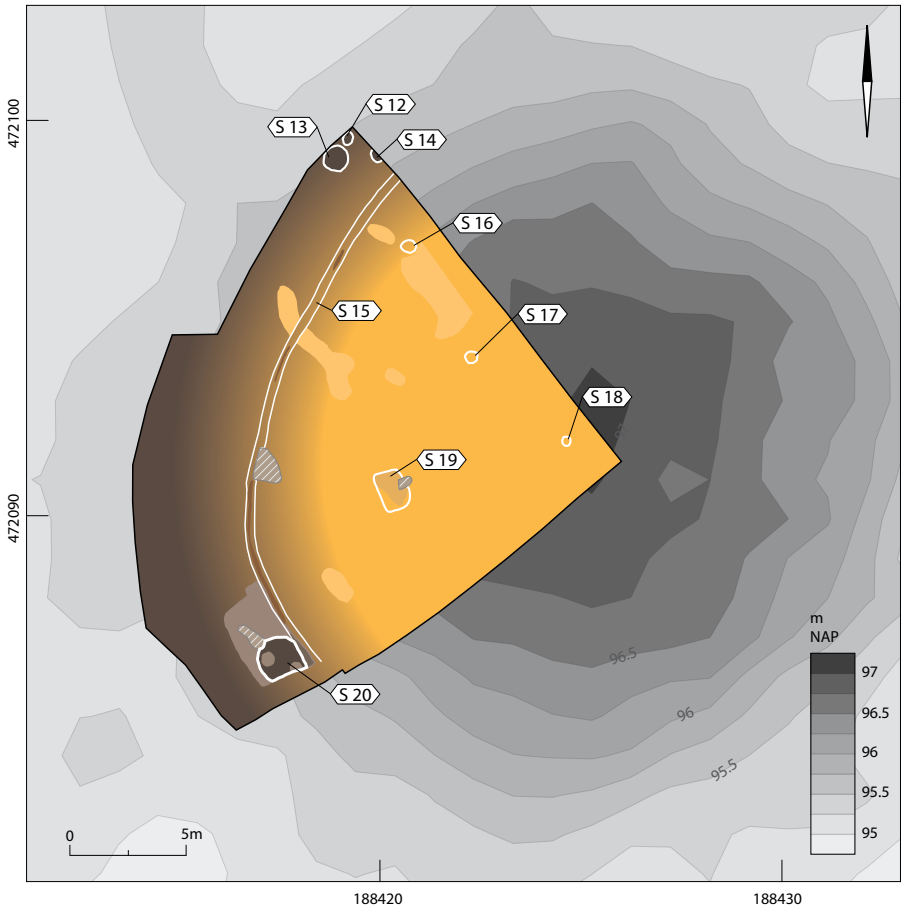


Fig. 2.21 Plan of features at level 10. For colours and symbols used see Fig. 2.8. Drawing by J. Porck.

The ditch is likely to have been a peripheral feature. That is, it is not a feature that was later on covered by the mound's body. Definite proof for this is lacking, due to the heavy podzolisation of the mound flank, which will have erased any sign of a ditch cutting through the mound's body. The most important argument that speaks for a peripheral feature is the fact that no sods were observed outside the ring defined by the ditch. A tiny layer of material that was found there can be interpreted as of colluvial origin. Theoretically, it is also possible that the ditch was dug before the mound was raised, and that the mound was situated just within the area defined by the ditch. However, this is not very likely, as it implies that people who built the mound, and carried hundreds of sods, had to walk over this ditch many times. Given the coarse matrix in which this narrow ditch was dug, it is very likely to have been trampled and (partly) collapsed even before the mound stood. The sections of the ditch do not indicate that this happened, but rather indicate a gradual process of filling in.

A charcoal concentration in the fill of the ditch was sampled (V 257). 3 g was sent in for C14-dating, yielding 2225±30 BP (GrA-44706). After calibration, the charcoal dates to 384-203 cal. BC at the two σ range, the later part of the Middle Iron Age to the earliest decades of the Late Iron Age. Charcoal from a ditch fill is not ideal for dating purposes. Since a shallow ditch dug into such gravelly soil will not have remained open for a very long time, the charcoal provides us with

a *terminus post quem* dating[37]. This is only slightly older than the dating of the charcoal in S 1. Theoretically, the ring ditch might have been dug during the occasion of the secondary burials that took place at the platform at the top of the mound. This is less likely, however. As noted above, both S 1 and S 2 are not in the centre of the circle defined by the ditch. They are *c.* 1.5 m out of the centre of the circle described by ring ditch S 15.

2.5.10 Sherds found at the old surface covered by the mound

The first indication we got on the dating of the mound came from the find of pottery sherds at and just in the old prehistoric surface covered by the mound. The old surface is well visible as a thin, somewhat grayish horizon underneath the sods (Fig. 2.22; Fig. 2.17-2.18). It was not truncated or leveled before the mound was built on top of it. 15 pottery sherds were found just underneath the top of the old surface (V 154/155, 158, 166, 170, 181/183, 197). V 188/189 are sherds found in the traces of old roots. Furthermore, two fragments of a small iron pin were found (V 156-157). The finds will be described in more detail in Chapter 6. All sherds are characteristic for Iron Age ceramics, and none of them is really decorated. As such, they provide us with a *terminus ad* or *post quem* dating of the mound. It is noteworthy that one sherd displays a surface finish where horizontal lines were created (V 170). A sherd with a very similar surface finish is known from mound 2 and it is very likely that both sherds are from the same

Fig. 2.22 Level 9, approximately coinciding with that of the original prehistoric surface. Ice-pushed gravel layers are visible. View to east-southeast. Photograph by Q. Bourgeois.

37 The irregular ditch section, its narrow shape and the coarse sediment into which it was dug ensures that the fill is the result of a relatively quick process of collapse. It is less likely that the charcoal ended up in the ditch when it was already filled in at a much later stage (by bioturbation processes). Even then, the ditch –as structural ele ment of the mound- must date to the Iron Age given the sherds found at the surface underneath the mound.

pot (Chapter 6; section 6.2.1 and 6.3.1; Fig. 6.6). This suggests that the activities related to the preparing of the location for the construction of both mounds were linked, and/or took place within the same period.

The sherds underneath mound 1 were loosely scattered, without any pattern. No finds were situated in the center of the quadrant.

2.5.11 Where is the central grave?

Although the centre is entirely undisturbed, no central interment was found. If central interments are always situated in the exact centre of the mound- which is usually the case- then we can see in retrospect that our quadrant is just situated outside the centre.

First of all, this becomes apparent from the ring ditch S 15. As argued above, if this would describe an exact circle, its centre would be 0.5 m to the east, outside the quadrant we excavated.

Secondly, the prehistoric surface inclines towards the centre. Apparently, the mound was built on a tiny natural elevation built-up of coarse sediment. The top of this elevation has not been reached in the quadrant we excavated but must be situated just outside it. If this is where the central interment is, then we would have an additional argument that the central grave will be situated outside the excavated part.

Thirdly, there is the peculiar ordering of sods: diagonally in the outer reaches of the mound, and horizontal in the centre. We already suggested that this change in orientation of sods is known from other mounds as well, and usually indicates that sods were used to cover a pit or pyre remains. It would imply that in the excavated quadrant at least the outer reaches of the central interment were touched upon.

If we are right in our estimation of the original centre, the secondary grave 2 is not in a central position (*c.* 1.5 m out of the centre).

The reason that our quadrant just missed the original centre is due to the fact that the only way to properly orient the quadrant is by basing oneself on the current form of the barrow. This is always difficult as it probably has been changed by erosion and restoration.

2.5.12 Features underneath the mound: Late Mesolithic and Late Neolithic traces

At level 10, several features have been recognized that are situated in the interior of the ring ditch and underneath the mound: S 16 to S 19 (Fig. 2.21, 2.23 and 2.24). Just outside the mound, to its southwest, we discovered two features that must be older than the ring ditch: S 20/21 (Fig. 2.20).

Sections were made over those features and the pit fills were sampled. S 16 is a shallow pit, just like S 17 and S 19. S 18 seems to have been the pit into which a post was placed. S 19 is similar in shape to S 1 and S 7 in trench 10. In S 16 some charcoal was found. For the rest, no finds were done in any of them. In addition to these features, we found two more while preparing the south profile section for drawing and sampling: S 20 and S 21 are both the remains of pits that contain charcoal. S 20 was cut when the ring ditch was dug (S 15) and must therefore be older than this ditch and the mound. S 21 was found only after the profile section was prepared and S 20 was excavated. Both pits must have been situated very close to one another. Both are clearly much vaguer than S 15. They nevertheless have a dark colour which is due to the presence of charcoal parts in them. The darkest fill of S 20 was sieved, which yielded a lot of charcoal (V 256). 4.7 g of this charcoal

Fig. 2.23 (top) Level 10, just below the prehistoric surface. View to the east-southeast. Several features are indicated. Photograph by Q. Bourgeois.

Fig. 2.24 (bottom) S 16. View to the northwest. The feature is 48 cm wide. Photograph by A. Louwen.

was sent in for C14-dating, providing us with a considerably old dating: 7345±40 BP (GrA-4483). After calibration at two σ range, this comes down to a dating of 6355-6076 cal. BC, or the Late Mesolithic. 12 g of charcoal found in the fill of S 16 was sent in as well (V 226), yielding a date of 3875±35 BP (GrN-32159). After calibration at two σ range, this comes down to a date in the Late Neolithic Bell Beaker phase: 2470-2210 cal. BC.

It is very rare to find soil features for both the Late Mesolithic and the Late Neolithic. The Mesolithic pit S 20 may well represent a hearth, but the lithic debris that is usually associated with Mesolithic camps is entirely missing here[38]. Although very small sherds and occasionally tiny lithic material has been found during the *Echoput* excavation, there is nothing in the way of a scatter of flint flakes that are usually found on Mesolithic sites. The fact that this pit feature was hardly visible, if not for the charcoal in it, should make one cautious if very old traces like these stand a chance of survival from ongoing soil formation if they were not sealed off by a prehistoric mound. The same applies to the Bell Beaker feature. This feature was also rather vague, and would never have been recognized as dating to the Late Neolithic if its charcoal content was not dated.

2.5.13 Features just outside the mound

Just outside the mound, in the northwest where the quadrant links up with trench no. 4, three features have been recognized: S 12-14 (Fig. 2.21). S 12 and S 14 are traces of posts, with a dark grey homogeneous fill. They are comparable in nature and colour to features that we found outside the mound in large numbers (see Chapter 4). S 12 has a depth of 14 cm. S 13 is the fill of a pit (depth 22 cm).

38 The excavation of *Hattem-Hanzelijn* by Archol BV (Knippenberg/Hamburg 2011) yielded many traces of Mesolithic hearth pits. Usually, they occur in clusters and rarely contain any finds other than charcoal.

Nothing was found in the fill of those features. The profile section (no. 9) shows that S 14 cuts through the dark top soil, which implies that it is younger than the formation of this soil and therefore cannot date to prehistory.

2.6 Dating the mound

A dating from the central interment would provide us with the best way of dating the construction of the mound. Since this burial was not found, we will have to deal with a number of C14- and typo-chronological datings of finds that provide *terminus post quem* and *terminus ante quem* datings.

The C14-datings of charcoal from two features buried underneath the mound (S 20: Late Mesolithic and S 16 Bell Beaker phase) provide us with a clear *terminus post quem* dating for the construction of the mound after the Late Neolithic. Iron Age sherds found at the old surface underneath the mound show that the mound was built in or after the Iron Age. They are just scattered at the surface, and only few in number (15) which makes it hard to provide a more precise dating of them. The only thing that can be said is that they are all undecorated and one third of them are smitten (Dutch: *besmeten;* see Chapter 6 for details of the finds). A small sherd (V 70) and a tiny flint flake (V 245) found in the mound (included in the sods) also provide a *terminus post quem* for the construction of the mound, but as they cannot be dated with any precision, they are of no further use here.

C14-datings of charcoal from the ring ditch that surrounds the mound makes it possible to specify the Iron Age dating somewhat. As argued in section 2.5.9, there is no evidence that the ring ditch was an intermediary feature. It is most likely that the digging of the ditch took place immediately or not long after the construction of the mound. We also saw that a narrow steep ditch dug into such a coarse sediment will not have remained open for a very long time. The charcoal that became part of its fill, then, provides a *terminus ad* or *post quem* dating for the digging of the ditch around 384-203 cal. BC (2σ-range). Alternatively, the ditch dates to an earlier phase of the Iron Age and the charcoal ended up in the by-then already filled-in ditch at a later stage by bioturbation processes (roots, animals).

S 1 and S 2 represent one pit with pyre debris and one burial, or two burials. At any rate, both were dug into the top of the mound and therefore provide a *terminus ante quem* dating for the construction of the mound. The charcoal from S 1 was dated at 375-170 cal. BC, and the cremated bone from S 2 at 191-1 cal. BC (2σ range, see section 2. 5.4 and 2.5.5). In the broadest sense, the oldest C14-dating means that the mound was built before or in the late Middle Iron Age. Taking into account a probable "old wood" effect for that oldest dating, the *terminus ante quem* dating for the construction of the mound might be somewhat younger, in the earlier half of the Late Iron Age.

Summing up, we have a *terminus post quem* dating that can be set at the later part of the Middle Iron Age and the beginning of the Late Iron Age (the ring ditch), and a *terminus ante quem* dating in the later Middle Iron Age or earlier part of the Late Iron Age. These comparable dates suggest that mound construction and secondary use of its top for burial took place within a relatively brief period of time, perhaps only one or two generations.

There is a second option to consider. We might be wrong in our assessment of the charcoal from the ditch. It might represent charcoal that ended in its fill by bioturbation. The digging of the ditch –and with it the construction of the mound- then could have taken place at an earlier stage, before the later Middle Iron Age that is. Yet, this must still have happened *during* the Iron Age (because of the presence of Iron Age sherds underneath the mound). We may then for

example think of mound 1 being built during the Early Iron Age, or in the first half of the Middle Iron Age. In that case, the time period in between the building of the mound and its reuse must have been much longer.

With the present evidence, both options remain open. The mound may have been built in the Early Iron Age/earlier half of the Middle Iron Age, or in the later half of the Middle Iron Age/earlier Late Iron Age. We will see later on in this book that circumstantial evidence makes the last option the most likely one.

2.7 Conclusion

Goal of this excavation was to gain an insight into the history of this conspicuous large barrow, particularly to prepare well-dated profile sections for pollen sampling. In view of its size, it was expected to be a Middle Bronze Age barrow. As pollen from this period are rare, we were keen to investigate and sample this particular mound. We could only excavate one quadrant at 11 separate levels. The entire excavation was carried out by hand, apart from the last level, where a small mobile excavator was used. On the basis of our excavation results, the situation turned out to be very different than expected, however. The following events can now be reconstructed.

The highest point of the *Echoput* hill is a small gravelly hillock, On this hillock mound 1 would be built. Two badly preserved pits containing charcoal (S 20 and S 21) testify to use of this place during the Mesolithic. For hunter-gatherer communities, the *Echoput* hill must have been a highly strategic place, commanding a superb view of the lower-lying part of the ice-pushed ridge. Nevertheless, apart from these pits, that are likely to be the remnants of hearths, not a single piece of lithic debris was found, throwing doubt on the theory that we are dealing with a Mesolithic camp site here.

The fill of another feature shows that the same site was also occupied thousands of years later, during the Late Neolithic Bell Beaker Period (S 16). The presence of posts indicates that activities took place here, but it is doubtful if we are dealing with a settlement here, as no settlement debris was found at all (flint, sherds).

A scatter of Iron Age sherds on the old surface show that the location where mound 1 would be built was used during that period. Two tiny, indeterminable pieces of iron were also found, which is noteworthy since iron is rarely found at Iron Age settlement sites.

At some time during the Iron Age, a large mound was constructed at this place. It is most likely that this happened in the later part of the Middle Iron Age or the earlier part of the Late Iron Age, but an earlier moment in the Iron Age cannot be ruled out altogether. Judging from the peripheral ring ditch, its diameter measured some 18.7 m, which is exceptionally large for burial monuments of the Middle and Late Iron Age, but also uncommon for the Early Iron Age. The centre defined by this ditch is just outside the quadrant excavated by us, so we lack knowledge on who was primarily interred in it. On the basis of the arrangement of sods, the centre was covered with horizontally placed sods. Similar constructions are known from other burial mounds and may indicate that people started to build the mound by filling in a central pit or covering off pyre remnants.

Careful investigation of the position of individual sods provided information on the way the mound was built. Almost all sods were placed upside down, and were particularly large (examples measured under good conditions measure 60 x 25 x 20 cm). The rectangular sods tended to be placed perpendicular to the radius of the mound circle, although there are exceptions. The general system is that sods are horizontally placed in the central part, to switch to a diagonal position in the

outer zones of the flanks. In the diagonal position, sods point towards the centre. From the old surface upwards (level 8 to level 6), there are small variations in the arrangement of sods.

The entire mound was built in one phase, there is no evidence at all for different phase of mound heightening. All features that were recognized (pit or post like structures in the mound) could be refuted as natural phenomena, misinterpreted sods, or disturbances caused by the 1999 restoration. The resulting mound had a deviant form: it clearly had a platform on its top instead of the round top with which it is reconstructed now.

On the top of this platform, people dug in remains of deceased people at two places next to each other. One is a packed, ball-like concentration of cremation (S 2 or grave 2) and the other a shallow pit containing some burnt human bones, charcoal and two iron hook-like objects. Both features must date to the Late Iron Age. It could not be proven that they represent a contemporary, functional whole (like the remains of a pyre and the burial). A post (S 3) may have marked grave 2.

Accepting that the mound was built in the later Middle Iron Age/earlier Iron Age, the time between the construction of the mound and these secondary burials would not have been very large, giving the mound the character of a collective burial monument. Again, that would be very uncommon for Middle/Late Iron Age mounds as we know them from other regions.

Traces of posts in its northern flank (S 12-14) are probably of more recent date, and are part of the Medieval/Post-Medieval constructions that were built at the *Echoput* hill in later periods (Chapter 4 and 5). After the prehistory, a thick humus horizon developed in the top of the mound and its surroundings. The formation of this horizon obliterated many traces in the top of the mound.

Based on the results of the excavation of one quadrant, the mound was never robbed or disturbed like happened with mound 2 (Chapter 3). The mound was damaged, however, during the restoration in 1999. This unintentional damage was caused by the use of an excavator machine that is too heavy for the subsoil. Particularly the western flank of the mound was damaged, obliterating the traces of the ring ditch, and the tracks of the machine led to compaction and disturbance of the inner layers of the mound as deep as level 4. During the restoration, white sand was deposited on top of the platform, but not on its flanks. This altered the outer appearance of the mound considerably, but is not in accordance with the way it originally looked like (that is: with a platform on its top).

Summing up, our research showed that this monumental mound is not a Middle Bronze Age mound as was expected, but surprisingly, it turned out to be a (Middle/Late) Iron Age barrow. For this period, barrows are generally rare, and specimens of this size in particular.

Chapter 3

Antiquarian leftovers - Mound 2

Quentin Bourgeois and David Fontijn

3.1 Introduction

To the north of the large Iron Age barrow that was described in the previous chapter lies a second barrow, which is relatively smaller. In the past, it had a diameter of 14.5 m (reconstructed on the basis of the surrounding feature we excavated). Today, its diameter extends to *c.* 16.5 m, which is due to accumulation of slope wash. The barrow was approximately 1 m high, the exact height could no longer be established as the top of the barrow was destroyed by a large pit dug into the centre (see section 3.5.2). In the central archaeological Database of the Netherlands, *Archis* it is registered as monument 3067 or *waarneming* 42457. We will refer to it as mound 2.

In contrast to mound 1 it was known that this barrow was dug into prior to our excavation. A large pit in the centre of the barrow was filled up during restoration. During the excavation we learnt that the pit was dug a long time ago by treasure hunters or antiquarians, probably in the 19th or early 20th Century. Since no record of any finds on this location is known, there was no information on the nature and character of the barrow before our excavation. Due to its smaller size, it was thought that this barrow might date to the Late Neolithic, yet there was no evidence present to support this. The primary goal of the excavation was thus to gain insight into the history of the barrow and to understand its relation to mound 1 (was it older, younger or of the same age?), the secondary goal was to prepare several (well-dated) profiles that could facilitate sampling for pollen analysis, in order to reconstruct the prehistoric environment around the burial mounds. Linking these results to the pollen data of mound 1 was important, as we suspected that both mounds would date to different periods. Samples were taken from the sods, from the old surface and from the B horizon underneath the barrow (see Chapter 5).

This chapter will describe the archaeological features we recognized in the course of the excavation of mound 2, as well as the context of the finds recovered from the mound. We will start with describing the restoration of the barrow in June 1999 (section 3.2), though fortunately the effects of this restoration were markedly less destructive than those in mound 1. Then, we will discuss the how and why of the excavation strategy employed (section 3.3), followed by a description of the mound's stratigraphy and general information on find units and administrative layers (3.4). Once the broad outline has been introduced, the individual archaeological features will be described from top till bottom in section 3.5. In the same section, attention will be paid to important natural features, such as the old surface and all associated finds are described as well. Features that later on appeared to be natural in origin are mentioned in passing. When the mound has been described in full, a chronology of events associated with the barrow will be established in section 3.6, while in section 3.7 the implications of the

described features and finds will be brought together to reconstruct the history of the mound. Overview drawings of a selection of relevant levels are presented in Figs 3.15 to 3.18.

3.2 State of preservation - the 1999 restoration

Just like in the case of mound 1, this barrow was also restored in 1999. This was necessary in this case, as a large pit was discovered in the centre of the barrow. A smaller pit was observed in the foot of the mound (Fig. 3.1). Trees were removed with a chainsaw, with the stem of the tree cut of as low as possible, leaving the roots in place. In contrast to mound 1, no additional layer of white sand was added on top of the barrow. Only the depression in the centre, and the small pit in the foot of the barrow were filled in with white sand. In total 6 m^3 of sand was used to fill in the depression. It is unknown whether or not the heavy mobile excavator drove on top of the barrow like it did in the case of mound 1. No track

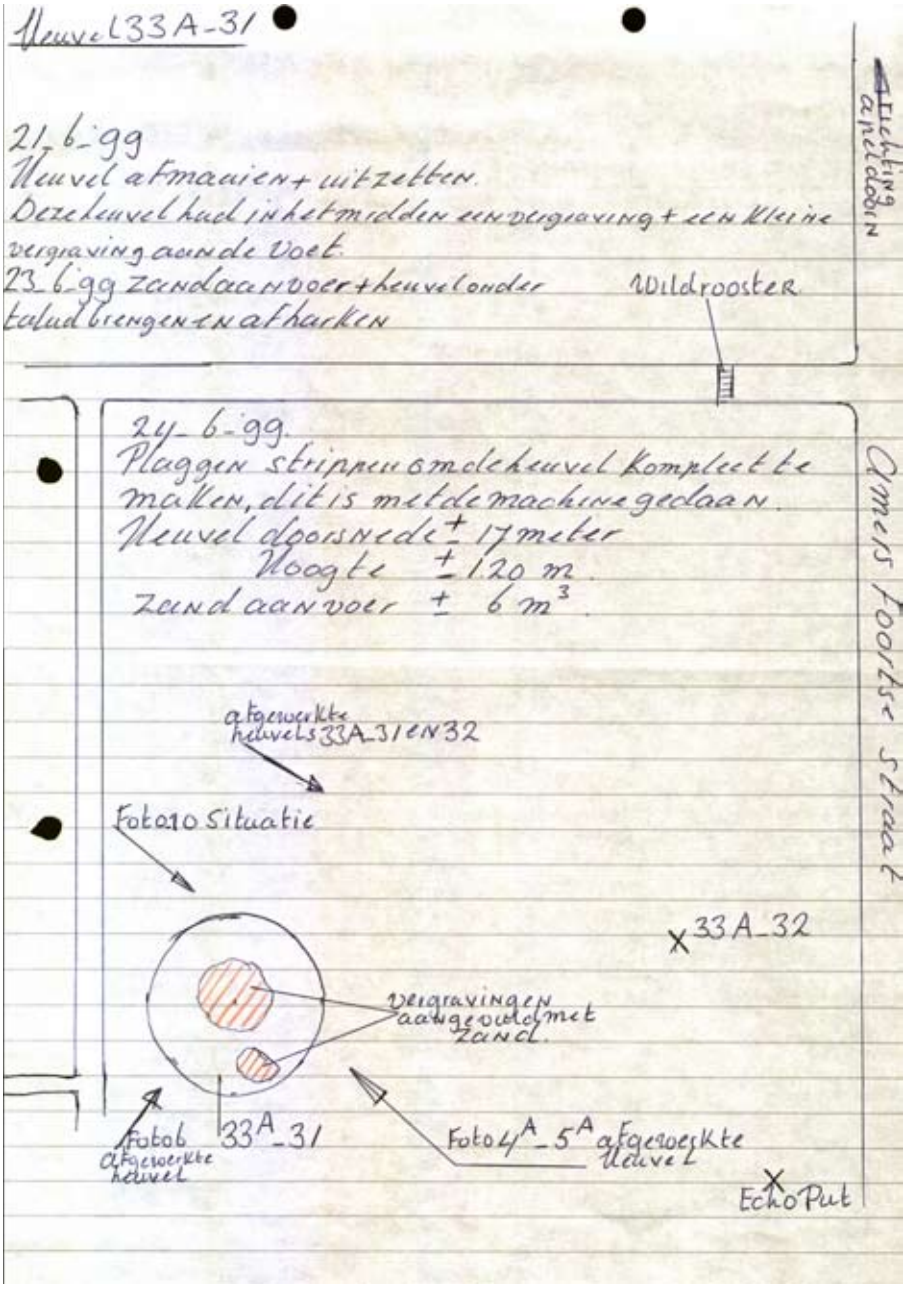


Fig. 3.1 The original document of the 1999 restoration. The approximate positions of the disturbances in the mound are marked in red. Source: National Heritage Agency (RCE).

traces were uncovered during excavation, nor were any photographs made during the restoration. The day after, the pits were filled with sand, sods were stripped around the barrow with the mobile excavator, and placed on top of the barrow, to give the mound a proper vegetation cover. The exact place where the sods were cut has not been recorded, neither how many sods were stripped[39].

After the restoration, the *Archeologische Monumentenwacht*, regularly inspected the mound, and removed vegetation on top of the mound[40]. Before the excavation the barrow was overgrown by ferns, which were kindly removed by foresters of the Royal Estate *Kroondomein*.

3.3 Excavation strategy

The excavation strategy was similar to the one used at mound 1 (*cf.* section 2.3). The exit strategy used for mound 2 was less elaborate than in the case of mound 1. The huge disturbance of the centre already made it very likely that there would be no central grave preserved. We also expected that due to the severe damage, only the flanks of the mound would provide readable profile sections. Unfortunately, the flanks of a mound are usually hard to read and far from ideal for understanding a barrow's general chronology[41]. For that reason, it was decided to excavate two adjacent quadrants, as it might be expected that a combination of two long profiles through the mound may be more helpful in unravelling the barrow's chronology than two half profiles of which the central parts would certainly be severely damaged. Two quadrants were dug into the barrow, the south-western and north-eastern (respectively trench (Dutch *put*) 2 and trench 3). In both trenches multiple horizontal levels were recorded, 9 levels in both (see Chapter 2 for the reason to excavate in horizontal levels). The entire mound was excavated by hand. Each level and all features were systematically inspected with a metal detector by Mr A. Manders. We used the same theodolite as for mound 1; all levels and most finds were measured in the National Grid.

The first action we undertook was the stripping of the soil from the barrow. This was done by the small mechanical excavator that was also used for mound 1 and in the trenches. Here we removed a layer of 5 to 10 cm from the top to the foot of the barrow, following the contours of the mound. This newly created surface was only photographed and not drawn as only the dark A horizon immediately below the vegetation was visible and no features. In both quadrants we removed a further 5 to 15 cm of this dark soil until a horizontal level was created in which different soil features became visible (level 1). This first level was drawn and photographed in trench (Dutch *put*) 2, but only photographed in trench 3 as here there was hardly anything visible that could be drawn. All subsequent levels in both pits were drawn and photographed (Table 3.1).

With regard to the recording of features. We worked simultaneously in two quadrants, and numbered features recognized in each quadrant separately. For that reason, we will refer to features in the following way: S 3.8.2 means: Trench (quadrant) 3, level 8, feature 2.

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39 If this took place close to the mound, there is a danger that archaeological features were disturbed. The excavation of the surroundings shows that there appear to be many archaeological features around the mounds (Chapter 4), just under the top soil.It is strongly recommended that sod stripping for restoration purposes only takes place in areas where it is certain that there are no archaeological features.

40 R. Datema: Inspectierapport Hoog Soeren, juli 2006 (Archeologische Monumentenwacht).

41 Particularly due to secondary soil formation. On this topic: Modderman 1975. For recent examples illustrating the problems concerning the interpretation of profile sections through the flank of barrows: Bourgeois/Fontijn 2010, 31-33; Fokkens *et al.* 2006; Fontijn *et al.* 2010, 51-53.

Level	Photographed	Drawn	Average NAP height (m)	Depth below previous level (cm)
2.1	x	x	95.75	10
2.2	x	x	95.6	15
2.3	x	x	95.3	30
2.4	x	x	95.2	10
2.5	x	x	94.95	25
2.6	x	x	-	-
2.7	x	x	94.85	10
2.8	x	x	94.75	10
2.9	x	x	94.72	3
3.1	x	-	95.75	10
3.2	x	x	95.6	15
3.3	x	x	95.45	15
3.4	x	x	95.25	20
3.5	x	x	95.00	25
3.6	x	x	94.85	15
3.7	x	x	-	-
3.8	x	x	94.65	20
3.9	-	x	94.60	5

Table 3.1 Presence/absence of drawings and overview photographs for each level in trench (quadrant) 2 and 3.

3.3.1 Trench (quadrant) 2

Having been drawn, the first level was deepened some 15 cm to create level 2 (Fig. 3.16). This second level was drawn, but since no notable differences were observable, the level was deepened some 30 cm. In this level the first sods were clearly distinguishable from one-another. It was drawn and photographed, after which it was deepened 10 cm in order to have a better overview of the sods and their structuring in the barrow. In the fourth level the most sods were visible, the level was drawn, photographed and then deepened 25 cm. Our fifth level had reached just the old surface sealed beneath the mound, and the sods were no longer visible. On this level, the first traces of the peripheral structure were visible. A small ditch in the southern half of the trench was uncovered. The contours of the ditch, however, were largely invisible due to later soil formation at the flanks of the barrow. It was then decided to locally deepen the level, in order to completely uncover the outline of the surrounding ditch. This level (6), was drawn from the measuring system of the fifth level.

Special attention was given to the area where the primary grave was expected. Three smaller levels were cleared (1.5 m by 2 m), photographed and drawn (levels 7, 8 and 9, deepened respectively 10, 10 and 3 cm). The sand shovelled from the area was sieved over a 4 mm sieve.

3.3.2 Trench (quadrant) 3

In trench 3, the first level was recorded by photographs only, and then deepened some 15 cm till the second level which was both drawn and photographed (Fig. 3.16). The second level was then again deepened where a third level was created 15 cm lower. The visibility of features was much less than at the comparable level in trench 2. No sods could be recognized here. For this reason, the third level was, after being drawn and photographed deepened some 20 cm till level 4. As still no clear features could be distinguished, this level was quickly photographed and drawn, and then deepened another 25 cm. At this level (5) the sods, already

observed in trench 2, became clearly visible. After all sods were photographed, drawn and recorded the level was deepened some 15 cm, reaching the old surface below the barrow (level 6). No features were visible, but we recognized traces of a burrow (of a rabbit?) as well as roots of the large tree trunk that stood partially in the profile. As the location of the surrounding ditch was already known in trench 2, we looked for the position of ditch traces in trench 3. Nothing could be seen on the sixth level, and therefore, locally a small trench was deepened on the place where the surrounding ditch was expected (level 7). Finally, the faint contours of ditch traces appeared and were drawn and photographed from the measuring system of level 6. A last broad level (8) was created, some 20 cm below the level of the old surface and was drawn and photographed. In order to investigate a feature (S 3.8.2) just observable in the north-profile, we deepened the level 5 cm alongside the north profile (some 1.5 x 9 m long). The feature that became visible was drawn from the measuring system of level 8, but this profile trench was not photographed.

3.3.3 Tree trunks

In the barrow, tree trunks of trees cut down in 1999 were still present (Fig. 3.16). We tested first if they could be removed using the mobile excavator. However, pulling them out in such a way would destroy too much of the barrow. We decided to leave them in place until the next level. In between the roots the soil was removed by hand, and individual roots were, if possible, cut through. Once the trunk was cut loose in this way, it was finally removed. Fortunately most trunks could be moved in this way, since most roots had partially rotted away (in total, we left four tree trunks until lower levels in trench 2, and one tree trunk in trench 3). In one instance the trunk was left in place, and we dug around the tree trunk. In the north-eastern quadrant a trunk was located partly inside the eastern profile. Removing the trunk would have destroyed half of the profile, and it was decided to leave the tree trunk in place in order to preserve the profile. The position of the tree trunks was recorded in the drawing, since the effect of the tree trunk on the readability of features and the recognition of soil traces is negative.

3.4 Mound stratigraphy and excavation administration of mound 'layers' and finds

The top of the mound consists of a thick dark brown humus horizon. Lithologically, we are dealing with sand intermixed with a few pebbles (Fig. 3.2). The top soil can be characterized as a well-developed variety of a Moder Podzol (*holtpodzol)* which developed on top of both barrows and in the surroundings (see section 2.5.3 and further in Chapter 2). The first few centimetres of this soil consisted of organic material, underneath this, two soil horizons were visible until some 30-40 cm underneath the top of the mound. The top half of this layer was dark black and represented the A horizon of the soil, underneath this, a dark brown layer represented the B horizon. On the southern flank of the barrow, locally, a thin leached out or eluvial horizon of grey-white sand could be distinguished (in trench 2 profile 1), although this could not be followed in other profiles nor on top of the barrow. The soil formation must have obliterated all features on top of the barrow, and it is only underneath this that anthropogenic features are visible. In the centre of the barrow, the mound was covered with white sand, used during the 1999 restoration to fill in the depression in the centre.

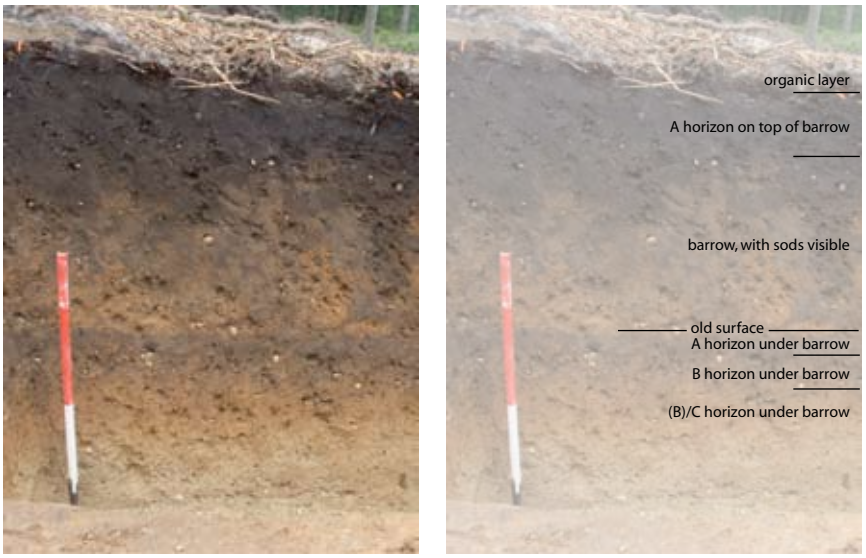


Fig. 3.2 A representative section of the profile 2.1 in mound 2 in trench 2. For description, see text. Here, sods are clearly visible. Photograph by Q. Bourgeois.

Underneath the soil that developed on top of the barrow, the mound material and the individual sods of which it was made were clearly visible (the thickest layer of distinguishable sods was at most 70 cm thick).

The sods themselves were placed on top of the old surface, also a Moder Podzol (*holtpodzol)*, albeit much less developed. The top 5-10 cm consisted of a blue greyish horizon which had developed in sand, with almost no pebbles (the A horizon of the palaeosoil). The top of the old surface was sharply delineated and with the exception of the western profile, the old surface could be easily distinguished and followed as a band throughout most of the barrow. This implies that the surface was not leveled, but intact when covered by the sods. This top layer probably represents a layer of cryogenic sorting (Arnoldussen *et al.* 2008; Waters 1992, 298; Dincauze 2000, 317-318), or a layer of cover sand deposited on a deflation lag. Underneath this relatively fine layer, a coarse layer of pebbles and coarse brown grey sand could be distinguished (10 cm thick, the B horizon of the old soil). Underneath this pebble layer, the bottom of the soil formation was visible as an orange brownish discolouration (the B/C horizon whose depth fluctuated throughout the profiles, in relation depending on the lithology of the matrix). The sediment consists of heterogeneous sediment of the ice-pushed ridges. In the profiles one sees diagonal layers of coarse sand intermixed with many pebbles followed by layers of finer sand with only a few pebbles. This was reflected in the barrow, where in the western profile, much less pebbles were found in the sods, probably because here, sods were used which originated from a less gravelly context.

The sods were taken from a ground marked with a Moder Podzol identical to the one we find as a palaeosoil underneath the barrow. Even the pebble layer underneath the A horizon was taken with the sods. The same pebble layer can be retraced underneath almost every sod, indicating that the sods were taken locally (gravel is only present in the subsoil of the top of the *Echoput* hill, not on its slopes), but not directly underneath the barrow. After all, the fossil surface underneath the barrow still has the layer of fine sand, with the layer of coarse sand and pebbles underneath it, indicating that the sods were taken locally, but that the terrain underneath the barrow was excluded from sod extraction.

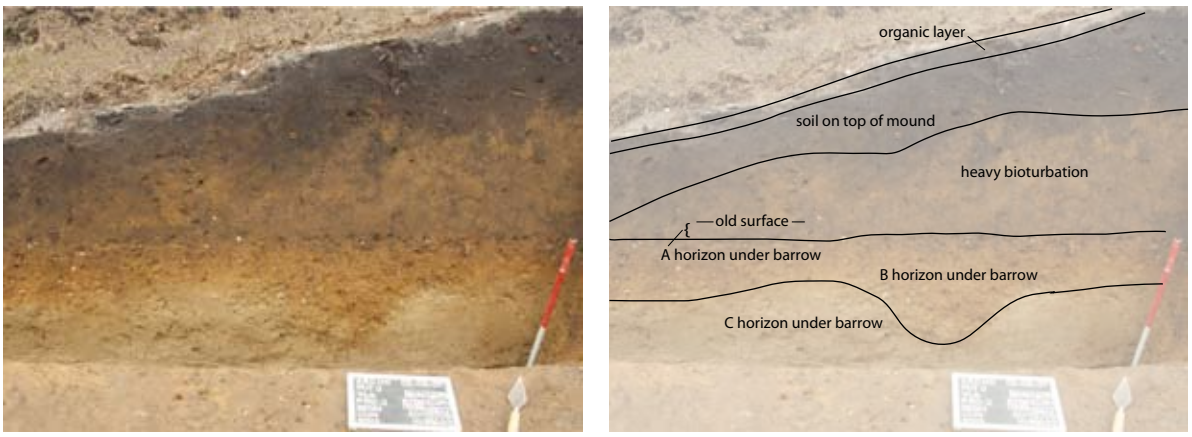


Fig. 3.3 Part of the 2.2 profile. Same as in Fig. 3.2, but here disturbances by bioturbation make it impossible to recognize any sods. Photograph by Q. Bourgeois.

3.5 Features

3.5.1 General 'readability' of the features

Features within the mound were very difficult if not impossible to recognize in the top layer. Soil formation processes erased all traces of anthropogenic nature in the upper 30 to 50 cm of the barrow. Underneath this zone, sods became recognizable, although not always very clearly. In some sections of the barrow, notably the western half, not a single feature was visible, even the palaeosol underneath the mound was almost invisible. This in contrast to the parts of the barrow where the old surface was an easily distinguishable, sharply delineated horizon. At the foot of the mound, the traces of the peripheral ditch became only recognizable underneath the thick black-brown horizon that had formed in the covering layers. Even then it only shined through as a slightly grey discolouration against the natural sub-soil.

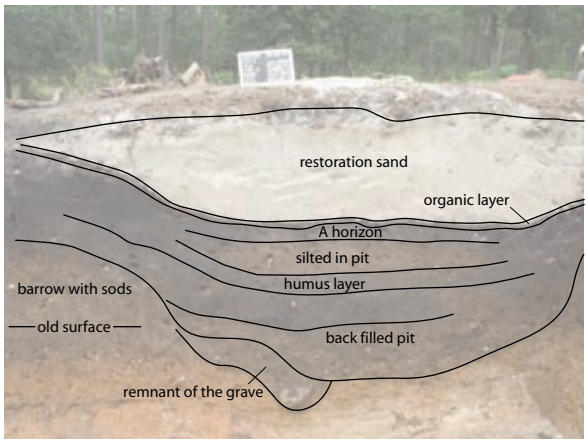
In the mound features, notably sods, were recognizable in places. When they were first recognized (at level 3 in trench/quadrant 2) only a few were observed, but at lower levels many more could be distinguished. Here too, the western half of the barrow was much less 'readable' and almost no sods could be seen in that part. This is probably due to increased biological activity in this part of the barrow: an animal burrow, now filled in, may have been situated here (Fig. 3.3).

Underneath the barrows features were better readable, with the exception of a concentration of charcoal which only became visible some 20 cm underneath the old surface (see 3.5.6). No traces of a pit could be recognized here, probably indicating that it was dug in when there were not yet any developed soils (*i.e.* this is a feature that is much older than the barrow by which it is covered).

3.5.2 The large central disturbance

In the centre of the mound a large depression (Fig. 3.4; Fig. 3.16), at least 3.5 x 2.5 m wide, was filled with white sand. The white sand could be traced 50 to 55 cm below the top and was used to fill in the large pit in the centre of the barrow. Underneath the white sand, a small layer of leaves and grasses was still visible. This organic material, which became covered by the white sand, represents material from the top of the original mound that was dug into. Underneath this thin vegetation layer, several layers of sediment could be distinguished which will now be described from bottom to top (Fig. 3.5).

Part of the lowermost layer that could be distinguished was probably part of the grave pit (see 3.5.7). The digging activities almost completely destroyed the central pit underneath the mound, which probably was the primary grave. Only a



small section of the original grave pit survived in the profile and was partly documented in the lowermost levels. The extension of the disturbance shows that the antiquarians/grave robbers[42] had clearly reached the bottom of the grave pit, and we assume that if any grave gifts were present in the primary grave, they would have succeeded in collecting them.

Fig. 3.4 (top) Level 2. The large central robbery pit in trench 2 is clearly visible by its white fill against the dark top soil. View to the northeast. Photograph by Q. Bourgeois.

Fig. 3.5 (bottom) The large central robbery pit in mound 2 (trench 2 profile 2). View to the northeast. Photograph by Q. Bourgeois.

42 Given the time when this probably happened (in the 19th century) the qualification "robber" can perhaps only be made when the digging was done without knowledge of the owners of the estate. To our knowledge, there is however no evidence that members of the Royal Familiy actively dug in the prehistoric monuments at their estate. Queen Wilhelmina was the first one to express an active interest in the burial mounds on her land, but she asked a professional archaeologist, dr J.H. Holwerda, to carry out the archaeological fieldwork. This was done at the Hoog Soeren, urnfield in 1906 (see further Chapter 1). The way people dug at the *Echoput* is characteristic for a situation where people are only interested in recovering ancient artefacts from a promising and easy to reach location (for mound 1, they had to dig much deeper).

Apparently, after having dug a deep shaft into the barrow, it was partly refilled, immediately or not so long after the digging of the pit. This can be inferred from the heterogeneous, unsorted, nature of the lowermost layer of the disturbance and the large lumps of dark grey sand intermixed with yellow and orange sand. People refilled approximately 50 to 60 cm of the original robbery pit. In the backfill a whetstone was found that does not match any example known from prehistory. It is well possible that we are dealing here with a tool used by the people who first dug into this mound (V 83; see Chapter 6 for this find). As to the reasons for this partially refilling, we do not have a clue. What we do know is that on top of this backfill a small greyish layer formed. This layer probably consists partly of washed down sediment and humus material (leaves, grasses, *etc*.). After some time another layer was deposited on top of this grey band, consisting of brown, light grey sand. This was probably deposited on top of the backfill after some torrential rain, or after the central depression had compacted some more, creating steeper slopes. The spoil heaps on the edge of the pit would thus have eroded partly off the flanks, and partly into the depression, thus creating a thin slope wash deposit. On top of this layer, a lightly developed soil formed. It was covered with decomposed leaves and other humus-rich material. The spoil heaps of the pit could be distinguished as layers of brown sand on the flanks of the pit. These heaps were seen in trench 2, to the west of the pit, and in trench 3 as a small brown layer covered by the restoration sand. The entire process of filling in of the pit was protracted, and took long enough for a soil to develop on the washed down material. This means that we have to reckon with some 75 years at least, but probably more. By approximation, we suspect the robbery/early antiquarian research to have taken place in the 19th century, which is a time in which there was a marked rise in the antiquarian interest in barrows.

The sequence of events that can be inferred from this succession of layers is the following (Fig. 3.6):

1. At first a larger area was cleared of sediment at least 4 x 3 m wide, after which in the centre of this shallow depression a deep shaft was dug 140-150 cm deep into the barrow. The sediment from this pit was thrown to the sides, on top of the cleared area. There is almost no doubt that we are dealing with a robbery pit, either by antiquarians or interested locals. The pit has destroyed most of the primary grave, and the grave robbers probably succeeded in recovering the grave goods. The nature of the pit, and the sequence of the filling indicate that it took place a long time before the restoration, possibly already in the 19th century.
2. Immediately (or very shortly) after their activities, the antiquarians partially backfilled the pit with sand from the spoil heaps.
3. After compaction of the backfill in the pit, the spoil heaps eroded into the central depression, but only after some time. A tiny humus layer had already formed on top of the backfill.
4. After the erosion of the spoil heaps stopped, and the compaction of the central pit had settled, another soil formed in the pit and a vegetation layer was deposited in the pit.
5. In 1999 the *ROB* filled the remaining depression with a thick layer of white sand, in places at least with 60 cm of material.

In retrospect it can be said that the central pit has destroyed most information from the centre of the barrow.

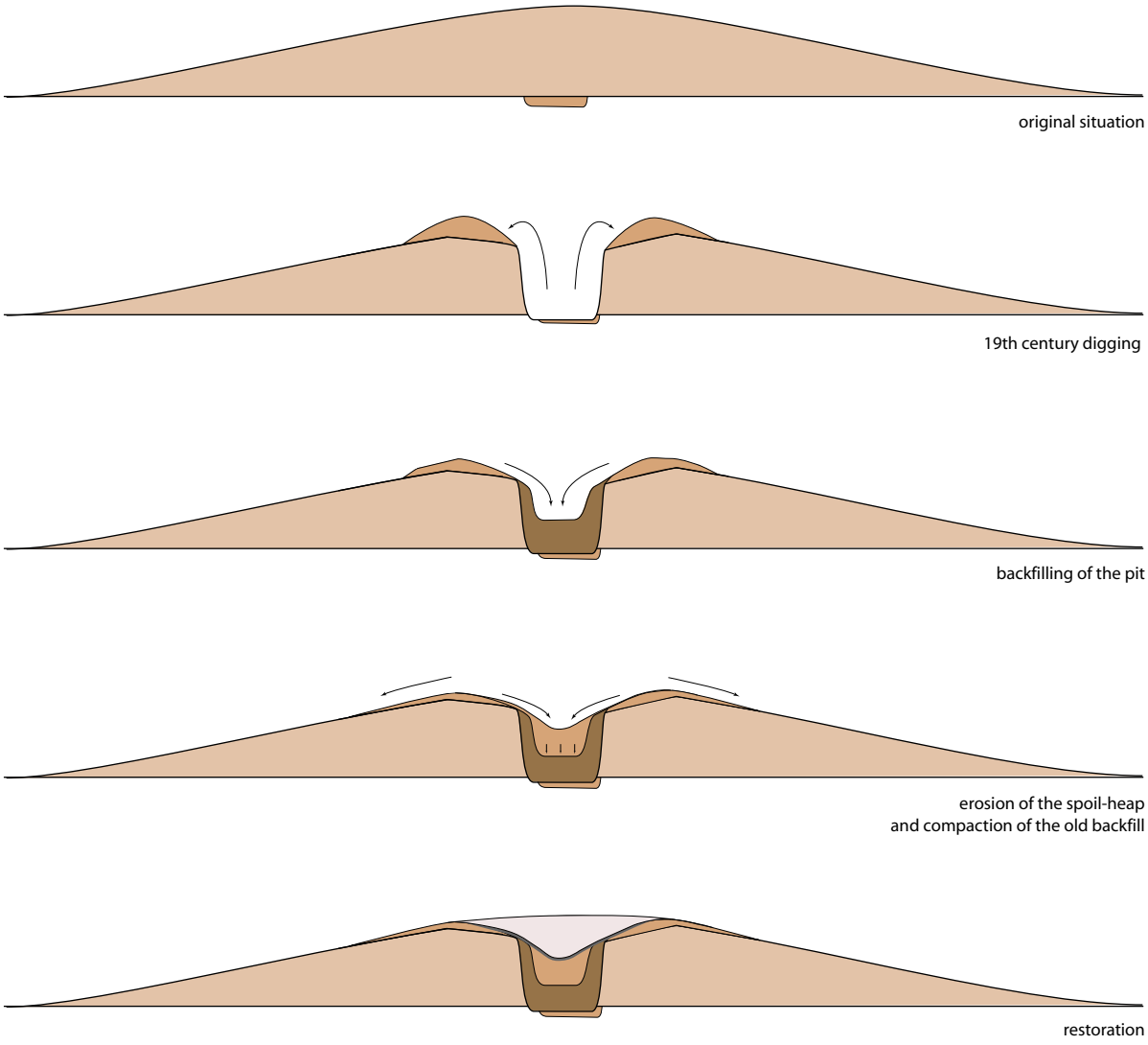


Fig. 3.6 Schematized representation of the sequence of events following the digging of a pit in the centre of the mound. Drawing by Q. Bourgeois.

3.5.3 Mound construction: the evidence of sods

From several layers and from the profiles, it became clear that the barrow was built up of sods. In the excavated levels some 50 sods were recognized and from the profiles, a further 45 sods could be distinguished (Fig. 3.17). As in the case of mound 1, all sods were individually drawn. Not everywhere in the barrow sods could be recognized. It is clear that in trench 2 for example the western half of the quadrant was difficult to read because of bioturbation (due to the presence of a burrow) (*cf.* 3.5.1). Only two or three distinct sods could be distinguished in this part of the quadrant, and even then with difficulty. Similarly in the profiles there were areas where not a single sod could be distinguished. In general these were areas where the readability of features was already difficult. In a few cases it can be demonstrated that trees stood over that layer. Secondary soil formation and local draining of the soil (by its roots) will have erased features there. For example, in level 4 of trench/quadrant 2, the areas where little or no sods could be seen were the places where on the level above two large tree trunks were located. Clearly the roots of the trees had destroyed much information in the barrow.

The sods are all made up of the same material as the old surface beneath the barrow (Fig. 3.7). They were probably collected locally, but not from underneath the barrow, as the old surface still exhibited a clearly distinguishable A horizon.

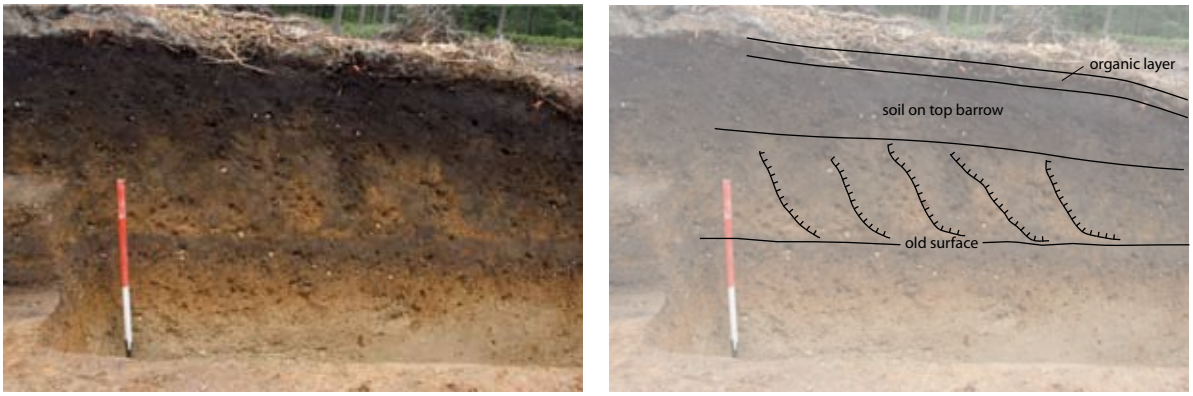


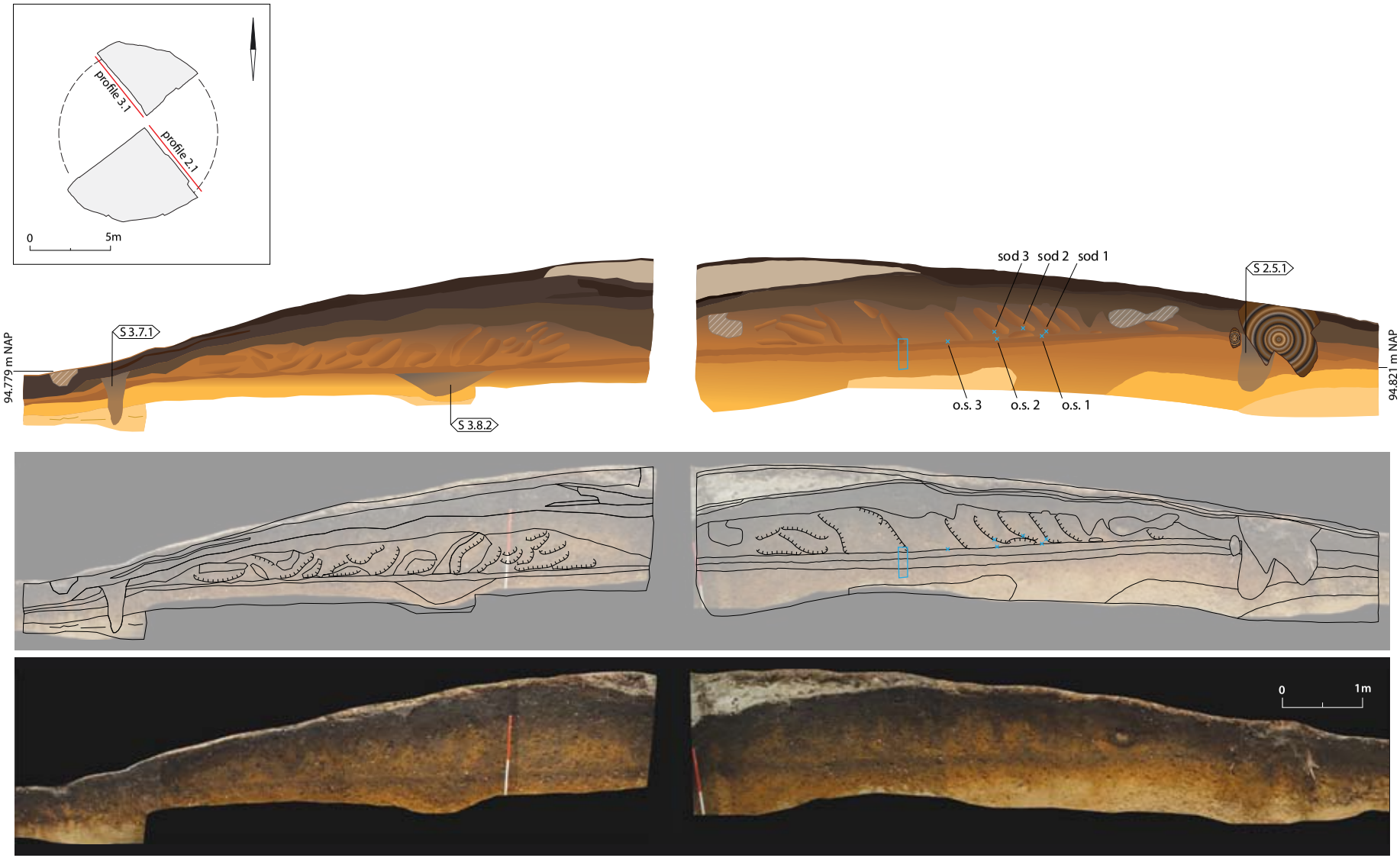
Fig. 3.7 Clearly distinguishable sods in trench 2 profile 2. View to the northeast. Sods are in a diagonal position in the southeast (right), with their A horizon tipped towards the centre of the mound (left). Note the similarity between sods and the first 25 cm of soil underneath the barrow. Photograph by Q. Bourgeois.

The sods had the same A horizon of grey blue sand with almost no pebbles, and almost all sods had a core of brown coarse sand intermixed with many pebbles underneath it. This sequence is the same sequence of soil horizont seen in the old surface: an A horizon of grey blue sand with no pebbles and 5 to 10 cm underneath it a layer of coarse brown sand and pebbles. The sods had thus stripped the A horizon and part of the B horizon underneath it, probably kept together by the roots of plants and grasses. At level 3 in trench 2, the first level at which sods became visible, three small pottery sherds were found. One is a sherd of a Bell Beaker period vessel (V 64), the other one can also be dated to the Late Neolithic, though not necessarily to the Bell Beaker Period (V 105). A third sherd (V 106) is probably a wall sherd of a pot dating to the Late Bronze Age or Early Iron Age. All these finds are described in detail in Chapter 6. It is likely that these sherds were part of the sods with which the mound was built.

It was not so easy to measure how large the sods exactly were, as they were usually observed in skewed position on a horizontal plane or in the profile. The following measurements therefore in the first place give an idea of the minimal and maximal sizes. Several of the sods that could be distinguished were between 50-80 cm long, especially in trench 2, most sods seem to have been quite thick (25-40 cm). In between these larger sods smaller sods of 40-50 cm in length could be distinguished. It might be possible that the larger sods are made up of two or three smaller sods, but they could no longer be interpreted individually. Furthermore, it might be possible that we cut part of the sods diagonally, thus making it likely that we misinterpreted their length. From the profiles it seems that at least two layers of sods were placed on top of each other. Traces of sods in the top layer however, had almost completely disappeared in the soil which developed on top of the barrow.

What becomes clear from the sods that could be distinguished is that they were not placed haphazardly, but that there seems to be a regularity in the ordering of the sods. In trench 2, all recognizable sods were placed perpendicular to the radius of the mound. The vegetation side (A horizon) placed towards the centre. In trench 3 however, only the sods close to the northern profile were placed with their top side towards the centre. Most sods in the rest of the quadrant were placed with their short sides towards the centre, so parallel to the radius of the mound. These radially placed sods are less orderly placed than the tangential placed sods in quadrant/trench 2. It seems as if these sods were placed more haphazardly, maybe to fill in the last remaining gap?

Studying the profiles, we observed that in the centre of the barrow the sods were placed with their vegetation side (A horizon) downwards, and that they were stacked horizontally one on top of the other. This is observed in profile 1 of trench 2 as well as in profile 1 and 2 in trench 3. It seems seem that the people who


profile 3.1
profile 2.1
0
5m
S 3.7.1
94.779 m NAP
S 3.8.2
sod 3
sod 2
sod 1
S 2.5.1
o.s. 3
o.s. 2
o.s. 1
94.821 m NAP
0
1m
NW
profile 3.1
profile 2.1
SE

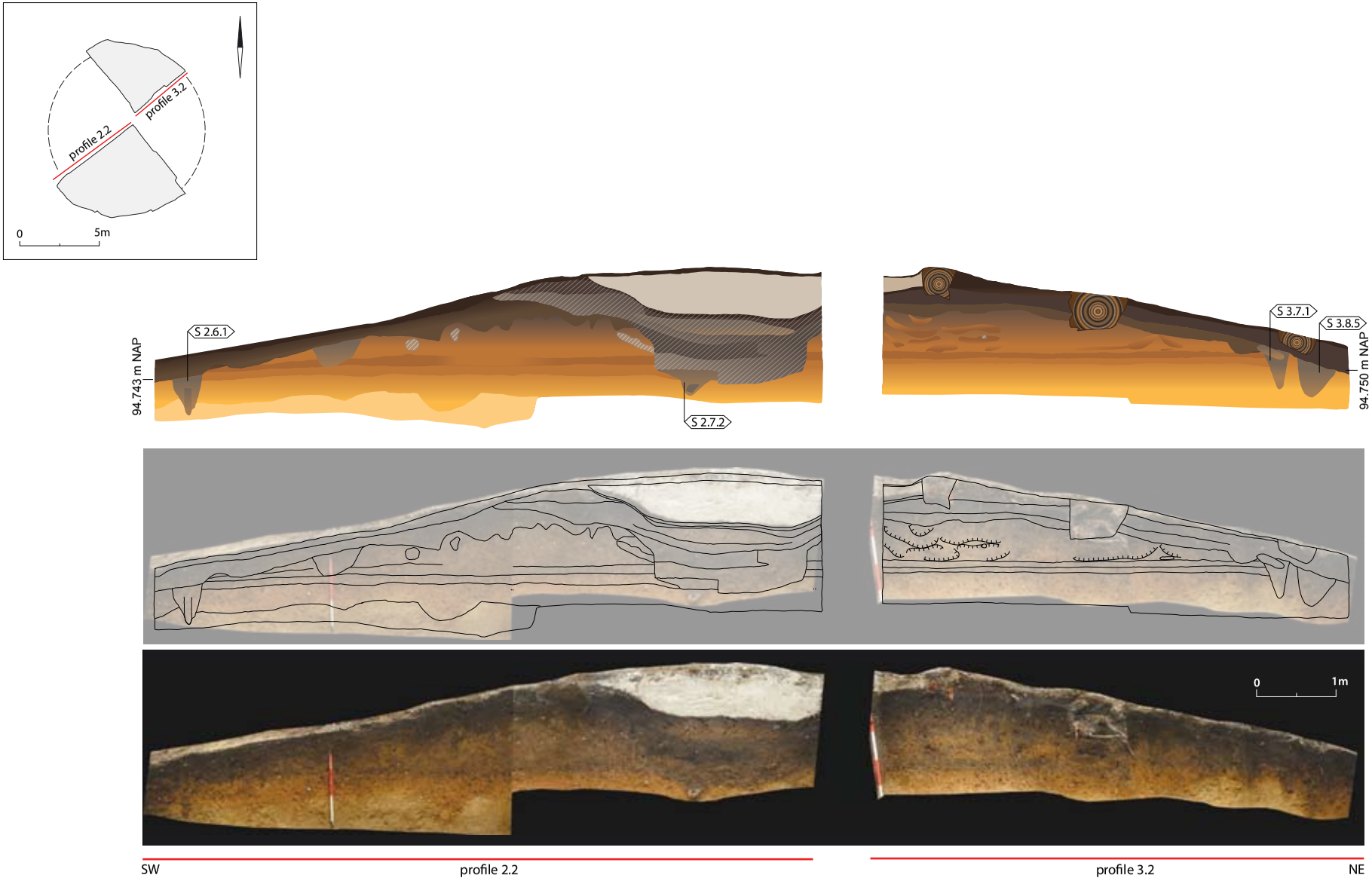


Fig. 3.8A and B Profile section of both quadrants. Photographs combined by photogrammetry and drawings . There is a small deviation from real size in the photographic compilation which causes a slight mismatch between drawing and photographs. For colours and symbols used see Fig. 2.17. By P.Valentijn and J. Porck.

built the mound first created a small "tower" of sods in the centre of the barrow, covering the primary grave. Then, working from this centre, sods were placed tangentially against this sod-core. This process is best visible in profile 1 of trench 2; where in the centre a core of upside-down sods can be seen, against which sods lean with their top side towards the core (Fig. 3.8). The sods towards the centre of the mound were placed in a much more vertical position than those that are in the foot of the barrow. There, the sods are almost in a horizontal position.

The following sequence of events can be reconstructed:

1. To cover the primary grave, a core of sods was placed with their top side down, creating a small tower of sods in the centre of the barrow.
2. Against this tower, sods were placed with their top side towards the centre, these were then placed tangentially around the core.
3. In the north-eastern quadrant, the sods were placed radially instead of tangentially. Their more haphazard placing might suggest that this represents the filling in of the last segment of the barrow.

It is interesting to see that this way of arranging sods is similar to what we observed in mound 1. There is also a good parallel, especially with the "tower" in the centre, between mound 1 and 2 of the *Echoput* and the Early Iron Age mound Tumulus 7 of *Oss-Zevenbergen* (Fontijn/Jansen forthcoming). For mound 1 we suggested that the horizontal stacking of sods in the centre might relate to the situation where people started to fill a grave pit with sods, or covered up pyre remains. In mound 2, the presence of a grave pit is attested. Unfortunately, the deep disturbance of the robbery pit makes it impossible to find a connection between the stacking of sods just around the pit and just on top of it.

3.5.4 Traces of a peripheral ditch with posts

The first traces of a feature (S 2.5.1 and S 3.7.1) surrounding the barrow were discovered early on in the excavation. At the foot of the barrow a small trench was dug in order to establish the level of the old surface and to connect our profile to trench 4[43], which runs from mound 1 to mound 2. In this small trench (1 m long, 50 cm wide), the possible traces of a surrounding ditch could be seen. But traces of the ditch in the quadrants were only discovered much later, when the fifth and seventh levels were deepened in respectively trench 2 and 3 (Fig. 3.9 and 3.18).

Furthermore the ditch in trench 2 was first observed when we found concentrations of charcoal that lay in what were still the lowest horizons of the Moder Podzol that developed in the top of the barrow (V 144). A few cm underneath the patchy concentrations of charcoal we then recognized the outline of a ditch (Fig. 3.10). In trench 2, the traces of the ditch were at first only partly laid bare in the southern half of the barrow. It was only uncovered in the western part of the barrow when a section of the quadrant was deepened some 5-10 cm when we were looking for the missing traces of the ditch in that part. The reason they were so hard to recognize has to do with the soil that had formed in the top of the barrow. The effect of this soil formation was much worse here than in the southern half of the barrow. The ditch traces only became readable because its sand fill was slightly greyer than the surrounding matrix. Similarly in trench 3, the visibility of the surrounding feature was low, and we had to create a lower horizontal level in places to be able to trace it.

43 Here we followed the same procedure as in the case of mound 1, see section 2.3.5.

Fig. 3.9 The peripheral ditch as seen on level 6 in trench 2. View to the southeast. The broad dark zone results from secondary soil formation around the foot of the mound and hampers the visibility of the ditch traces. Photograph by Q. Bourgeois.

Fig. 3.10 A section of the ditch in trench 2 with traces of charcoal in its fill. Photograph by Q. Bourgeois.

The find of the charcoal in the trench initially led us to believe that we were probably dealing with a Late Neolithic trench with palisade (Lanting 2007/2008, 62; Modderman 1982). In order to substantiate this we created sections all trough the ditch, in order to record the position of posts and to see whether questions regarding the placing of these posts could be answered. In total 44 sections through the ditch were made, and each one was drawn and photographed (Fig. 3.11). The sections were informative, but there remained problems with the interpretation: the ordering of posts in the ditch was different from those we knew from publications on Late Neolithic barrows. It appeared to be neither a regular ditch nor a classic palisaded trench and it is difficult to reconstruct how the ditch with its posts would have looked like in the past. Traces of the ditch were seen to at least 60-70 cm underneath the old surface, and the largest observed width was approximately 40 cm, being slightly wider and deeper in trench 2 than in trench 3. The trench was in all cases very narrow at the bottom and less than 10 cm wide, even in some cases V-shaped in section (though not in all).

In contrast to what we first thought no clear-cut palisade was observed. But the cross- sections demonstrate that at least four deep posts were placed in the ditch (Fig. 3.12). All the posts were recognized in trench 2, and no posts were seen in the NE-quadrant (trench 3). The posts recorded in the sections extend to 40 to

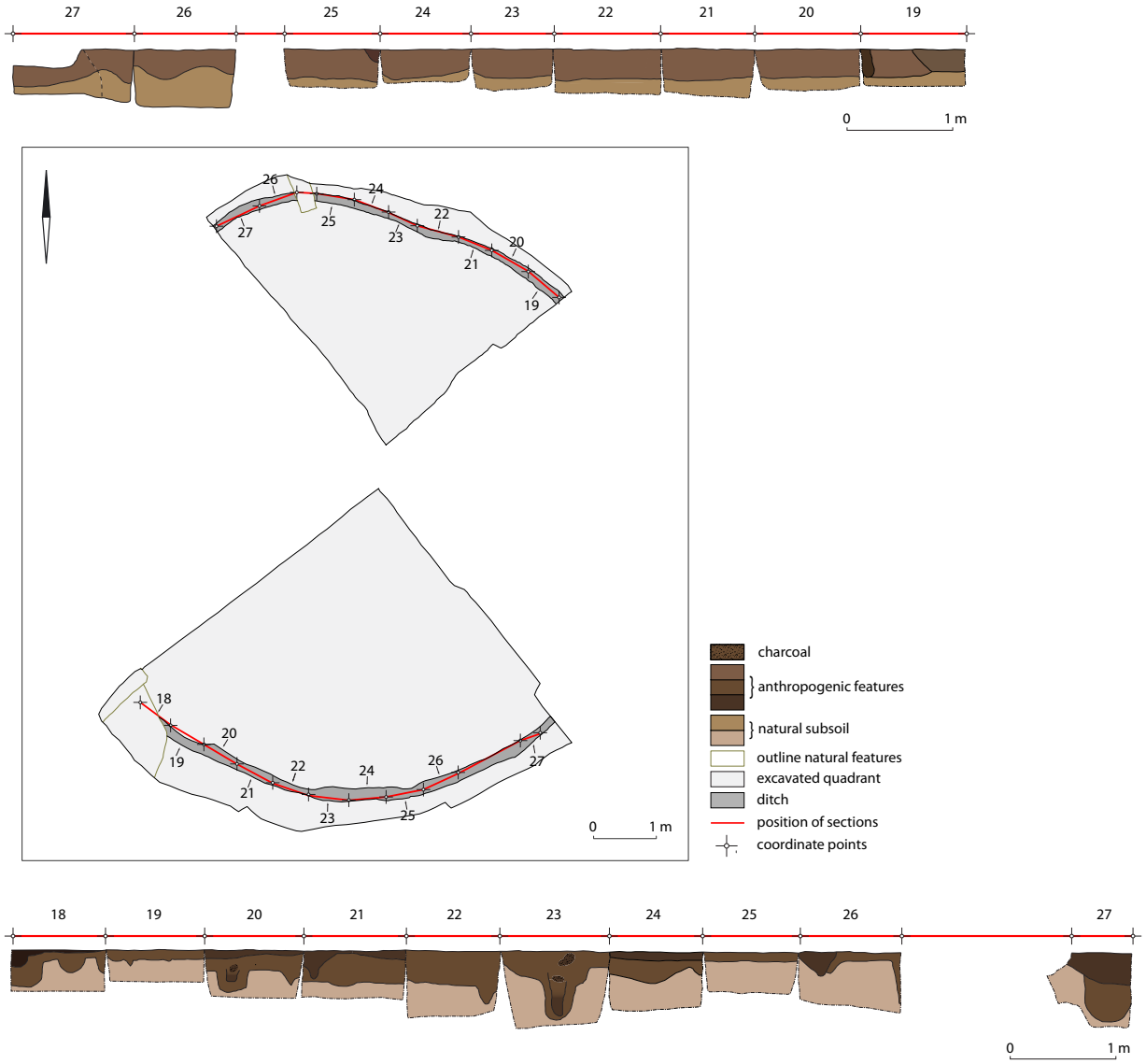


Fig. 3.11 Sections through the peripheral ditch and their position in relation to the barrow. Drawing by J. Porck.

64 cm beneath the sixth level. In at least two cases the traces of the post itself were visible (Fig. 3.13), which implies that the posts had been standing there until they decayed and were not pulled out. In both cases the dark brown fill left by the post also contained small fragments of charcoal (V 244 and V 241). In between these clear cut posts (four in total), a few other traces were recognized that might also represent the remains of posts. Their interpretation is more difficult, as their fill was much less distinct and they did not seem to penetrate as deep as the other post traces. We cannot altogether rule out that they represent a local deepening of the ditch. So, we can be fairly sure on the presence of deep posts (each placed 2-2.5 m from one another), but we are not certain if smaller posts were placed in between. The depth of the ditch in trench 2 is very variable, from 30-40 cm in some areas, to only 10 cm in others. The reason for this is unclear. The patches of charcoal (V 182 and V 184) were found in places in the ditch fill (in the southern part of the trench/quadrant 2). This may be another indication that there was some construction in between the deep posts (be it wickerwork or smaller posts). As we have seen, charcoal was also found in small quantities in the ditch fill of mound 1.

In trench 3, the depth of the ditch does not change much from place to place and ranges between 25 and 30 cm below level 8. The fill is uniform and as remarked above, we did not find any indication that posts were once standing here.

Fig. 3.12 A section (perpendicular to no. 26 in fig. 3.11) through the ditch which shows traces of one of the four recorded posts. View to the west. Photograph by Q. Bourgeois.

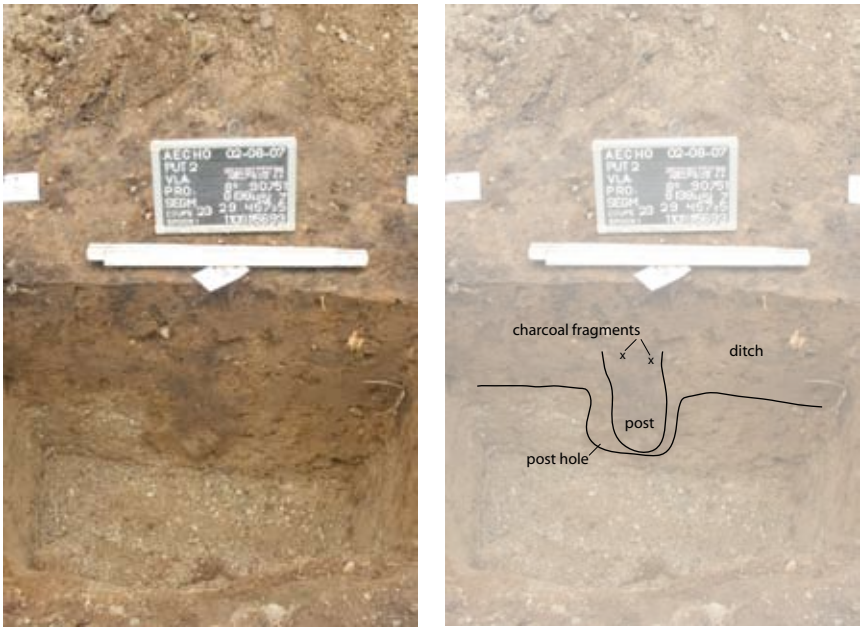


Fig. 3.13 One of the post traces (section 23 in fig. 3.11) showing a shadow of the post itself, indicating that the posts had decayed in situ. Small particles of charcoal were found. View to the north. Photograph by Q. Bourgeois.

Also, we did not observe differences in ditch fill of the kind we noted in trench 2. When observing the sections in trench 3, it might even be suggested that we are dealing with a regular ditch with no posts at all. Only in profile 2 is the ditch covered by what seems to be patches of charcoal and burnt loamy sand (Fig. 3.14), suggesting something might have burnt in or on top of the ditch.

With the exception of charcoal no finds were done in the ditch. A sample of 1.7 g charcoal from the ditch fill in trench 3 has been C14-dated (V 182 from S 3.7.1). This yielded a dating of 2240±35 BP (GrA-44879). After calibration (at the 2σ range with Oxcal 4.0) this comes down to 392-204 cal. BC, the late Middle Iron Age or the transition to the early Late Iron Age. This dating is almost identical to that of the charcoal from the ring ditch around mound 1 (see Chapter 2: 384-203 cal. BC). The charcoal should be considered as a *terminus ad* or *post quem* dating for the construction of the ditch. It is very unlikely, that the ring ditch was open for a very long time given the gravelly matrix into which it was dug. Also, the option that it ended up in the ditch fill much later by processes of bioturbation is unlikely, as there is practically no charcoal outside the ditch

Fig. 3.14 A patch of loam and burnt sand discovered in the fill of the peripheral ditch S 3.7.1 in profile 2, trench 3. View to southeast. Photograph by Q. Bourgeois.

fill. Since everything found during our excavation shows that mound 2 was constructed in just one phase, and as the ring ditch seems to be an integral part of its design, we may assume that the ring ditch is contemporary to the construction of the mound. The presence of charcoal in other parts of the mound suggests that burning of fire may even have been related -hence contemporary- to the use of the mound for funeral rites.

Are we then dealing with a palisaded ditch? This question is difficult to answer. A palisaded ditch *sensu strictu* is a Late Neolithic phenomenon surrounding barrows (see Lanting/van der Waals 1976 and Bourgeois/Wentink forthcoming for several examples). In most cases traces of closely placed posts can be observed in the ditch surrounding the barrow (see for example a barrow from *Putten*; Van Giffen *et al.* 1971). In the *Echoput* case this is definitely not so: we have evidence for only four good posts at irregular intervals in two quadrants (Fig. 3.11). Furthermore the ditch probably dates to the late Middle Iron Age or early Late Iron Age, a period from which we do not know palisaded ditches surrounding barrows. They are known from the Early Iron Age. Examples that can be cited are from the urnfield of *Someren-Waterdael*: grave 4, 6, 7. These are probably of leveled Early Iron Age barrows with diameters comparable to mound 2. The posts were, however, placed in a very regular order (Kortlang 1999, 144, Fig. 5). The *Mierlo-Hout* urnfield yielded five leveled circular ditch monuments with posts, which in four examples were placed outside the ditch. It remains uncertain if they all date to the (Early) Iron Age. At *Someren-Philipscamping*, an Early Iron Age barrow with posts placed in pairs with no ditch was excavated (Modderman 1962-1963). Tumulus 3 of *Oss-Zevenbergen* also dates to the Early Iron Age/early Middle Iron Age and has a ring of posts without a ditch, that are placed in pairs in the southwest quadrant, and without pairs but at regular intervals in the other quadrants(Fokkens *et al.* 2006, 88-103). Middle Iron Age and Late Iron Age barrows are rare in the Low Countries, let alone examples of ring ditches with posts placed in the ditch. Hessing and Kooi (2005, 651-652) refer to cases where posts were placed at the sides of rectangular ditches surrounding Late Iron Age graves in *Wijk bij Duurstede* (as yet unpublished). Although these burials have a different form, they are another expression of what seems to have been going on here as well. We are dealing with a ring ditch dug around a barrow in which people placed posts on several locations. These posts will undoubtedly have signalled something to people who passed by or visited the barrow, but did not function to demarcate the barrow in the way post circles usually do.

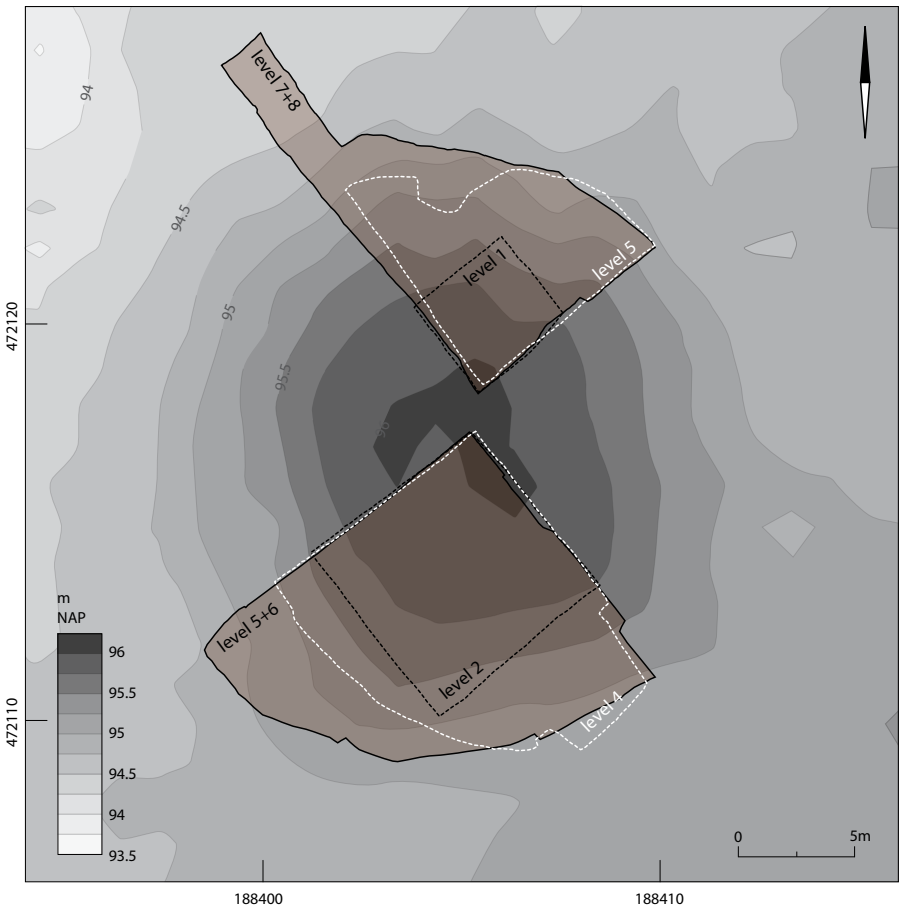


Fig. 3.15 Extension of all levels depicted in this chapter. Drawing by J. Porck.

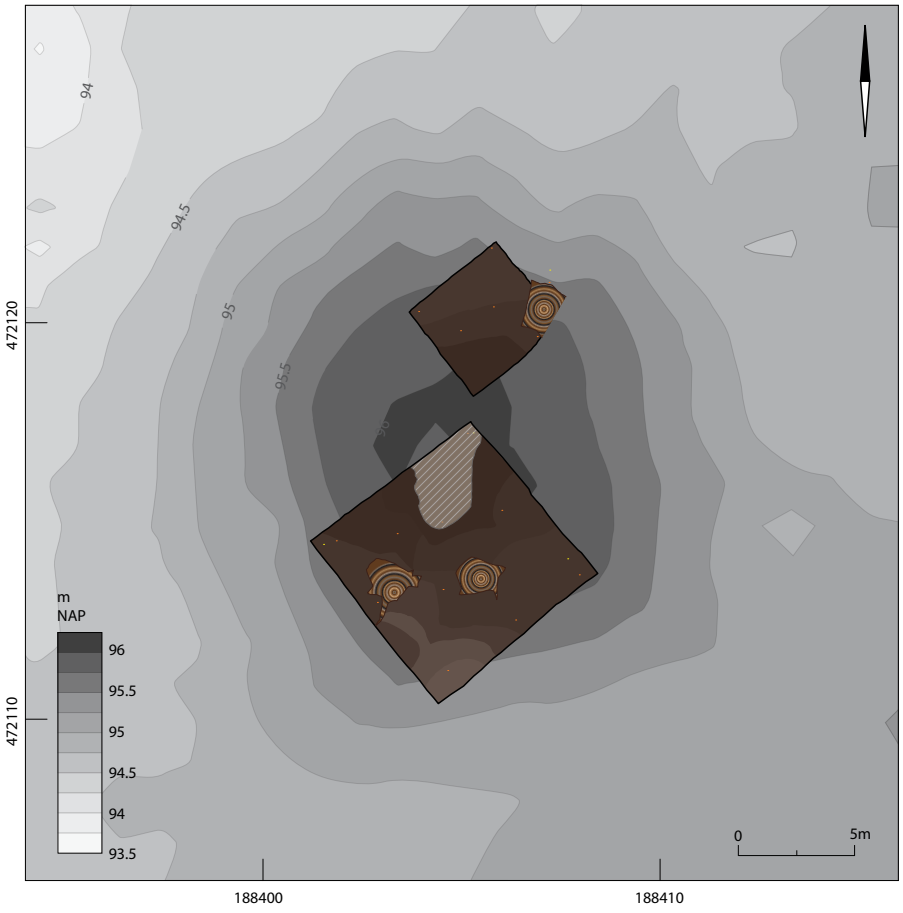


Fig. 3.16 Plan of features at level 2 in trenches 2 and 3. For colours and symbols used see Fig. 2.8. Drawing by J. Porck.

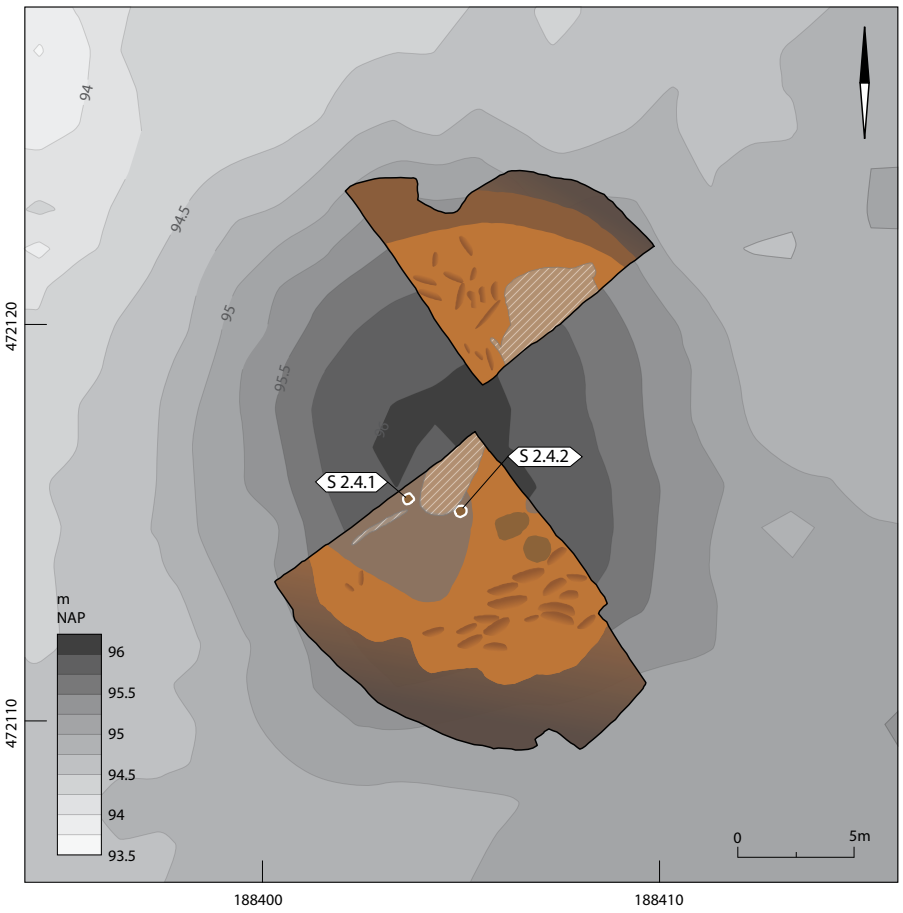


Fig.3.17 Plan of features at level 4 and 5 in trenches 2 and 3 (sods). For colours and symbols used see Fig. 2.8. Drawing by J. Porck.

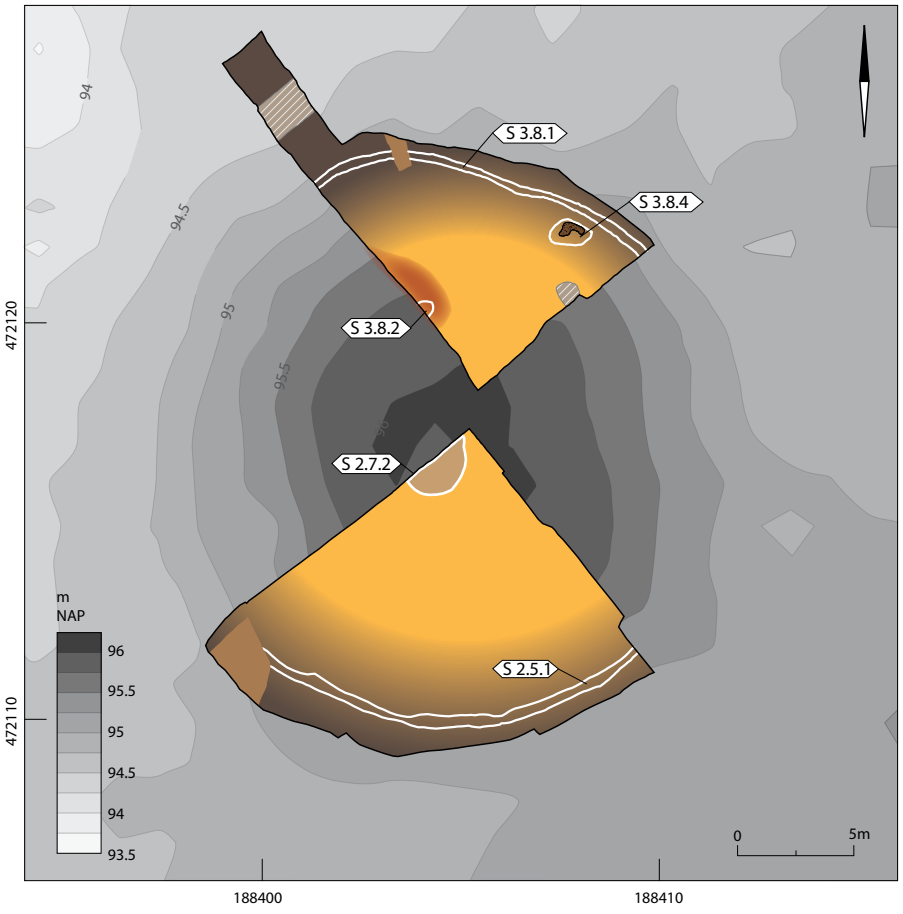


Fig. 3.18 Plan of features at level 5 and 6 in trench 2 and levels 7 and 8 in trenches 3 (peripheral ditch, prehistoric surface, pre-barrow traces). For colours and symbols used see Fig. 2.8. Drawing by J. Porck.

3.5.5 A Bell Beaker feature (S 3.8.2)

Underneath the barrow, a large pit was uncovered (100 by at least 50 cm, the boundaries of the pit were difficult to distinguish). In the pit charcoal was found. The deeper parts of the pit are well visible in the profile (the deepest recorded depth is at least 105 cm underneath the old surface), but its upper parts are not. In fact, we could not observe from which point at the old surface underneath the mound the pit was dug. Clearly, soil formation took place before the mound was erected and obliterated the uppermost part of the pit that was once dug into it. It can thus be assumed that the pit is much older than the barrow as the traces of the pit were very faint. The only reason why we thought that there was a pit there in the first place, was the occurrence of charcoal at its bottom. This is actually very similar to S 20 found underneath mound 1, which appeared to date to the Late Mesolithic (section 2.5.12). For that reason we suspected that this was also a Mesolithic hearth pit. However, we must refute this dating on the basis of C14-dating of a charcoal sample from its fill (0.9 g; V 199 from S 3.8.2)[44]. This charcoal is dated to 3745±35 BP (GrA-44880). After calibration with Oxcal 4.0 this comes down to 2281-2035 cal. BC at the 2σ-range, which is the late phase of the Bell Beaker Period. This is a clear *terminus post quem* date for the construction of the mound, as the weak soil formation implies that it must have been dug a considerable time before the podzolic soil developed on top of it that is covered by the burial mound. A pit dated to the Bell Beaker phase was also discovered underneath mound 1 (S 16; section 2.5.12), also without further finds in it. The charcoal in it dates to the earlier rather than the younger phase of the Bell Beaker Period (2470-2210 cal. BC).

3.5.6 Features in and under the mound

In total 16 features were documented within the body of the mound and under the mound. Those features within the mound, were mostly the lower parts of post traces, probably dug through the mound (S 3.4.1; S 2.3.2), while for others it remains uncertain what their nature was (S 2.3.4; S 2.3.1; S 3.8.3). Posts dug through the top of the mound were occasionally also found in mound 1 (S 12-14), and may well relate to the cluster of posts around both mounds, of which several must be younger than the mounds (see section 2.5.13).

In some cases what was marked as a feature, was probably the top side of a sod, which was cut horizontally (this was probably the case for S 2.4.3, S 2.3.5; S 2.3.3). Underneath the mound, only three clear anthropogenic features were observed, on the one hand the peripheral ditch seen in trench 2 and 3, and on the other, two pits in trench 3 one of which is at least much older than the barrow (see section 3.5.5), the other pit (S 3.8.4) was also very difficult to distinguish and also had charcoal in its fill. It might be that this pit can also be dated to the same time-period. Around the primary grave, three small pits were seen (S 2.4.1; S 2.4.2; S 2.5.2). Sections made through the features reveal that we are dealing with small pits, respectively 10, 13 and 4 cm deep. Both pits were dug through the old surface underneath the barrow, but what the nature of these pits might have been remains unknown . They were very shallow, and would not have been much deeper than 15-20 cm beneath the old surface. It is difficult to say whether or not these pits are anthropogenic in origin or represent natural depressions.

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44 The charcoal was sampled when it was first visible at level 7. At that moment, the outline of the pit was not recognizable yet. Once level 8 was created, we could follow its contours and record the feature in its entirety. This is the reason why the feature is S 3.8.2, whereas the find number is registered at level 7.

Summing up, for most features we cannot be sure if they really are anthropogenic. A number of post traces are younger than the mound, and there are at least two clear anthropogenic features, S 3.8.4 and S 3.8.2, both of which pre-date the construction of the mound. Both contain no other finds than charcoal, and one of them (S 3.7.2) can be dated to the Late Neolithic Bell Beaker Period).

3.5.7 The remnants of the primary grave (S 2.7.2)?

Underneath the large robbery pit, not much was left of the primary grave (*cf.* 3.5.2). We carefully excavated the central part of the barrow, but could only document what was left of the grave. The robbery pit went all the way through the grave, and only the western half of it was left. Three layers were drawn and photographed, until we reached the bottom of the grave pit. A small fragment of charcoal and a flint flake were found (respectively V 240 and V 243).

The oval pit, as far as could be documented, was at least 175-200 cm long and 80 cm wide. From the profiles it can be suggested that the pit was dug some 30 cm below the old surface. The pit distinguished itself from the robbery pit by its more homogenous nature and the presence of many illuviation layers (*fibers* in Dutch) resulting from soil formation. These are absent in the robbery pit. On top of that, the contours of the primary pit are more affected by processes of bioturbation (Fig. 3.19). All these observations led us to conclude that we were dealing with a pit that was much older than the large disturbance in the centre. Because of its central position in the mound, the older pit is very likely to relate to the primary burial. The robbery pit was sharply delineated within the grave pit, while the outer edge of the grave pit gradually faded out into the natural subsoil. The orientation of the grave pit can roughly be inferred as N-S, although a full excavation might bring more precision into this orientation.

In the fill of the grave pit, no traces of an inhumation were seen, and no cremation remains were found. As only part of the grave was excavated, and as the robbery pit destroyed most of the primary grave, it cannot be inferred whether or not an inhumation or a cremation was deposited in the grave pit. It must even remain open if any body was placed in the grave at all. On the bottom of the pit a large stone was found, it is unclear whether or not this stone was placed there in relation to the central event. (see Fig. 3.5).

Fig. 3.19 The bottom of the primary grave on level 7. Indicated is the disturbance caused by digging activities of the grave robbers. Trench 2, S 2.7.2. View to the west. Photograph by Q. Bourgeois.

A small piece of charcoal (0.6 g; V 243) from the original grave pit was C14-dated. It dates to 5125±35 BP. After calibration with Oxcal 4.0 this results in a dating of 3990-3800 cal. BC at the 2σ range: the period of the Middle Neolithic so-called *Swifterbant* culture; Van den Broeke et al. 2005, 27; Raemaekers 1999). At best, the Middle Neolithic charcoal from the grave pit provides a *terminus post quem* dating for the construction of the mound. Overviewing all dating evidence, it must have been charcoal related to much older activities which might have taken place here, or charcoal that resulted from natural causes (see section 3.7). During the digging of the pit, it got locked into the pit and became part of its fill.

3.6 Finds done at the prehistoric surface covered by the mound

Just like in the case of mound 1, a few artefacts were found at the prehistoric surface underneath the mound: two sherds and two stone tools. They are described in more detail in Chapter 6. One of the two pottery sherds (V 159) can be dated to the Iron Age and is important because a sherd with an identical fabric and surface finishing was found underneath mound 1 (V 170; see section 2.5.10). Although they do not fit, it is very likely that they are from one and the same pot. This suggest that there was a very close relation between both locations that both would later be the place where two barrows were built. The other sherd does not allow a more precise determination. A pounding stone (V 139) and a whetstone (V 201) are the other finds done on the old surface. They cannot be dated more precisely, but would not be out of place among debris of a normal Iron Age settlement. Just like in the case of mound 1, such finds reflect activities that were carried out before the barrow was built. They also provide a *terminus post* or *ad quem* dating for the mound, somewhere in the Iron Age. This fits in with the sherds found in the mound itself (section 3.5.3).

3.7 Dating the mound

Since the central pit was disturbed and could not be excavated in its entirety, the dating of mound 2 is mainly based on circumstantial evidence. Charcoal from the central pit provides a *terminus post quem* dating of the mound after 3990-3800 BC. A pit that is covered by the mound, and must be much older than it given the differences in soil formation, provides a further *terminus post quem* dating in the later phase of the Bell Beaker Period. Bell Beaker sherds as well as Late Bronze Age/Early Iron Age sherds were found among the sods. It is most likely that they were part of the sods when they were cut, hence evidencing the presence of an activity area or even a settlement from those periods on the top of the *Echoput* hill. They make the point that the mound must have been constructed *after* the Late Bronze Age/Early Iron Age. Charcoal form the ring ditch corroborates this view, since it was dated to the period that marks the transition of the Middle to the Late Iron Age (392-204 cal. BC). As this peripheral ditch seems to be an integral feature of the mound and not a later addition, the charcoal from its fill provides us with a *terminus ad* or *post quem* dating for the construction of the mound itself. This is particularly so, since the nature of the ditch and the gravelly matrix into which it was dug makes it highly unlikely that it has been open for a very long time, to become filled with charcoal from use phases post-dating the construction of the mound. This means that mound 2 should be dated at the end of the Middle Iron Age or in the Late Iron Age. This is the same dating as we inferred for the construction of the larger mound 1. Unfortunately, the Iron Age sherd found underneath the mound cannot be dated more precisely to substantiate this.

With regard to the soils, but also to the construction of the mound (the arrangement of the sods, the construction of a ring ditch), there are conspicuous similarities between both mounds. The pollen from the sods from both mounds as well as from the soils buried under the mounds are identical, suggesting that they are more or less contemporary (see Chapter 5). We will come back to this in Chapter 8, where the evidence of both mounds and the excavation of its surroundings are brought together.

3.8 Conclusion

Goal of the excavation of mound 2 was to gain insight into its dating and use history, and to create well-dated profile sections from which pollen samples could be taken that would allow us to reconstruct the environmental history around the mound. Crucial was to link up the history and pollen evidence of mound 2 to that of mound 1. Before we began, nothing was known on its dating. We speculated that this smaller mound might have been older than the later mound 1, and one of the things suggested was that mound 2 could be a Late Neolithic barrow, a forerunner of mound 1 thought to be a Middle Bronze Age one. Our excavations would show our expectations to be completely wrong!

We excavated two quadrants of the smaller mound 2 entirely by hand, creating 9 horizontal levels in each quadrant for documentation. On the basis of this excavation, we can present the following reconstruction of its history.

Mound 2 was built on a place that already had a long history of use. Charcoal in secondary position might indicate that activities took place during the Middle Neolithic. At least one pit with charcoal could be dated to the youngest phase of the Bell Beaker Period, but also a Bell Beaker sherd, another Late Neolithic sherd and a much younger Late Bronze Age/Early Iron Age sherd found in the mound, as inclusions in sods, testify to the use of the *Echoput* hill during that time.

The mound is likely to have been constructed during the late Middle or Late Iron Age (4th and 3rd century BC). On the basis of our excavation results we conclude that it was constructed within one phase. It must have been built not long before or after the construction of the larger mound 1 (the precise sequence of events can no longer be reconstructed). The central interment is a N-S oriented oval pit (175-200 cm by 80 cm). Such pits may well evidence inhumation graves, but as the pit was heavily disturbed by grave robbers and could not be excavated in its entirety, this could not be corroborated. Traces of antiquarian digging activities suggest that the robbers took something from this pit. We therefore assume that there were grave gifts in it. It should be emphasized that inhumation graves are very rare for the Iron Age in the Low Countries (Van den Broeke/Hessing 2005) but so are Middle/Late Iron Age burial mounds like mound 2 with a diameter of 14.5 m and a height of *c.* 1 m.

On top of the grave pit, a small tower of horizontal sods was built (we could observe at least two layers, but there must have been more), against which diagonally sods were placed to all sides, pointing to the centre. All sods were placed upside down. There were at least two zones in which the arrangement of the sods differed, suggesting a sequence in its construction or the presence of two work parties working simultaneously. The sods were not well visible in all parts of the quadrant, hampering a full understanding of the mound's construction. As far as we can see now, the method of construction is largely similar to the one used for building the larger, yet contemporary mound 1.

The barrow was marked with a ring ditch, again just like in the case of mound 1. This time, however, several large posts were placed inside that ditch. It proved impossible to make out whether there was a regular pattern in the positions of

those posts. Especially in the easternmost quadrant, no more than a ditch was visible without posts at all. Post settings are very rare for Iron Age burials. Some of the examples known, also display asymmetrical changing post arrangements (see section 3.5.4). Secondary graves or other features were not found within the mound.

The centre of the mound was severely damaged by antiquarians/grave robbers, who dug a deep and broad pit. Not long afterwards, it was partly back filled, and then the half-filled pit must have been lying like this for a very long time. Probably this happened in the 19th century.

Apart from backfilling the robbery pit, not much was done to the mound during the 1999 restoration.

Chapter 4

Excavating the surroundings of the barrows

Patrick Valentijn and David Fontijn

4.1 Introduction

One of the most important reasons to select the Echoput site for an excavation is the fact that it is one of the few places where the surroundings of the burial mounds could be excavated as well. As set out in Chapter 1, the environment of barrows has rarely been investigated in the past, although there are now indications that it might have been a special place in the landscape. For the *Echoput*, a high hill with a relatively small flat surface at its top, we suspected that it was not the most logical place for late prehistoric settlements. These rather should be sought at the lower, more extended plateaus of the ice-pushed ridge. Since a hill top, crowned with just two barrows, is a rare phenomenon at all, excavation of its immediate surroundings seemed all the more interesting. How would the immediate surroundings of those barrows on this small top have been organized? Due to the creation of an open space around the mounds in 1999, excavation became a possibility. This chapter describes the methodology of the environmental excavations and its results.

4.2 Research method

The open space around the barrows measures approximately 25 by 50 m. Beyond, there is a dense forest at the slopes of the hill. The open space could be easily excavated, but the dense forest itself posed more problems: the dense vegetation, the large numbers of tree trunks, the undulating surface, they all made manoeuvring with a mobile excavator hard.

Beforehand, it was clear that our excavation would be prospective. We wished to gain insight into the nature of the archaeological record at this site: are there archaeological features preserved? But if so, we also wanted to know what we found, what sort of relation it might have had to the burial mounds. This meant that we would not only have to register features, but fully excavate them as well. Also, flexibility in trench planning was a *condition sine qua non* for this excavation. Fortunately, both the National Heritage Agency (*RCE*, then called *RACM*) and the municipality of *Apeldoorn* (the official authority with regard to excavations at this site) allowed us to act this way. Crucial, however, was the kind permission and cooperation by the land owner *Kroondomeinen* (the royal estate) for excavating in this nature reserve.

Financial means only allowed for an excavation that is modest by modern standards. We planned to get at least a representative idea of the features preserved under the soil of the open space that more or less coincides with the top of the hill. Also, we wished to prospect at least the adjacent flanks. Of a square area comprising the hilltop and the adjacent flanks measuring 107 by 94 m, we excavated

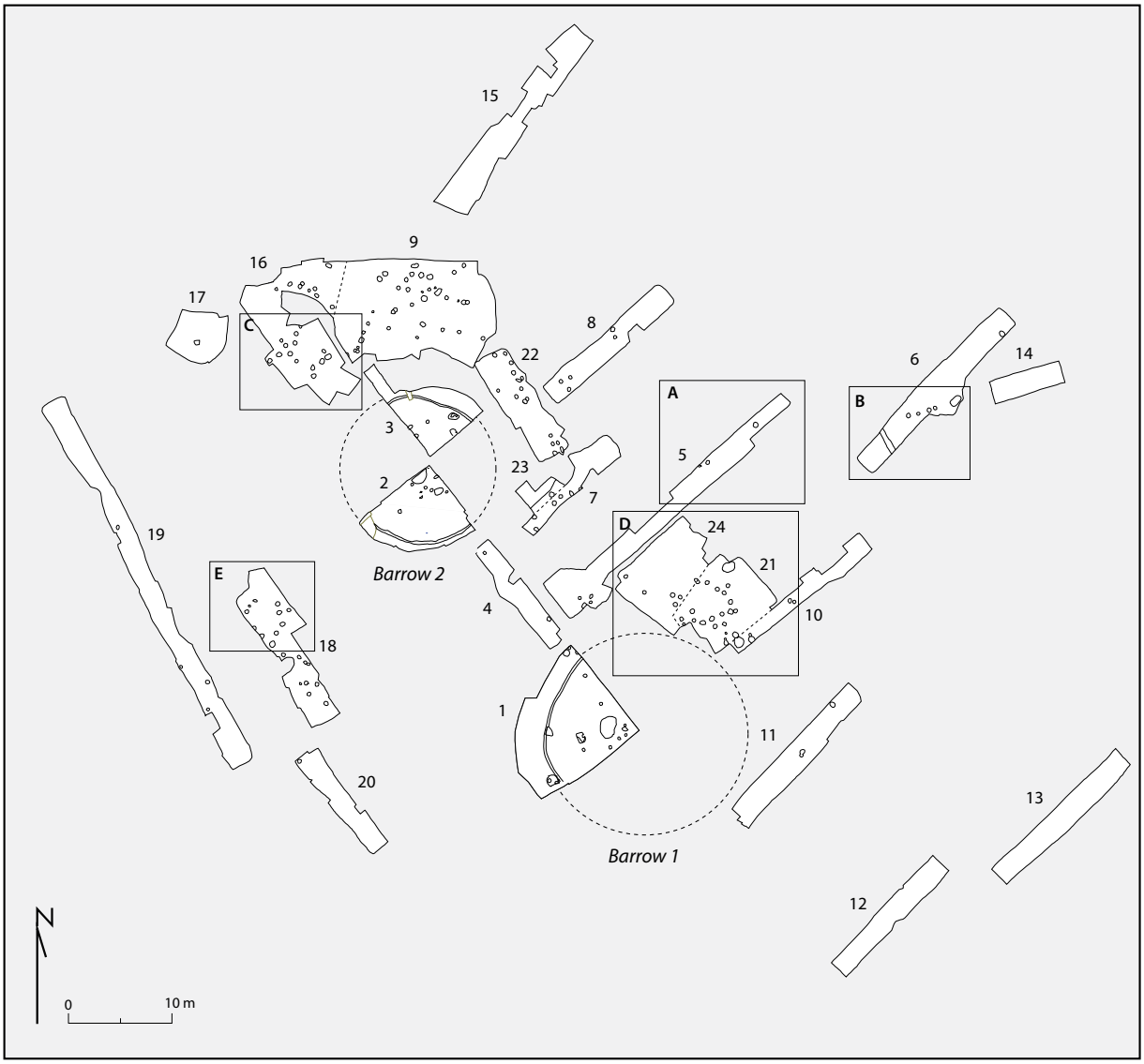

Fig. 4.1 Plan of all trenches around the barrows. Trench numbers are indicated. Rectangles refer to details depicted in other figures of this chapter. Drawing by P. Valentijn.

986 m² or 10% (Fig. 4.1). It was planned to create trenches of approximately 2 m wide, which were 9 m apart. If space permitted, interesting configurations of features were to be excavated in a larger trench. If no features were found in two parallel trenches, a new one was planned in between. In reality, the many obstacles in the forest forced us to be flexible. Not every cluster of features could be excavated within the most optimal trenches. Due to logistical reasons, it proved to be impossible to excavate between mound 2 and trench 18: the path here had to remain accessible, and rain water had formed pools at this place. For the same reason, we could not investigate the southwest side of mound 1. When the opportunity arose, we created relatively large trenches, like trench 9. We also tried to follow configurations of features that might represent structures, like a post alignment (trench 6 and 14).

Trenches were dug with a small mobile excavator (*4 t midi excavator*). The second author was always present when they were created, together with Mr A. Manders, who used his metal detector to inspect for finds and features beforehand. The first author took care of the further investigation of the features in most trenches.

The procedure for excavating trenches was as follows. After removing the top soil (vegetation), a first horizontal level was created half way in the A horizon of the top soil. If no features were recognized, a new level, 5 to 10 cm deeper, was created. Usually, features became visible at the transition of the A to the B horizon if there was a Moder Podzol. In the few cases where locally a Humus Podzol had developed (with an eluvial or E horizon) features could already be distinguished at a higher level. Once features were recognizable, the surface was shovelled clean and drawn. In each trench, at a distance of 10 m, a 1 m wide "box" was dug as deep as well into the substrate or C horizon. This allowed us to inspect the soils that had developed. All these profiles were drawn and photographed. Individual sections were prepared over each feature, which were drawn at a 1:10 scale and photographed. The description was always checked by both authors in order to reach as much as possible uniformity in soil and feature description. Although colour descriptions always tend to be subjective, we thus were able to establish comparable descriptions, also between features from different trenches.

4.3 Soil profile and visibility of the features

Moder Podzols have developed in most of the iron and mineral rich Pleistocene Rhine and Meuse deposits making up the glacial ridges of the *Veluwe* (Berendsen 2005b, 55). Such Podzols are characterized by a well-developed B horizon, resulting from the illuviation of non-amorphous humus together with iron-compounds (Berendsen, 2005a, 100-1). The soils at the Echoput are mainly *holtpodzols*. In the Dutch System of Soil Classification (*Systeem van Bodemclassificatie voor Nederland – De Hogere Niveaus*) these are a suborder of Moder Podzols, and can be distinguished by a thin A horizon and a brownish B horizon (Berendsen 2005a, 100-1). There is no leached out, eluvial horizon (see also the general description in section 1.9). In general the soil profile at the site is as follows (Fig. 4.2):

- O horizon: Litter layer of un-decomposed plant remains with a depth of 5-20 cm.
- A horizon: Mineral soil of (almost) fully decomposed organic materials with a depth of 10-30 cm. This horizon has a dark grey colour and consists of loamy sand with low gravel content.
- With regard to lithology: at the bottom of the A horizon, at the transition to the B horizon, a thin layer of pebbles and coarse gravel was observed in several profiles.

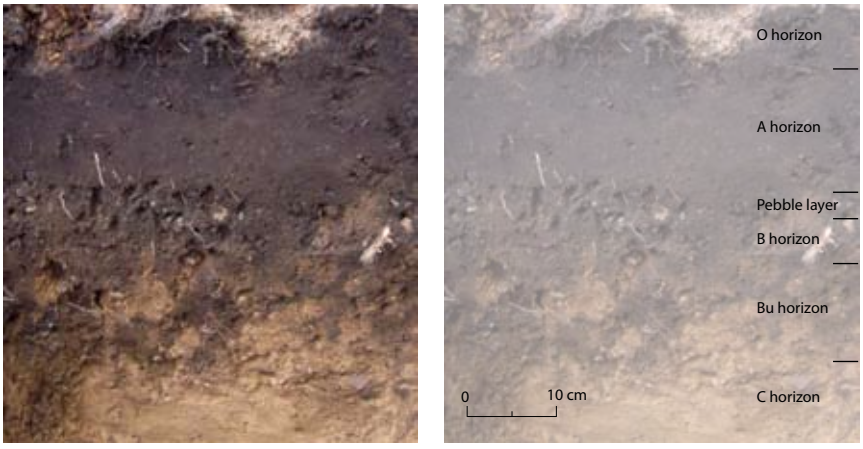

Fig. 4.2 Profile section (trench 16 profile 2). Photograph by P. Valentijn.

- B horizon: Mineral, iron and humus accumulation layer which in most soil profiles could be divided in two sub-horizons, with a gradual, often cluttered transition.
- An upper part (B horizon) with a depth of 5-15 cm. This part has a brown to dark brown colour, with sometimes a greyish accent. Lithologically, it has formed in a matrix of loamy sand, with a low to high gravel content.
- The lower part (Bu horizon) has a depth of 15-40 cm. This part has a light/yellow brown to brown colouring. Lithologically, we find this sub-horizon often in a matrix of loamy sands, with a low to high gravel content.
- This B horizon is often (very) mottled as the result of bioturbation, especially the lower part.
- C horizon: Zone that had only minimally been influenced by soil formation processes. This horizon has a yellow to brown yellow colouring and a varying lithology, ranging from fine to coarse sand and from loamy to gravely.

At a few places Humus Podzols had formed. These can be characterized as a *haarpodsol* in the Dutch soil classification, which in general are characterized by a thin A horizon, a clear, grey E horizon, and a well-developed B horizon consisting of illuvial amorphous humus (Berendsen 2005a, 100-1). Some of the Moder Podzols

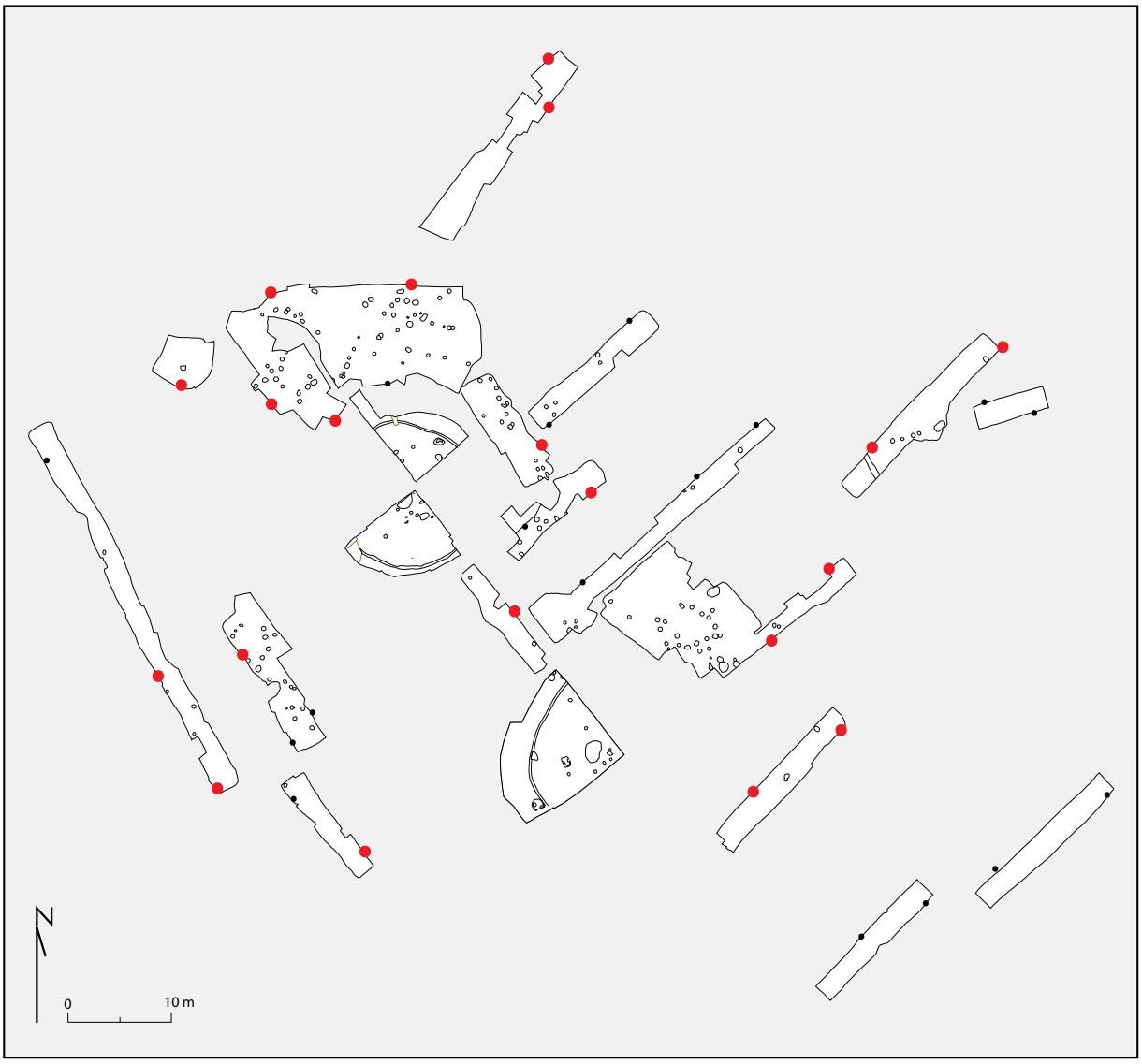

Fig. 4.3 Plan of all trenches. Indicated with a big red dot are locations where an eluviated E Horizon developed. Small dots represent profiles with a Moder Podzol soil. Drawing by P. Valentijn.

display signs of a developing Humus Podzol, such as a weakly developed E horizon and/or thin illuviation layers in the B and C horizon (*fibers* in Dutch) (Fig. 4.3). Soil formation is influenced by several factors, of which local variation in parent material is the most likely to have caused the differences in soil types at the site. In general Humus Podzols have formed in the coarse sanded and gravel rich deposits of the *Veluwe* glacial ridges. In contrast to the fine sanded, loam rich deposits – in which mostly Moder Podzols have formed – these coarse deposits lack a high mineral component. This results in a low production of bases, and subsequently low pH values and higher podzolization (personal communication Th. Spek, July 2007).

The upper part of the soils on the site is unusually thick (15-25 cm) and rich in humus (approximate percentage of organic materials 8-10%) in comparison to the soils in the wider area of the *Veluwe* (personal communication Th. Spek, July 2007). Henk de Bakker (retired pedologist at Wageningen University, who used to study the soils at the *Kroondomeinen*) explained that the soils at the site were probably saved from large scale collecting of litter and sods at the end of the 17th century to the beginning of the 20th century. Also, the site was not disturbed by the large scale forestry activity at the *Kroondomeinen* during the first half of the 20th century. The soils at the site are therefore undisturbed forest soils, which are a rarity in the Netherlands and north-western Europe in general (personal communication Th. Spek, July 2007). During the excavation of the burial mounds themselves, we found several indications that this dark A horizon must have formed long after the barrows were built (Chapter 2, spec. section 2.5.5 and 2.5.7).

The matrix in which the soils have formed is of a heterogenous nature. This is the result of horizontal Pleistocene Meuse and Rhine deposits being pushed upwards obliquely by glacial ice, when the ridges of the *Veluwe* were formed (Berendsen 2004, 165). Over a distance of only a few meters the substrate on the site can change from fine sands to coarse sands and from loamy to gravely sediments. The top layer (15-25 cm) of the substrate at the site is almost devoid of any gravel. This part might be the result of eolian activity at the end of the Weichselian glacial. Beneath the top layer a layer of pebbles and coarse gravel is visible at some places (Dutch: *grindsnoer)*. The content of coarse gravel and pebbles in the upper parts of the substrate is highest on the top of the hill near barrow 2 and decreases towards the flanks of the *Echoput* hill (Fig. 4.4).

Many of the soil characteristics described above can be seen in the lengthy profile connecting the profiles of the barrows (Fig.4.5). At the top there is a thick A horizon, with a pebble layer at the bottom running over almost the entire length of the profile. In the west, a weakly-developed E horizon is visible. In the eastern part the varying nature of the parent material becomes clearly visible. At a distance of less than 5 m several oblique layers of fine sand, gravely sand, very gravely sand and very loamy sand follow up on each other.

When trying to follow the old surface beneath mound 1 along the length of the connecting profile it becomes clear that it does not join with the top of the A horizon outside the barrow (Fig. 4.5). In contrast to the old surface beneath mound 2, it does not gradually descend into the A horizon. Obviously a part of the top soil around mound 1 is missing. An explanation for this could be that the sods used for erecting the barrow were cut in the direct vicinity of the mound, thus removing the upper part of the soil. Another plausibility is that the sods used by the *ROB* for consolidating mound 1 in 1999, of which we know that they were cut somewhere in the vicinity of the barrow, were stripped here.

In general, the soil on the site is undisturbed, except for the profiles in the southern half of trench 18. Features could quite easily be distinguished from their surrounding matrix, usually at the transition from the A to B horizon in the

Fig. 4.4 Plan of all trenches. Indicated with a big green dot are locations where a concentration of gravel and pebbles are found in the substrate. Small dots represent locations where gravel is low or absent. Drawing by P. Valentijn.

Moder Podzols or even higher up in the Humus Podzols. Only the features with a light colour and diffuse borders, which are probably the oldest features, were hard to discern.

4.4 A Middle Bronze Age feature?

Although many features have been found in the trenches, the amount of artefacts and charcoal found in them is surprisingly low. Despite the considerable effort put into detecting possible archaeological remains during the excavation of the features, only one feature contained a small piece of charcoal. The fill of feature S 16 in trench 5 (Fig. 4.6) contained 0.3 g of charcoal (V 51). C14-dating of the charcoal yielded a date of 3195 ±30 BP. Calibrated with OxCal 4.1 (IntCal 09) this comes down to a dating of 1517-1417 cal. BC (2σ range), at the transition of the Middle Bronze Age A to B that is. However, in comparison to the features of Late Neolithic date found beneath the barrows (see Chapter 2 and 3, sections 2.5.12 and 3.5.5) feature S 16 has a "young" appearance, due to its darker colour and sharper edges. At first instance, feature S 16 was interpreted in the field as a posthole, because of its homogeneous, grey fill and rather sharp edges. But after we made a cross section through it, a natural origin for the feature seemed

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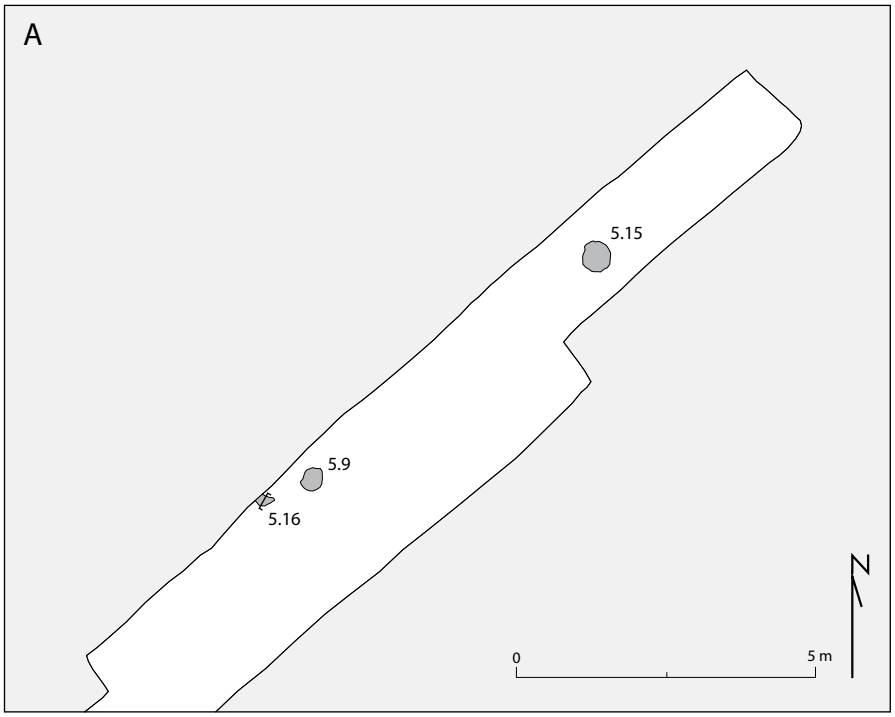


Fig. 4.6 Plan of features in trench 5. Drawing by P. Valentijn.

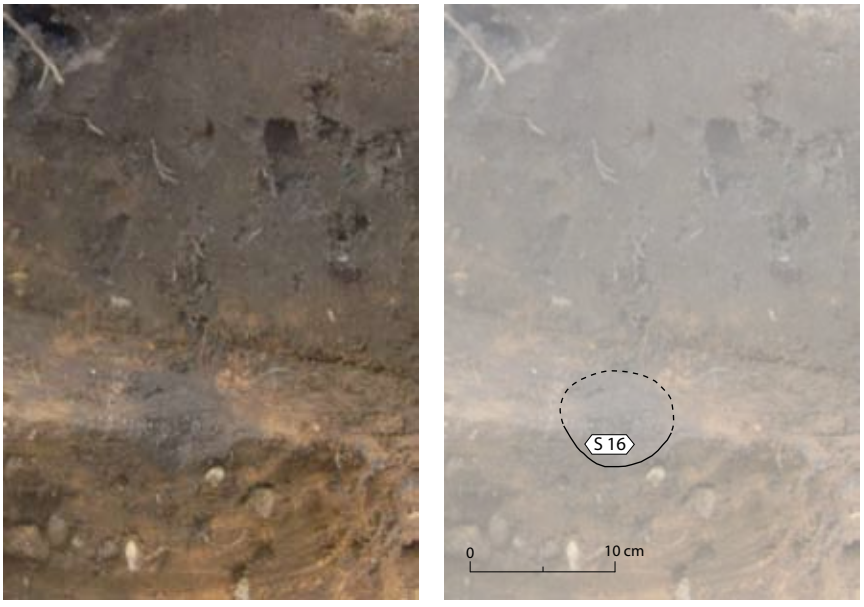


Fig. 4.7 Photograph of S 16 (by P. Valentijn).

equally likely, as this small feature (8 cm deep) strongly resembles the "spurs" at the bottom of the soil's B horizon (Fig. 4.7). So an anthropogenic nature for this feature is uncertain, which means that the charcoal might be an intrusion caused by sedimentary processes, like bioturbation.

4.5 A ditch and a post alignment?

In trench 6 four features (S 1 to S 4) were found which can be interpreted as the traces of a small post alignment, orientated west-southwest to east-northeast. To the northeast of the alignment we found the traces of a pit, S 5 (Fig. 4.8). The position of the pit, in line with the post alignment, suggests that they are related. The features are comparable in fill and shape, with the exception of S 5 which is

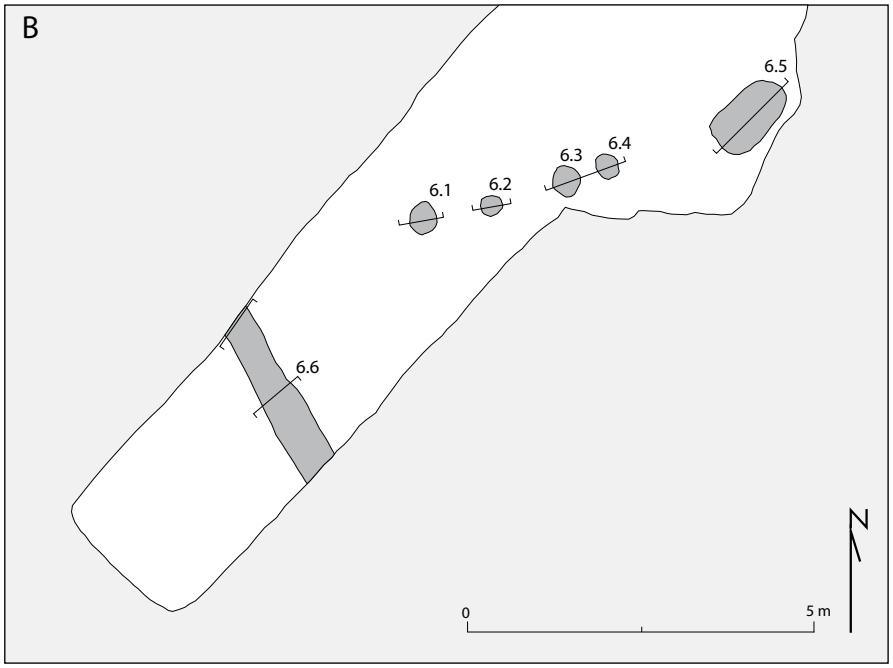


Fig. 4.8 Detail of features in trench 6. Drawing by P. Valentijn.

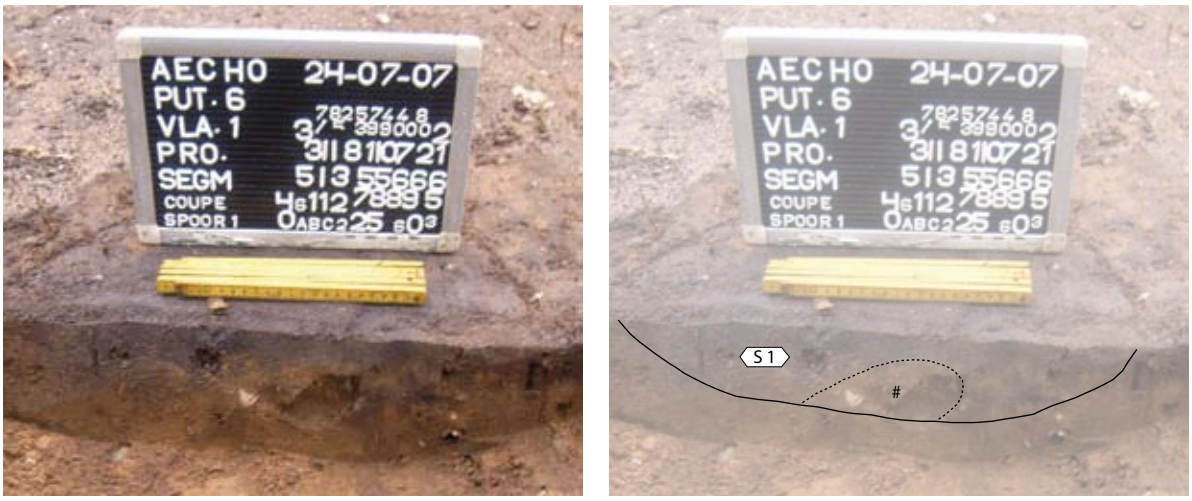


Fig. 4.9 S 1 in trench 6, view to the south. (by P. Valentijn).

larger (Fig. 4.9 - 4.10). The fill of these bowl-shaped features consists of dark grey, loamy sand and the edges of the features are cluttered due to bioturbation. This homogeneity of the features supports the idea that they belong to a single structure. Unfortunately, due to the presence of tree trunks, it could not be checked whether the alignment continues westwards. It may have been part of a larger construction (like a house). At any rate, the post row does not seem to align with any features found in the trenches to the southwest of trench 6 (Fig. 4.1).

To the south of the post alignment in trench 6 a southwest-northeast orientated ditch was found (S 6; Fig. 4.8). In cross-section this shallow ditch has an irregular bowl-shape, a width of 50-70 cm and a depth of 20-30 cm (Fig. 4.11). The diffuse edges and light brownish to light yellow brownish colour of its fill suggest a date older than the post alignment. Unfortunately, this dating cannot be verified due to the absence of any finds.

Fig. 4.10 Traces of post row in trench 6 in the field. View to the south (by P. Valentijn).

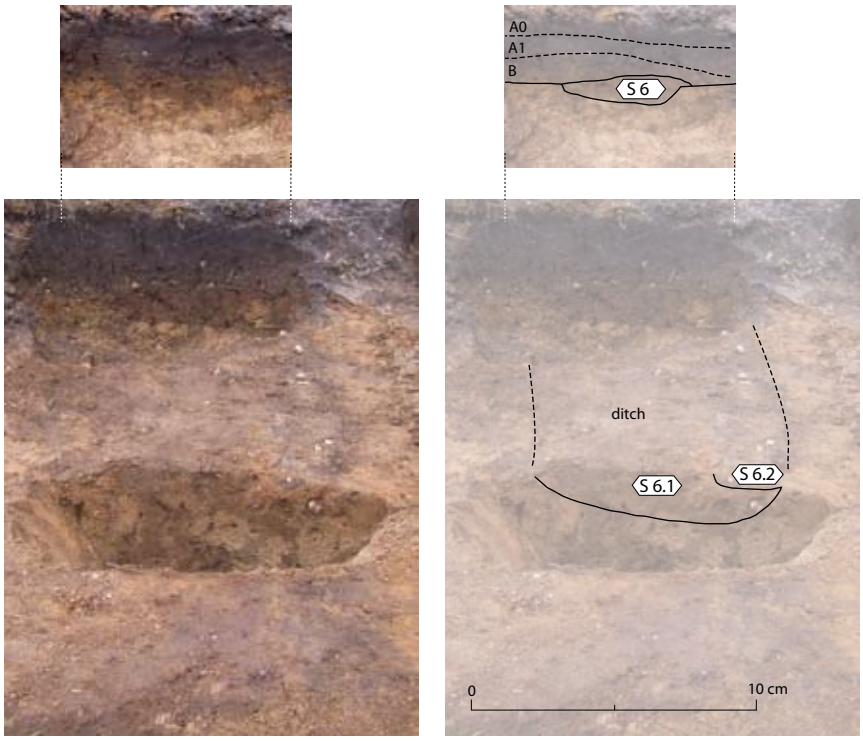
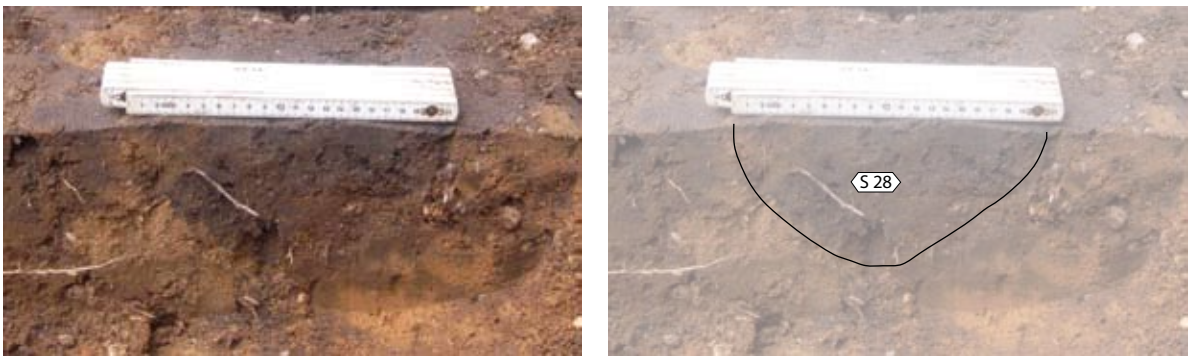


Fig. 4.11 Traces of a ditch (S 6). View to the north (by P. Valentijn).

4.6 A cluster of features around mound 2

In the trenches to the north and east of barrow 2 a surprisingly large cluster of postholes and pits was discovered (Fig. 4.1). This cluster is clearly limited to the trenches 9, 16, 22 and 7/23, as the surrounding trenches do not contain any features. When excavating the trenches the features were quite easily to discern. Their rather dark colour and sharp edges, in comparison to the Mesolithic and Neolithic features found beneath the barrows (see section 2.5.12 and section 3.5.5), sug-



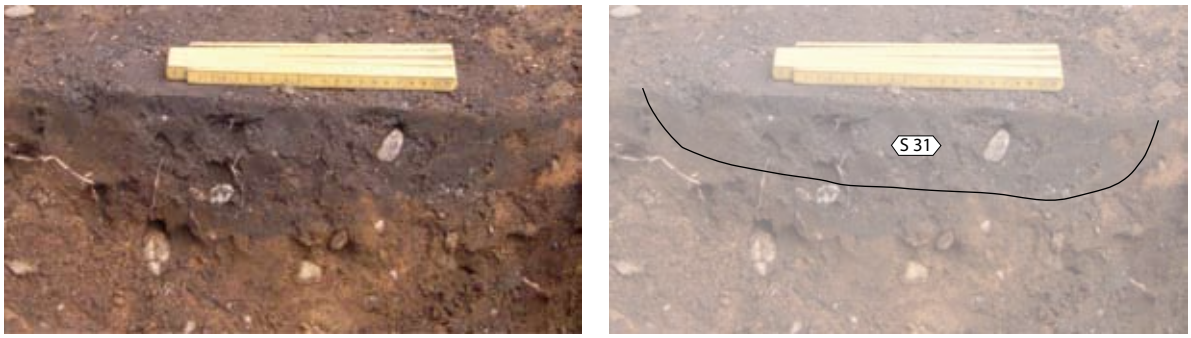


Fig. 4.12 (top) Photograph of trench 9 S 28. (by P. Valentijn).

Fig. 4.13 (bottom) Photograph of trench 9 S 31 (by P. Valentijn).

gest that they are of a younger date. As the features are devoid of any finds it is impossible to date them with any precision. However, pollen from a few features of trench 9 and 16 suggests a date in the Late Medieval Period (see Chapter 5).

The colour of the features in these trenches ranges from grey to dark grey, sometimes with a brownish or a blue accent. Their contours range from fairly sharp to very diffuse. In general the features are (irregularly) bowl-shaped and most features have a maximum depth between 5 and 15 cm and a maximum width between 30 and 50 cm (Fig. 4.12- 4.13). Most of them are the traces of posts, and a few are the remains of pits. We do not know how to interpret this configuration of traces. As the features do not contain any finds, not even a tiny piece of charcoal, it is unlikely that they are the remains of a settlement or long-term occupation. No obvious structures can be discerned, although several clusters and rows of features are visible. However, the discovery of features was severely hampered in the field by the presence of trees, which limited the possibilities to extend trenches, resulting in several un-investigated areas in between the trenches. Also, the substantial variation in lithology and soils makes it hard to discern structures on the basis of fill characteristics. Soils in these trenches can be characterized as both Moder and Humus Podzols and the lithology of the substrate ranges from fine to coarse sands, with varying loam contents. It is therefore not unlikely that the variation in fill characteristics has resulted from local differences in geology and does not have any significance for the dating and functional interpretation of features.

Only in the southern half of trench 16 we recognized a structure in the configuration of features. Here several features (S 1 to 14) make up a possible round structure with an opening to the north (Fig. 4.14). The structure has a maximum width (east-west) of 3.8 m and maximum length (north-south) of 4.2 m (distances measured from centre to centre of the innermost postholes). These distances are not unlike those of the round structure discovered in trench 21 and 24 (see below section 4.7) and the possible structure in trench 18 (see section 4.8). However, tree trunks to the south, to the north and at the centre of this structure, made it

Fig. 4.14 Detail of features in trench 16. Drawing by P. Valentijn.

impossible to fully excavate this possible structure. So whether we are dealing here with a true structure or not will remain unknown. The depth of the features making up the structure lies between 5 and 18 cm, with most features having a depth of 11 to 15 cm. They have a dark grey fill with rather sharp edges. However, the features making up the south-eastern part of the feature have a blue accent. This need not indicate a difference in origin for these features, but could have resulted from differences in local geology. Pollen from feature S 1 and 7 have provided a dating for this possible structure in the Late Medieval Period (see Chapter 5).

During the excavation of trench 9 a large stone artefact was found. This object was not associated with a feature. It was just below the top soil. The stone appeared to be a granite quernstone, which must be of prehistoric origin (section 6.4.2).

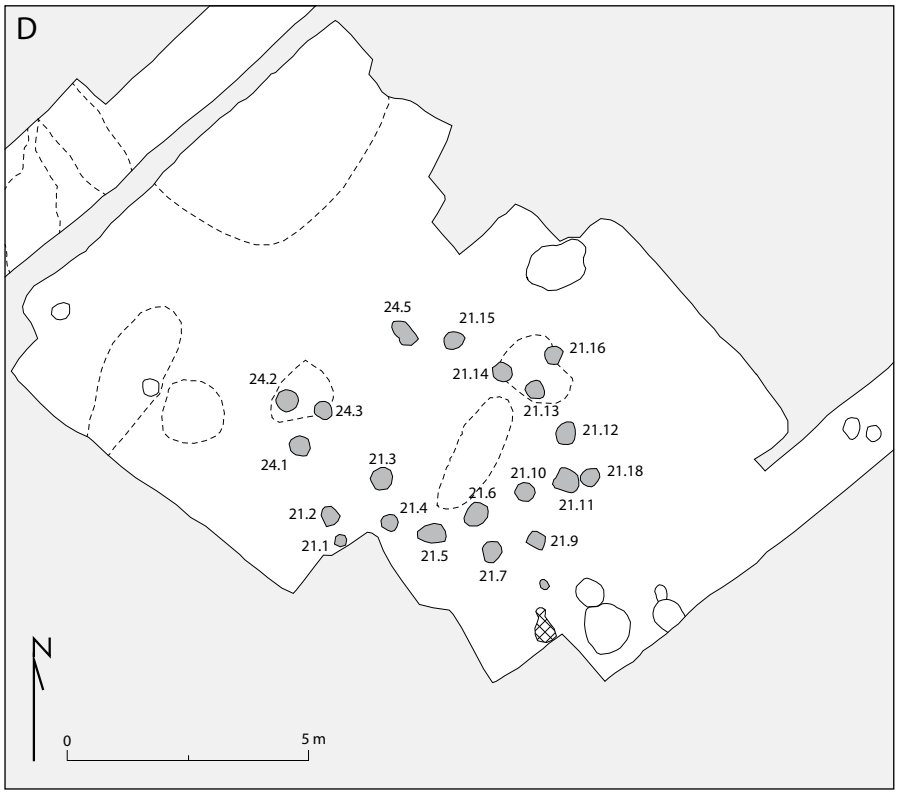
4.7 A round construction

Amongst the many features discovered in the trenches only one structure could clearly be discerned. This structure was discovered in trench 21 and 24, at the foot of barrow 1. It was recognized as such during the field work. Here several traces of postholes (trench 21, S 1-7, 9-16, 18 and trench 24, S 1-3, 5) make up a round structure (Fig. 4.15). The fill of these features resembles that of the features found to the north and east of barrow 2 (see above section 4.6). However, the nature of the traces is remarkably homogeneous, compared to the clusters of features found in other trenches. Most of the features have a dark grey, bowl-shaped fill with more or less diffuse edges, except for features S 13, 14 and 16 (trench 21) which are formed in a coarser, less loamy substrate and have a lighter colour (Fig. 4.16). The maximum depth of the features ranges between 5 and 20 cm, and for most features between 8 and 16 cm. The maximum width of the features ranges between 24 and 56 cm, with most features having a width of 30-45 cm. Only the remnants of pits in which once posts have stood were present (*paalkuil*) – no traces of the actual posts remained (*paalgat*). Feature S 5 (trench 24) might represent the traces of two posts, as the southern half of its fill has a slightly darker colour (Fig. 4.17). This might be the fill of a second posthole cutting into an older one. However, this interpretation is uncertain, since the border between the two fills is quite diffuse.

The configuration of features suggest that there was an irregular inner circle of twelve posts (trench 21, S 3, 4, 5 6, 10, 11, 12, 13, 14, 15 and trench 24, S 2, 3, 5) with six outer posts (trench 21, S 1, 2, 7, 9, 16 and trench 24, S 1). The distance between the posts making up the inner circle ranges between 0.5 and 1.8 m, with a distance between 0.9 and 1.2 m being most common. The distance between the inner and outer posts ranges between 0.8 and 1.3 m. The structure has a maximum (southwest-northeast) width of 4.05m and a length (northwest-southeast) of 4.07 m (distances are measured from centre to centre of the innermost features). There is an opening in the structure to the north-west with a width of 2.75 m.

It is difficult to establish the dating of the structure. As the features were devoid of any finds, artefacts provide no means for dating the structure. A date is indicated, however, by the analysis of the pollen from the fill of the features. The pollen spectra from the fill of the postholes, suggest a younger date than those from sods of the barrows. The pollen indicate a Late Medieval or (early) Post Medieval date for the structure (see Chapter 5).

The absence of finds from the features and the unusual and irregular shape of the structure, make it hard to get an idea on its nature and function. Some prehistoric and medieval parallels have been found, though. Round structures dating to the Middle Ages are not uncommon in the Netherlands (Doesburg *et al.* 2009, 75-84). Most of these are interpreted as haystacks or granaries. These have a diameter of almost 3 m to 8 m. Most of them consist of five, six or seven posts and sometimes they have a central post. A few have eight, nine or ten posts. Our structure differs from these in that the distance between the poles of the medieval structures is larger. Also, the medieval constructions did not have an entrance or opening and the number of posts used is higher in the case of our round construction. Round or oval medieval and post-medieval structures with an opening and a larger number of posts are known from the Dutch sites *Den Dolder-Fornheze*



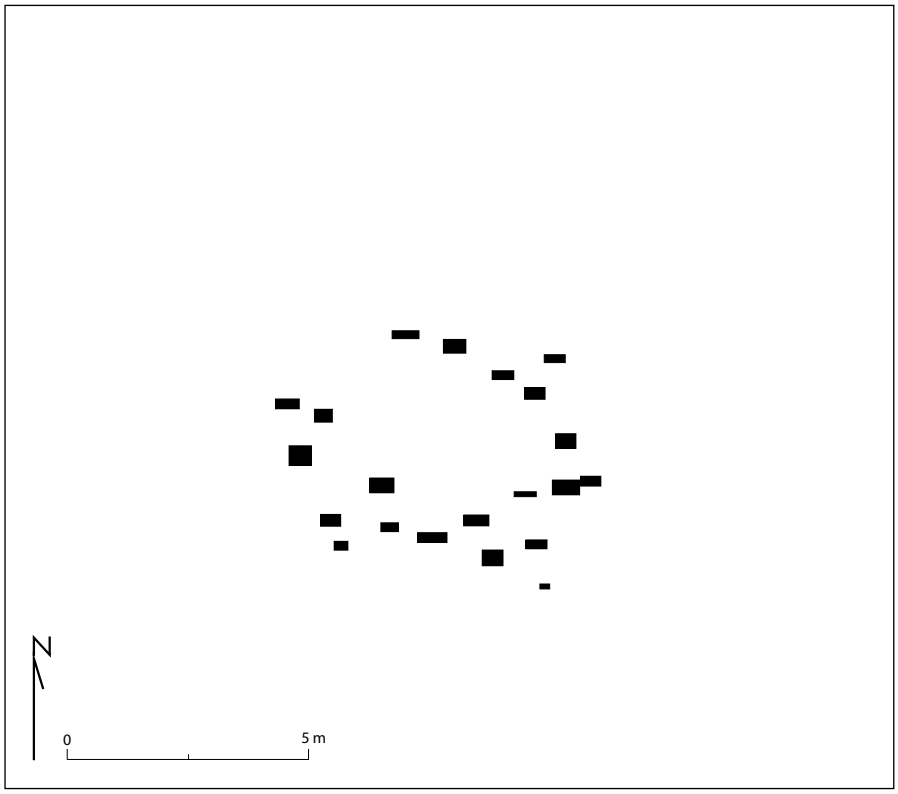


Fig. 4.15 Detail of features in trench 21 and 24. Drawing by P. Valentijn.

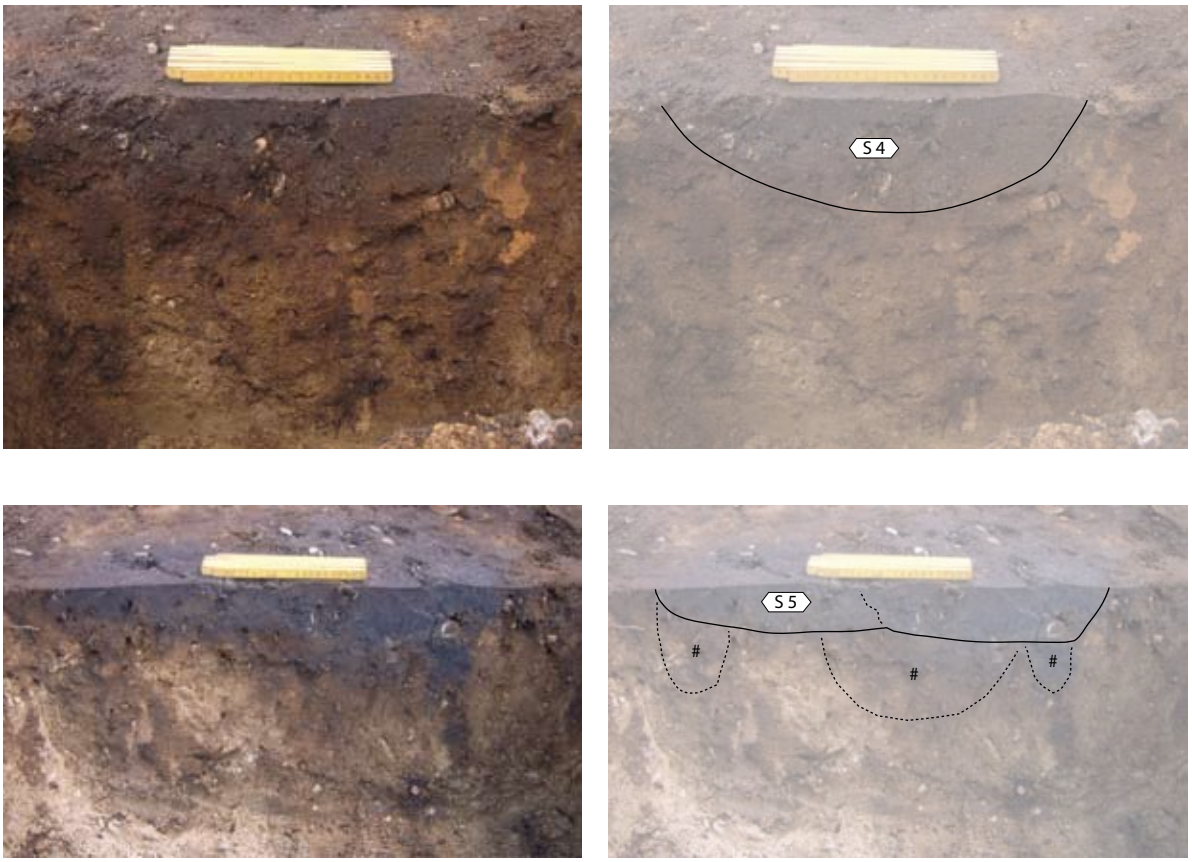


Fig. 4.16 (top) Photograph of S 4 in trench 21. (by P. Valentijn).

Fig. 4.17 (bottom) Photograph of S 5 in trench 24. (by P. Valentijn).

(Doesburg et al. 2009), *Baarn-De Drie Eiken* (Van Tent 1996, 31), and a site near *Nuland* (Van Doele/Van Genabeek 2004, 13-5 and 35-8). These structures have been interpreted as huts to stall sheep. However, they too do not appear to be valid analogies, as our example does not have much space for sheep. On top of that, the above-mentioned examples differ significantly in the regularity used in positioning the posts, the large diameter of the posts, the diameter of the structures (in excess of 12 m), and the distance between the posts (1.25- 2 m).

During an excavation near *Losser* (Province of *Overijssel*) in 1939 more than a hundred round structures were said to be discovered, together with several oblong and rectangular structures (Hijszeler 1946). These structures have a diameter between 2-3 to 3.5 m, with the largest structure measuring 4.5 by 5 m. They consist of 5 to 16 posts. In this they are not unlike our construction, but the ones from *Losser* are far more regular in the way the posts were placed. The dating of these round structures is a difficult matter as only one sherd of Roman *terra nigra* pottery was found. On the basis of several doubtful analogies, Hijszeler dates these structures to the first centuries *AD*. According to him they are the remnants of wooden huts, as slabs of clay were found near the postholes and at some occasions burnt loam was found in the postholes.

Although we could not find real parallels, the similarity between the features strongly suggest that they were once part of one construction and it seems not too far-fetched to suppose that we are dealing with the remnants of a round hut. We hypothesize that we may be dealing here with a temporary shelter for shepherds, as they are known from many places at the *Veluwe* in more recent times (19th and early 20th century). Extensive sheep grazing, after all, is something that may have

been expected to have been practiced widely here in Late Medieval and early Post-Medieval times (*cf.* the indications for heaths in that period presented in Chapter 5).

To the north of the round structure, a musket bullet was found during the excavation of trench 5. These date to the Post-Medieval/Modern Period and may well evidence hunting activities taking place in the *Echoput* forest.

4.8 Features near the westernmost flank of the hill

On the westernmost flank of the hill three trenches were excavated (trench 18, 19 and 20). Of these, only trench 18, nearest to the summit of the hill, yielded a significant amount of features. To the west, down the flank, signs of human activity were almost completely lacking, except for a few features without finds.

In the northern half of trench 18 a rather homogeneous cluster of posthole traces was recognized (S 10 to 20). These bowl-shaped features have a grey fill with cluttered or diffuse edges and a maximum depth between 7 and 20 cm, with most features being 10-12 cm deep. They might be part of a round structure with an opening to the north (Fig. 4.18). This possible structure would have a maximum width (east-west) of 3.2 m and a maximum length (north-south) of 4 m. The opening is 2.3 m wide (distances measured from centre to centre of the innermost postholes). These distances are quite similar to the possible structure in trench 16 and the round structure in trench 21 and 24. Its validity can, however, not be checked, as the presence of tree trunks made it impossible in the field to follow the outline of this possible structure. Like the features in other trenches, the features in trench 18 contained no finds, so dating this possible structure is impossible.

The southern half of trench contained a more heterogeneous cluster of postholes and pits, with differing fill colours and depths. No apparent structure is discernible among them. What was readily apparent, however, was the disturbance of several features. These disturbances were caused by a recently dug hole, which contained the residuals of the sand used for restoring the barrows in 1999. Pollen from feature S 2 provide a date in Late Medieval times (see Chapter 5).

4.9 Conclusions

Excavations of the environment of barrows have only rarely been carried out. The investigation of the surroundings of the mounds at the *Echoput* has proven to be worthwhile. Over a hundred features have been discovered on the relatively small surface at the top of the hill! These are clearly confined to the immediate surroundings of the barrows. Especially to the north of mound 2 the density of features was high. Towards the flanks of the hill remnants of human activity are obviously lacking.

The excavated features were very well preserved in the undisturbed Moder Podzols. Amongst them one round structure, a small post row, a ditch and two possible structures could be discerned. Unfortunately, hardly any artefact was found in them. Only one sherd was found. It has been dated to the Late Neolithic, and was found in one of the features of the post row. For the rest of the features, we practically have no clues for further dating and interpretation. Medieval and Modern sheep huts and the round structures from *Losser* have some similarities to the (hypothetical) round structures recognized during the excavation, but no exact parallels could be found. The round structure at the foot of mound 1 might

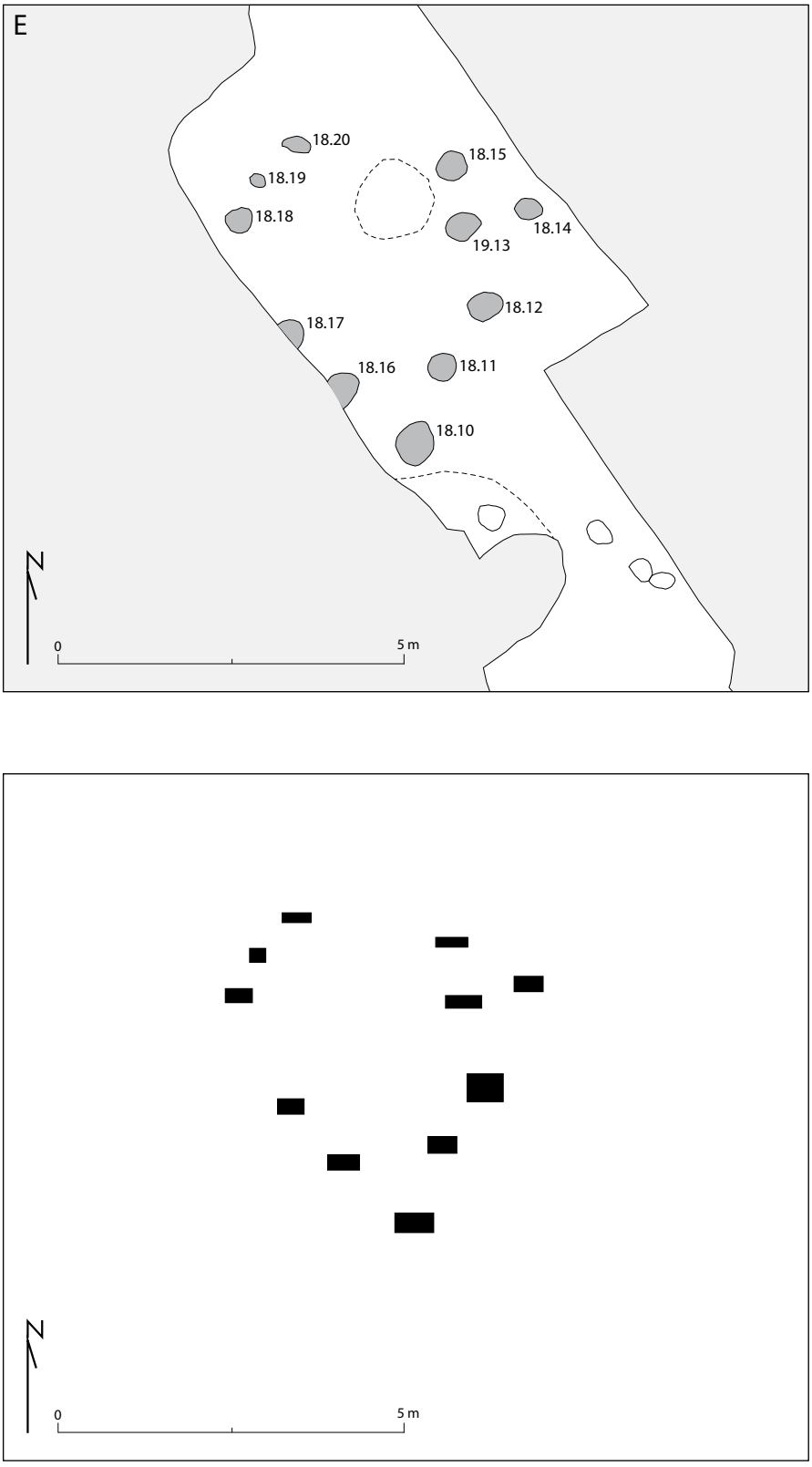


Fig. 4.18 Detail of features in trench 18. Drawing by P.Valentijn.

represent a little hut. The pollen spectra from the features of the structures in trench 21/24 and 16 date them to Late Medieval times or later. It is well possible that such a small hut served as a shelter for shepherds.

This leaves us with a somewhat uneasy result: we have shown that there are indeed many good archaeological features around these barrows, but we are at present unable to make more sense of them. In spite of the few positive indications for Late Medieval or Post-Medieval dates of certain features, it is still very well possible that the cluster of features contains older traces as well – maybe even remnants of activities related to the burial rituals that resulted in the excavated barrows. Future barrow excavations therefore need to focus on the immediate surroundings of barrows to substantiate and further develop our insights on the organization of this environment.

Chapter 5

AN ENVIRONMENTAL HISTORY OF THE *ECHOPUT* BARROWS

Marieke Doorenbosch

5.1 Introduction

The previous chapter presented the results of the partial excavation of the immediate surroundings of the barrows. In addition to this, a reconstruction of the prehistoric vegetation around the mounds is of great importance for grasping something of the place and role of the *Echoput* burial mounds in the wider (cultural) landscape. Analysis of pollen from the barrows is a way to achieve this. As set out in Chapter 1, the reconstruction of the environment around the barrows by means of pollen analysis was one of the most important goals of our fieldwork. This chapter will discuss the methods used, the sampling strategy and the results achieved.

Particularly in the Netherlands, pollen analysis is of old a well-established research technique to reconstruct the vegetation history in the environment around barrows. The first analysis of pollen from prehistoric barrows already dates from before the Second World War. Environmental studies of barrows were initiated by Prof. van Giffen. His ideas were carried out and improved by prof. Waterbolk (Waterbolk 1954). Later on, prof. van Zeist (van Zeist 1967), prof. Groenman-van Waateringe and dr Casparie (Casparie/Groenman-van Waateringe 1980) enlarged the data base on barrows and improved their interpretation. Since then, the environmental analysis of barrows was carried out according to the routines set out by the four scientists mentioned. It has been thought for a long time that there was sufficient knowledge on 3rd and 2nd millennium cal. BC barrows, but recently it became clear that important information is still missing (Fontijn 2007b). Research by Casparie/Groenman van Waateringe (1980) and Groenman-Van Waateringe (2005), for example, indicated that barrows were built in open spaces. However, the origin of these open spaces is still unclear. An important part of the research project at the *Echoput* is to find out more about the landscape at the site the barrows were built: what did the landscape look like at that time? Was there indeed an open spot in the landscape before the mounds were built? What was the size of this open place and when and with which purpose was this open space created? It is well possible that there already was an open spot long before the barrow was built. If it was already there, it is an intriguing question what the purpose of this open place was. Was it, for example, part of an economic zone of the settlement? In order to deal with such questions, the vegetation that was growing in the surroundings of the open space has to be reconstructed.

5.2 Present day environmental setting

The *Echoput* hill is a somewhat deviant place in the local environment. It is one of the highest places in this part of the *Veluwe* (95 m + *NAP*). The *Veluwe* exhibits an average yearly precipitation sum which is considerably higher than in most parts of the Netherlands, since orographic precipitation occurs on the elevated parts, like at the *Echoput*. The moist air is forced to ascend where the landscape is elevated, causing the air to cool down, to form clouds and to rain out. The local (loamy) soil conditions prevent the water from draining off immediately, which makes the *Echoput* hill a very wet place. See for a more detailed description of the soils Chapter 1 and 4.

The surrounding area is covered with mixed forest (deciduous and coniferous forest). The deciduous forest consists mainly of oak coppice (*Quercus sp.)*, with an undergrowth of blueberries (*Vaccinium myrtillus)* and grasses, but also birches (*Betula sp)* and beeches (*Fagus sylvatica)* are present. The coniferous forest consists mostly of pines (*Pinus sp*.), together with some Douglas-firs (*Pseudotsuga menziesii*) and Larches (*Larix sp*.). The barrows were almost invisibly located in the forest until 1999, when both barrows were consolidated. The above ground parts of the trees on and around the barrows were removed and they were covered with white sand to regain their presumed original shape.

5.3 Research method: Pollen sampling and analysis

Pollen precipitates on the surface every year and gets more or less evenly distributed in the top soil. Pollen disappears due to corrosion and outwash, but normally there is an equilibrium between the supply and disappearance of pollen. Therefore, the pollen in the topsoil represents the vegetation of the regional and local surroundings of the period before. After a barrow was built, the surface with the pollen from the years before was sealed from the air. New pollen was prevented from precipitating on the surface and the corrosion and outwash of the pollen under the barrow was reduced. Analyses of the pollen in the old surface of a barrow provide information about the surrounding vegetation of the barrow from the time before it was built. This principle has been used in order to reconstruct the landscape around the *Echoput* barrows. Both mounds were built on a Moder Podzol (Dutch classification: *holtpodsol;* section 1.9 and 4.3). They were constructed of still clearly visible sods, which were taken from a *holtpodsol* identical to the one that had formed in the soil they were placed on (see Chapter 2 and 3). The old surface was recognizable in the soil profile (Fig. 2.17, 2.18 and 3.7 - 3.8). For each mound, individual samples were collected from different locations in and under the barrows by Prof. C. Bakels and Ms Y. Achterkamp MA (University of Leiden, the Netherlands). From each mound several samples were taken from the old surface underneath the barrows, where the old surface was clearly visible. In addition several samples from the top (*e.g.* the old surface) of different well recognizable sods of both barrows were taken. Samples were also taken from the bottom of the ditch around barrow 1 and from the fill of a small pit that was found underneath barrow 1 (see Fig. 2.21 and 2.22 (V 267, put1; *cf*. section 2.5.12). For sampling, about ten cm^3 of soil was collected by cutting a piece of soil out of about one cm high, five cm broad and two cm deep. From these samples a selection has been made to analyse, based on the quality (colour and texture) of the soil. An overview of samples that have been taken and which have been analysed can be seen in table 5.1. The location of the analysed samples in the barrows is given in Fig. 2.17 and 2.18 (mound 1) and Fig. 3.8 (mound 2).

A rather new approach in the palynological research of barrows was applied in this investigation, by taking samples from the soil profile underneath the barrows. The samples from underneath barrow 2 have been analysed for this research. About ten cm^3 of soil was collected every centimetre over a length of 30 cm, containing the A and most of the B horizon (see Fig. 2.17). The reason to do this is to provide a pollen diagram which shows the vegetation development in the period before the barrow was built. Ideally pollen diagrams are derived from samples taken from peat or lake sediments. The formation of peat and lake sediments is well known and is described as an accumulation of organic material. In each layer of sediment pollen was caught. There is no longer vertical movement of organic material and therefore pollen from the lower peat layers represents the oldest vegetation. Although in a mineral soil there has been no accumulation of material with each successive layer containing a successive period of pollen precipitation, there are reasons to believe that such a pollen series also represents consecutive periods of vegetation compositions (Havinga 1963). The consequences for the interpretation of a mineral soil pollen diagram will be further discussed in 5.6.

Another experimental approach was achieved by sampling the fill of the places where posts were dug in close to the barrows (see Chapter 4). Samples were taken from the fill at the bottom of these features, which had an average dept of 5-15 cm, so sampling took place around 35-50 cm below ground level. The main purpose of the pollen analyses was to find out whether these post traces could be dated and possibly be linked to the barrows. A selection of samples has been made to analyse, so different post features would be represented. See table 5.1 for all sampling locations and the selected samples that have been analysed. This approach of sampling and the consequences for the interpretation will be further discussed in section 5.7.

Pollen was extracted by adding potassium hydroxide to one cm^3 of the sediments to remove humic acids. To every sample five *Lycopodium* pills were added as a marker. Heavy liquid separation (specific gravity 2.0) was performed to separate the inorganic material from the organic material. Finally the samples were acetolysed with a mixture of sulphuric acid (H_2SO_4) and acetic anhydride, to remove the large plant remains. Grains were identified with the aid of the keys of Faegri *et al.*(1989), Moore *et al.* (1991), Punt *et al.* (1976-2009) supplemented by Reille (Reille 1992; 1995; 1998), several lists set up by van Geel (van Hoeve/ Hendrikse 1998) and the reference collection of the Faculty of Archaeology of Leiden University. To calculate the spectra a pollen sum of ∑AP–*Betula* (van Zeist 1967) has been used. A minimum of 300 arboreal pollen grains (exclusive *Betula*) per sample have been counted.

5.4 Results

For barrow 1 four samples of the old surface, four sod samples, a sample taken from the ditch and a sample from a small pit underneath mound 1 have been analysed (see table 5.1 and Fig. 2.17 and 2.18). Sample 2 from the old surface did not contain enough pollen to count, as well as the ditch sample and the sample from the pit. The remaining samples contained sufficiently preserved pollen. From barrow 2 the three samples from the old surface and the three sod samples gave good results, although pollen preservation was relatively poor. From the pollen series that was taken the soil profile underneath barrow 2 results could be obtained from sample 1 until sample 25. Sample 25-29 were very poor in pollen numbers. The samples from the posthole features contained all very well preserved pollen. Below the results will be described.

5.4.1 Pollen from the old surface underneath the mounds and from the sods

Fig. 5.1 shows pollen spectra from the sod and old surface samples from barrow 1 and 2. Spectra are given in % based on a tree pollen sum minus *Betula* pollen. In the total AP (=arboreal pollen) *Betula* is included. In the total NAP (=non arboreal pollen) spores are included, non pollen palynomorphs are excluded. As shown in Fig. 5.1, the two mounds show no remarkable differences and therefore they will be discussed together. Also no differences could be noted between the old surface and the sods of both mounds, so the result description below counts for both the old surface and the sod spectra. The percentage of non arboreal pollen (NAP) exceeds the percentage of arboreal pollen (AP) in all samples. Especially heath (*Calluna vulgaris)* and less but still in considerable amounts Poaceae show high percentages. The most abundant tree pollen types are *Alnus* (35-70%)*, Quercus* (15-40%) and *Corylus* (15-25%). The presence of *Carpinus* in some of the spectra should be noted. Anthropogenic indicators (according to Behre 1986) are present in all the samples, with *Plantago lanceolata* and Asteraceae tubuliflorae as the most dominant. Non-pollen palynomorphs were mostly represented Sphagnum and moss features, but also *Debarya glyptosperma* and *Zygnema* type 314 (van Geel in: van Hoeve/Hendrikse 1998) are notable.

5.4.2 Pollen from the soil profile underneath mound 2

Fig. 5.2 shows the pollen diagram derived from the series of samples taken from underneath barrow 2. A percentage diagram is shown, with % based on a tree pollen sum minus *Betula.* In the AP (=arboreal pollen) *Betula* is included. In the total NAP (=non arboreal pollen) spores are included, non pollen palynomorphs are excluded. The zones described below are based on palynological changes in the diagram. This means they are not automatically chronological zones. For discussion about the zones, see below.

Zone 1

In this oldest part of the diagram a decrease in forest cover can be seen, 40% to 20%. The forest at the beginning of this period consisted mainly of *Tilia*, *Quercus* and *Alnus.* A decline of *Tilia* pollen is notable in this zone, as well as the appearance of *Fagus* pollen. The percentage of *Alnus* pollen shows an increase as well. Heath shows an expansion, as well as Poaceae. Anthropogenic indicators, like *Plantago lanceolata*, *Artemisia* and Asteraceae tubuliflorae are present in low amounts.

Zone 2

In zone 2 *Tilia* decreases further until almost no *Tilia* pollen was found anymore. *Corylus* shows an increase and the other tree species remain quite stable. *Calluna vulgaris* fluctuates between 100 and 200%, Poaceae between 50 and 100%. Anthropogenic indicators are present in higher amounts than in zone 1. The percentages of ferns and mosses have decreased, as well as *Sphagnum*.

Zone 3

Zone 3 shows a peak of *Tilia* pollen and a decrease of *Calluna vulgaris*. This zone is based on the top samples taken from the soil profile and it is very well possible that part of the sod above the old surface has been included in these samples. This sod also contains a soil profile, similar to the soil profile underneath the barrow.

Vervangen door uitklapkaart B

As a consequence it is likely that these samples do not represent the youngest vegetation composition in this diagram, but older, comparable to part of zone 2 in the diagram.

In all samples from the soil profile particles of charcoal have been found.

5.4.3 Pollen from the post features

See Fig. 5.3, where spectra are given in % based on a tree pollen sum minus *Betula* pollen. In the total AP (=arboreal pollen) *Betula* is included. In the total NAP (=non arboreal pollen) spores are included, non pollen palynomorphs are excluded. The location of the features samples in indicated in Fig. 5.8.

Trench 9

A very low percentage of arboreal pollen grains, 15-20%, can be seen. The absence of *Tilia* is notable in comparison to the pollen spectra obtained from the barrows, as well as fairly high percentages of *Fagus* pollen and the presence of *Carpinus*. The herb pollen types are dominated by *Calluna vulgaris*, with percentages over 500%. Grasses show high percentages as well, around 70%. Anthropogenic indicators are present in low amounts, however, the amount of *Secale* is relatively high.

Trench 16

This spectrum shows also a low percentage of arboreal pollen, around 15%. *Tilia* is absent as well, *Fagus* and *Carpinus* are present in considerable amounts. *Calluna vulgaris* is again the dominating species, together with a high percentage of Poaceae. The presence of *Fagopyrum* and *Centaurea cyanus* should be noted.

Trench 18

This spectrum is similar to the spectrum from trench 16, except for a lower percentage of Poaceae.

Trench 21

Also these spectra looks very much like the spectrum of trench 16 and 18, including the presence of *Fagopyrum* and *Centaurea cyanus*. Remarkable is the very high percentage of *Calluna vulgaris* in one of the spectra.

5.5 Discussion

5.5.1 Dating the barrows

The first point to make with regard to the palynological results is the resemblance between the two barrows. Pollen spectra from the old surfaces indicate a similar vegetation pattern at the time the barrows were built, which makes it likely that they were built in the same period. This is in line with what was expected on the basis of the C14-datings and general similarities between the mounds (*cf.* section 3.7). The occurrence of *Carpinus* suggests that this period can be placed in the Iron Age (Janssen 1974). Both their similarities as well as their Iron Age dating are in agreement with the excavation results (see Chapters 2 and 3). The latter show that the dating could be further specified to the late Middle or earlier Late Iron Age (Chapter 2 and 3).

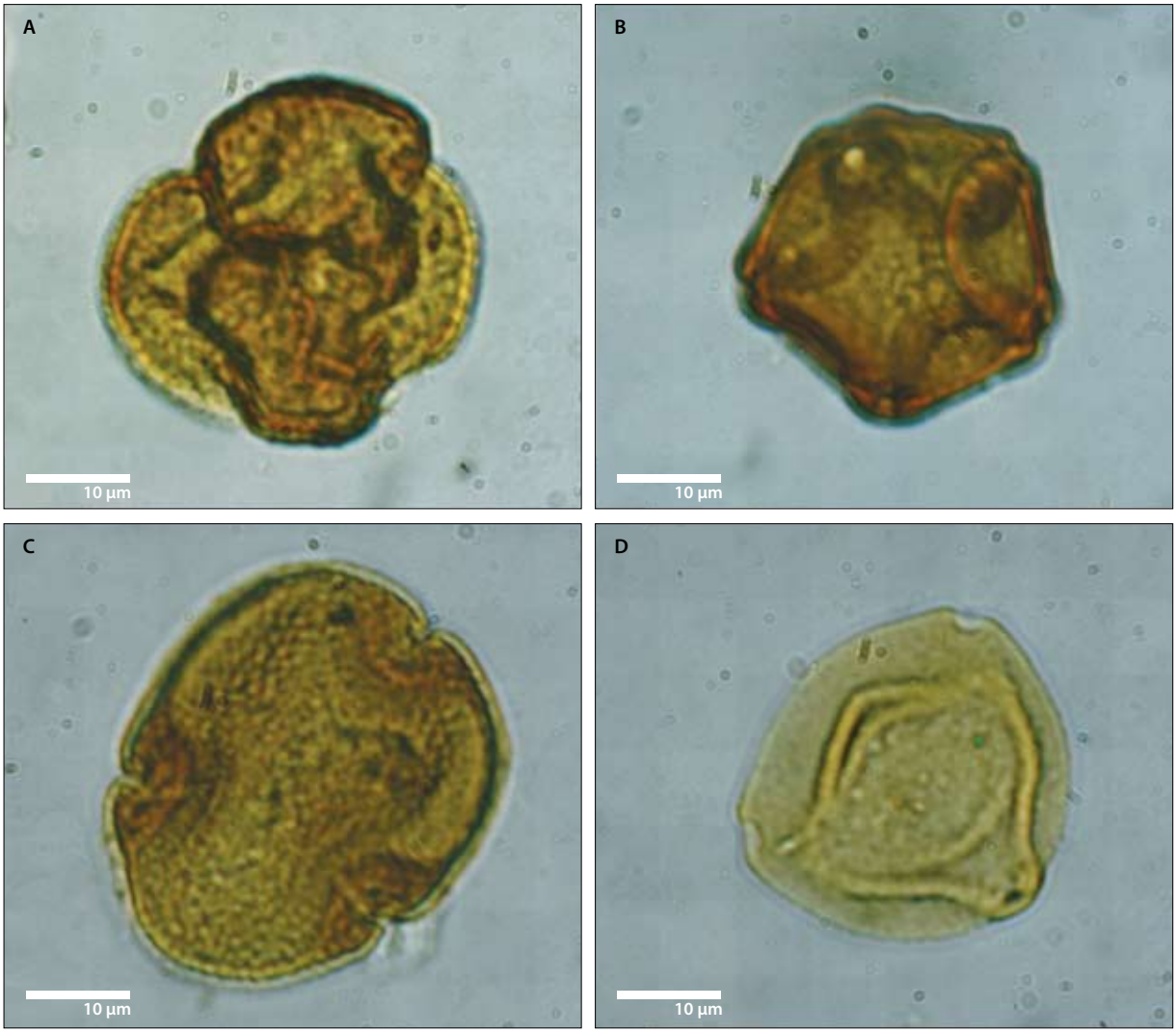


Fig. 5.4 Pictures of pollen grains of a) Calluna vulgaris (common heather), b) Alnus (Alder), c) Tilia (Lime) and d) Corylus (Hazel). Pictures are taken from samples from the Echoput at 1000x magnification.

Fig. 5.5 Picture of flowering heath at Laren (the Netherlands). Taken by prof. C.C. Bakels.

5.5.2 The barrow landscape

The similarity of the pollen composition of the old surface and the sods indicates that the sods were cut in the close surroundings of the barrows, where vegetation composition was similar to the spot where the barrows were built. The following discussion about the barrow landscape is based on the results of the samples of both the old surface and the sods of the two mounds, which represent the vegetation composition at the time the barrows were built.

Fig. 5.1 shows the pollen spectra of the mentioned samples. They indicate that herbs are much more abundant than trees. Especially heath (e.g. *Calluna vulgaris)* and less, but still in considerable amounts, grasses (e.g. Poaceae*)* dominate the herb species. Heath pollen tends not to spread outside the heathland where the pollen is produced (De Kort 2002).This implies that the *Echoput* barrows were built in an open spot, where heath was the most dominant species. Non-pollen palynomorphs such as *Debarya glyptosperma* and *Zygnema* type 314 (Van Geel in: van Hoeve/Hendrikse 1998) suggest the presence of some water at the site, at least part of the year, conditions which still exist in present times (see Chapter 2 and 5.2). Amongst the herb pollen anthropogenic indicators were present. These were dominated by *Plantago lanceolata* and Asteraceae tubuliflorae. Remarkable is the find of one pollen grain of *Secale* in the pollen spectrum from sod 2. This cereal species (rye) has not been commonly introduced in the Netherlands during the Iron Age yet, however, some early iron age finds in northern and western Europe have been reported (van Zeist 1976). The anthropogenic indicators suggest the presence of human activity at the site, which is consistent with the find of pottery sherds and flint fragments in the sods and the old surface (see Chapter 2 and 3). However, the pollen percentages of anthropogenic indicators were too low to conclude the site was a settlement area with (former) arable fields nearby. This is consistent with the data from the excavations in the close surroundings of the barrows (see Chapter 4).

The tree pollen that is present in the pollen spectra is mainly from *Alnus, Quercus* and *Corylus. Alnus* is likely to have grown on the lower sites in the surroundings of the heathland, where soil was more water saturated. So probably alder carr was present in the stream valleys in the surroundings of the *Echoput* hill. The dominance of *Alnus* pollen within the total arboreal pollen content could imply an open landscape where the alder pollen were free to travel in from out of the alder carr, since no other extended forest blocked their way. *Corylus* is a tree that requires light conditions to grow, it will not be able to survive in the reduced light conditions in a closed forest. The tree requires moist soil, but no wet conditions. It is very likely that *Corylus* has grown on the slopes around the Echoput hill, together with *Quercus*, a tree that has also has a preference for soil that is not very wet. (Weeda *et al*. 1985). The presence of the alder carr in the valleys and the more open vegetation in the surroundings of the barrows indicated that forest clearing had only taken place in the higher and drier places around the *Echoput* hill. The forest was not cleared recently before the barrows were built, indicated by the presence and the diversity of the herb vegetation. The herb vegetation had already had some time to establish and to develop and the open place must have existed some time before the mounds were constructed. This implies a landscape that was already managed to maintain the heathland. The area was possibly kept open by grazing and as such was part of the economic zone of settlements. This will be further discussed in 5.5.4.

5.5.3 The impact of sod-cutting

As mentioned previously, the barrows were built in an open place with mainly heath. The minimum size of this open place can be estimated. To build a barrow out of sods, an area with open vegetation is required for the sod-cutting. We have already seen that the barrows were built at the same time, or one relatively quickly after the other. The similarity of the pollen spectra from the old surface and the sods indicates that the sods were taken in the near surroundings of the place where the barrows were built. The lithology of the sods also demonstrates that the sods were predominantly stripped from the top of the *Echopu*t hill and not in the lower environment. Regeneration of heath after sod-cutting takes a period of about 20 years (Gimingham 1988). Assuming that the period between the construction of the first and the second burial mound had been too short for the heath vegetation to regenerate the open place had to be large enough to cut sods for building two barrows. The soil profile shows that the surface beneath both barrows was not used for sod cutting (see Chapter 2 and 3), which also implies that the barrows were built at the same time or that at least part of the area had already been kept free from sod-cutting as a reservation for the construction of the second burial mound. Knowing the height and the diameter of the mounds and the sods the minimum size of the open area that was needed can be calculated. For this calculation the assumption has to be made that the barrows are smoothly shaped spherical segments (see fig. 5.6)[45].
The volume of this spherical segment can be calculated with the following formula:

$$Vss = 1/6 \cdot \pi \cdot h \cdot (3r^2+1h^2)$$

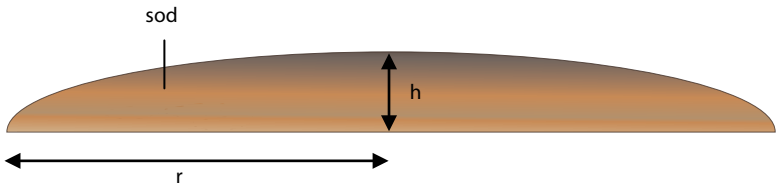


Fig. 5.6 A schematic drawing of a barrow. To calculate the minimum area that has been used for sod cutting to build a barrow, a barrow can be seen as a smoothly shaped spherical segment, which has been built with uniform sized sods. Drawing by J. Porck.

Vss = Volume spherical segment
h = height of the barrow
r = radius of the barrow

Knowing the height of the sods, the necessary area per $1m^3$ can be calculated.

The measurements of the barrows are (see Chapter 2 and 3):
Barrow 1: r=9.5m (d=19m), h=1.08m
Barrow 2: r=7.25m (d=14.5m), h=1.0m
Sods: average h=0.25m

The calculated area to be stripped for barrow 1 is $615m^2$ and for barrow 2 $332m^2$. A total area of $947m^2$ was used for sod-cutting, with a depth of about 25 cm. This implies that a minimum area of 1396 m2, the surface beneath the barrows included, consisted of open vegetation (see Fig. 5.7). The barrows, already

45 We have already seen that this is not entirely correct for mound 1, which has a flat instead of a round top (Chapter 2).

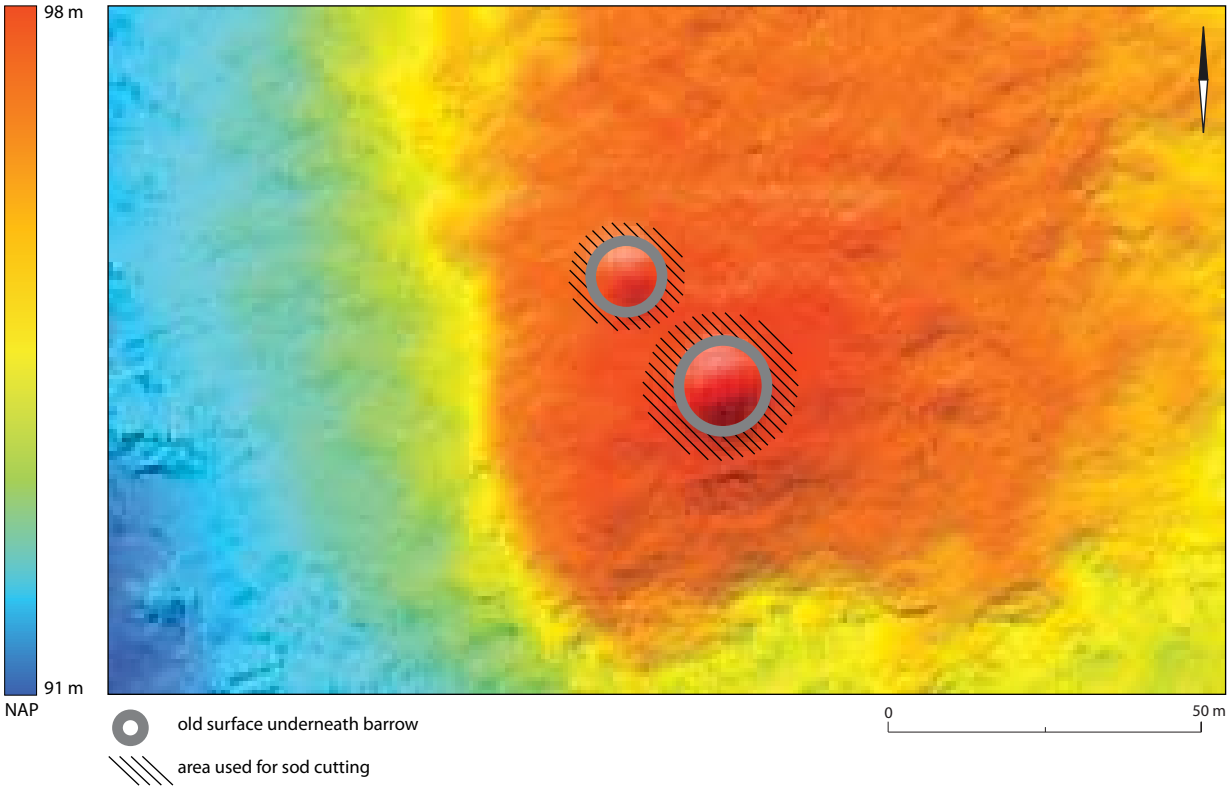


Fig. 5.7 View of the Echoput hill with the two excavated barrows, based on digital elevation model of the AHN (copyright AHN). Around each barrow the minimum area that has been used for sod cutting has been indicated as a circle around the mound, to give an impression of the surface that had to be stripped. If the heath was stripped in such a concentric area or, for example, in plots, is unknown.

located on a relatively high place in the environment, were probably even more prominent in the landscape, knowing that the direct surroundings were cleared from the topsoil, creating a bare vegetation-free environment. This could have increased their visibility from the surrounding landscape.

5.6 The pre-barrow landscape

Compiling a pollen diagram from pollen in a mineral soil has been the subject of many discussions (Dimbleby 1961; 1985; Havinga 1963; 1984; van Mourik 2003). As explained previously, the difference between a mineral soil and peat makes the interpretation of such a diagram more difficult. There are still many questions about the exact process of pollen distribution in a mineral soil. Several investigations have shown there is a correlation between soil development and the distribution of pollen in the soil. Van Mourik (2003) has shown that the pollen diagram from the around 70 years old soil under planted *Larix* and *Fagus* trees reflects the transition from the former heath to the present planted forest. In the same research he has shown that pollen in a mineral soil are protected from decay and distributed in the soil by the activity of soil fauna. Pollen grains are transported deeper into the soil. However, this process was stopped when the soil was covered by a burial mound and the soil was well preserved until the excavation. Although the process behind the pollen distribution in the soil is not entirely clear, it seems that pollen diagrams derived from mineral soils do represent the vegetation development from a period before (Havinga 1963; van Mourik 2003) and this assumption will be used to discuss the pollen diagram from the soil underneath barrow 2. So, the pollen diagram derived from the soil under barrow 2 represents the vegetation development of a certain period before the barrow was built. The length of the period represented is not very clear. Dimbleby (1985) mentioned that in a buried soil the downward movement of pollen has a suggested rate of 10 cm per 300 years. This would imply that the pollen diagram from bar-

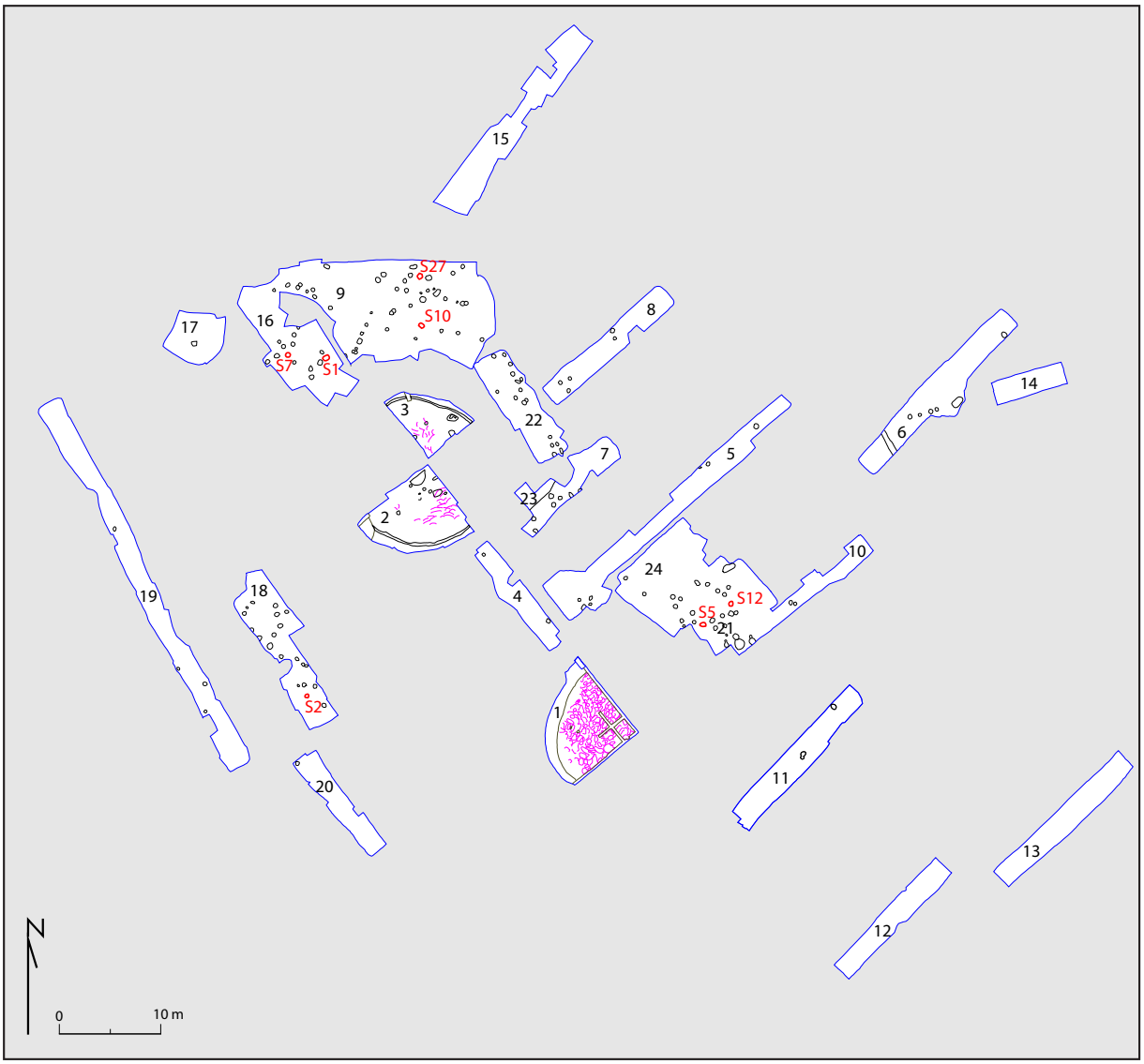


Fig. 5.8 Location of samples taken from the fill of post/pits. Drawing by P. Valentijn.

row 2 shows the vegetation developments of about 700 years. However, this cannot be confirmed in this research. In the research by van Mourik (2003) a 70 year old soil with a depth of about ten cm was investigated, implying seven years per cm soil. This makes it difficult to compare different soils with each other. Hence, the vegetation developments that will be described below cannot be placed exactly in time. The interpretation of pollen diagrams from mineral soils underneath a barrow will be further discussed in Doorenbosch (forthcoming).

For the period represented in the pollen diagram it becomes clear that heath vegetation was already present in considerable amounts at the place where later on the barrows were built. However, the forest coverage was higher than at the time the barrows were built, 40% compared to 20%. This forest was mainly dominated by *Tilia* and *Quercus* at the drier sites and *Alnus* at the wetter sites. Despite the low pollen counts in some of the lower samples clear trends can be seen in the diagram. A decline of *Tilia* pollen is notable, a decline which is assumed to be general in the Dutch vegetation history, according to several other pollen analyses from peat/lake sediments in several parts of the Netherlands (Janssen 1974; van Geel 1978). An increase of *Fagus* is visible in the diagram, comparable to the general increase of *Fagus* in several parts of the Netherlands, since its arrival between 3000 and 500 cal. BC (Fanta 1995). An increase of *Alnus* pollen that can

be noticed might be primarily related to the decrease of *Tilia* or could indicate an expansion of the wet forest. The decrease of forest cover seems to go hand in hand with an expansion of the heath vegetation. At the time the barrow was built vegetation was, at least locally, dominated by heath. However, it is not entirely clear how the open place was created and what it was used for in the period before the barrows were built. Indications of the presence of human activities at the site in several periods before the barrows were built are evidenced by finds from below and beyond the mounds, although they do certainly not hint at a very intensive use of this site in – say- the Bronze Age or early Iron Age (see previous chapters). The absence of cereal pollen grains and high amounts of arable weeds like *Artemisia vulgaris* in the diagram demonstrate that the location had not been used for crop cultivation. At this moment it is not entirely clear what the size of the heathland could have been, this subject will be further explored in the thesis of the author (Doorenbosch forthcoming). The minimum size of the heath must have been 1396 m2 (see 5.5.2). To maintain the heath, the landscape must have been managed. The amount of grasses (Poaceae) together with *Plantago lanceolata*, Asteraceae liguliflorae, *Succisa* and *Galium* type could be an indication that the heath land has been used as pasture (Hjelle 1999). The remains of charcoal found in all the pollen samples may also be an indication that humans burnt the heath vegetation (Karg 2008), a form of heath management that can be used to rejuvenate the heath, possibly in combination with grazing by livestock.

5.7 Posts at the barrow site

The pollen spectra from the four possible structures (see section 4.6 – 4.8) that have been sampled have a different composition than the barrow spectra. The content of the post-hole fill spectra seems to be younger. This is implied by the amounts of *Carpinus* and *Fagus*, which had increased in comparison to the barrow pollen spectra. Both species show an increase during the Holocene vegetation development in the Netherlands since the Subatlantic period until the Medieval Period (Janssen 1974). Also the constant presence of *Secale*, which is known as a common crop in the Netherlands only since the Roman Period (Behre 1992), indicates a younger pollen composition. In addition, all posthole fills, with exception of those from trench 9, contained pollen from *Fagopyrum* and *Centaurea cyanus*, which are only present in the Dutch pollen spectra from the Late Medieval period (Bakels 2000). The posthole fill pollen spectra indicate a landscape, probably much younger than the barrow landscape, which was more open than during the time the barrows were built. The amount of *Alnus* had decreased. This implies deforestation of the lower sites as well, or a change in soil water content. The barrow site was at this time an open spot as well, but the character of the place had slightly changed compared to the barrow landscape. *Calluna* had expanded at the cost of the forest. The diversity and quantity of other herbs increased. At trench 21 a very high percentage of *Calluna* pollen can be seen, which is not visible in any of the other samples. This could indicate a local abundance of heath, for example the covering of the roof of the structure could have been made of it. However, can the dating of the pollen spectra be coupled to the dating of the posts? In other words, can the posts also be dated in the Late Medieval Period? The following scenario may apply. A hole was dug into the soil, in which the post was placed. The posthole was then filled, probably with soil that came originally out of the hole. As has been described in the previous paragraph, pollen infiltration can take place in an uncovered soil, like happened in the soil underneath the barrows before they were built. This process had also taken place in the soil the posthole was dug into. This implies that the posthole fill contained a mixture of recent and

older pollen (recent at the time the post was placed). After some time the post had decayed, leaving -together with the posthole fill- the well visible feature in the soil. Since the soil had not been buried, the development of the soil at the location of the posthole could now also continue, unlike the soil underneath the barrow. At the time of the excavation a holtpodsol had developed with a thick A horizon on top (see Chapter 4). It is likely that part of the posthole feature had been merged into this thick dark layer. However, under this A horizon (part of) the posthole features were still clearly visible. This implies that the soil at this depth was still undisturbed, because the soil development had not reached this depth yet. In addition, the pollen spectra did not show the recent vegetation type that is present in the *Echoput* area (e.g. *Larix* and *Pseudotsuga*, see 5.2), another indication that the soil was not mixed with the upper part. The pollen spectrum that was found in the samples taken from the still clearly visible posthole features would then represent the pollen mixture that was present in the original posthole fill. As described above, the pollen spectra from the posthole fills contained pollen types that were only known to be present in the Netherlands from the Roman Period and from the Late Medieval Period. This Medieval pollen could have come from the vegetation that was present at the *Echoput* hill at the time the posts were placed or they could have been infiltrated in the soil from some time before the posts were placed. The posts could then be dated in the Late Medieval Period or later (as a *terminus post quem* date). The pollen spectrum from the posthole fill from trench 9 lacked pollen that indicates the Late Medieval Period and consequently the Roman Period can be determined as a terminus *post quem* date for this posthole. This discussion will be further exploited in Doorenbosch (forthcoming).

5.8 *Veluwe* barrows and heath

The barrows of the *Echoput* were built in an area with heath vegetation. Since the Neolithic heath vegetation could establish and expand in the Netherlands due to human influence. Forests were cleared for agricultural purposes and because the soil was impoverished, heath could expand (Casparie and Groenman- van Waateringe 1980; Berendsen 2005). The existence of heath at places where *Veluwe* barrows were built was already shown by Waterbolk (1954) and Casparie and Groenman- van Waateringe (1980). A more recent research in *Apeldoorn* by J.W. de Kort (2006) showed the presence of heath in the pollen spectra from a much older barrow than the *Echoput* mounds (probably late Neolithic).

5.9 In conclusion: the history of a barrow landscape

It is generally assumed that most barrows were built in open spaces in a forest area. However, the origin of these open spaces is hardly known. The pollen analyses of two barrows at the *Echoput* show the vegetation history of the open space from a period before the barrow were built. This showed that the clearing of the forest was indeed much older than the barrow building, as has been suggested in the introduction. When and how the open space was created is not known. From the beginning of the period our data represent the open spot has mainly been covered by heath vegetation mixed with grasses and several other herbs. The open space, surrounded by forest of *Tilia* and *Quercus*, has been used during at least some centuries by prehistoric man. The presence of anthropogenic indicators confirms the influence of prehistoric man in the environment. Mesolithic and Bell Beaker features have also been found, though it is not known if the forest had been cleared already by them. Although we did not uncover any evidence for a settlement outside the mounds, it is clear that the area has been used by

prehistoric man. But what did they use the open place for since the Bronze Age? It is very likely that it was included in the economic zone of farming communities as grazing grounds/pasture, keeping the vegetation open. Based on the high percentage of pollen from Poaceae, in combination with the presence of *Plantago lanceolata*, Asteraceae liguliflorae, *Succisa* and *Galium* type (Hjelle 1999), the use of this open spot as pasture is very plausible. Furthermore, regular burning of heath could have occurred, indicating that a form of heath management was used to keep the area open. At least the use of fire is indicated by the amounts of charcoal found in the pollen records. Before the barrows were built the open area seems to have been used solely as a place for the living, since no indications have been found that people were buried there. This changed when the burial mounds were constructed in the later Middle Iron Age or early Late Iron Age. At this time the vegetation surrounding the *Echoput* hill had changed. The *Tilia* dominated forest had decreased and forest with a more open character mainly consisting of *Quercus* and *Corylus* had taken its place. The heath at the open place at the top of the *Echoput* hill had expanded. This change in vegetation was probably due to human activities, like burning and grazing. The upper surface of a large part of the heathland at the *Echoput* hill was stripped in order to get sods for the construction of the barrows. The surface where the barrows were going to be located was left untouched. Whether the barrows were built at exactly the same time or with a short period in between does not change the fact that both places had already been designated as barrow location based on the observation that the surface underneath both barrows were not used for sod-cutting. The two barrows must have been quite pronounced features in the landscape, while placed on one of the highest locations in the area, cleared from surrounding vegetation. It is unknown whether the surrounding landscape was kept open after the barrows were built. However, one of the mounds has been re-used again as a burial location (grave 1 and 2; Chapter 2 and 7).

In the *Veluwe* area, open spaces with usually heath vegetation have been chosen as location to build barrows. The origin and the use of these open places before the burial mounds were constructed are often not very clear. There are some archaeological finds demonstrating that the open place had been used by people in the period before the barrow building. This research of the two barrows at the *Echoput* has shown part of the history of such an open place.

Sample location			Sample name
Barrow 1	Profile 1.9	Soil profile series	1-35
	Profile 1.9	Sod samples	A1.9 sod 1
			A1.9 sod 2
		Old surface samples	A1.9 o.s. 1
			A1.9 o.s. 2
	Profile 1.10	Ditch samples	A1 ditch
		Sod samples	A1.10 sod 3
			A1.10 sod 4
		Old surface samples	A1.10 o.s. 3
			A1.10 o.s. 4
	Level 10	S 17	V 267
Barrow 2	Profile 2.1	Soil profile series	1-24
	Profile 2.1	Soil profile series	25-29
	Profile 2.1	Sod samples	A2.1 sod 1
			A2.1 sod 2
			A2.1 sod 3
		Old surface samples	A2.1 o.s. 1
			A2.1 o.s. 2
			A2.1 o.s. 3
Trench 9	Level 1	S 2	V 0169
		S 8	V 0163
		S 9	V 0137
		S 10	V 0140
		S 11	V 0131
		S 12	V 0128
		S 13	V 0129
		S 14	V 0130
		S 15	V 0133
		S 16	V 0134
		S 17	V 0135
		S 21	V 0136
		S 25	V 0160
		S 27	V 0161
		S 29	V 0164
		S 34	V 0165
		S 35	V 0168
Trench 16	Level 1	S 1	V 0172
		S 3	V 0171
		S 7	V 0175
		S 8	V 0176
		S 10	V 0178
		S 13	V 0179
		S 15	V 0190
		S 21	V 0191
		S 23	V 0192

Table 5.1 Overview of the samples taken from the barrows and their surroundings. The samples that have been analysed are indicated by a shade. Those indicated with light shades gave good results and are discussed in the text. Those with a darker shade did not contain any or not enough pollen. For the exact location of the analysed samples, see Fig. 2.17, 2.18 and 3.8; o.s = old surface underneath mound.

Sample location			Sample name
Trench 18	Level 1	S 2	V 0200
		S 12	V 0194
		S 15	V 0196
		S 18	V 0198
Trench 21	Level 1	S 2	V 0293
		S 3	V 0292
		S 4	V 0291
		S 5	V 0290
		S 6	V 0288
		S 7	V 0289
		S 9	V 0287
		S 10	V 0286
		S 11	V 0285
		S 12	V 0283
		S 13	V 0282
		S 14	V 0280
		S 15	V 0279
		S 16	V 0281
		S 17	V 0278
		S 18	V 0284
Trench 24	Level 1	S 1	V 0294
		S 2	V 0296
		S 3	V 0295
		S 4	V 0297
		S 5	V 0277
		S 6	V 0276
		S 7	V 0298

Chapter 6

Finds

Arjan Louwen, David Fontijn, Patrick Valentijn, Cristian van der Linde and Annemieke Verbaas[46]

6.1 Introduction

In this chapter the finds of the *Echoput* excavation will be described and discussed. For convenience sake, finds will be discussed per context and category. Section 6.2 will deal with the finds from mound 1, 6.3 with those from mound 2 and 6.4 with the artefacts found in the surroundings of the two mounds. Some finds have already been mentioned in the previous chapters but will be described and discussed in more detail here. Because burial mounds are complex entities and finds play an important role in the interpretation of these prehistoric puzzles, attention will be paid to post-depositional disturbance. For the excavation of the mounds and their environments, one system of find recording was used. In contrast to feature numbers, find numbers are unique. Find number 1 is indicated as V 1 (V from the Dutch *vondstnummer).* All pottery described is hand made unless stated otherwise. The stone tools were first analysed by stereomicroscope (with incident and oblique lighting) in order to locate any residues and to obtain a general view of the polished zones, striations or directionality in the polish and edge removals. The implements were then studied by incident light metallo-graphic microscope with magnifications ranging from 100 to 560x.

6.2 Finds from mound 1

6.2.1 Pottery sherds

Pottery sherds were discovered in different levels of mound 1. Also, two ceramic objects other than pottery were found in the top levels of the mound (see section 2.5.2). For the discussion of these ceramic finds we will work our way down the mound. Because the different levels (except for level 11) were all dug manually the documented spread of pottery sherds is quite reliable: the chance of missing a sherd is small when a surface is "skimmed off" with a shovel.

Two pottery sherds were found at level 2 (V 23 and V 29). The first sherd (V 23, Fig. 6.1) has a slightly smitten[47] (Dutch *besmeten*) surface and is tempered with a mix of potgrit and quartz (particles of about 2 mm). Its thickness is 9 mm. The smitten surface of the sherd suggests a date in the Iron Age because that is the period par excellence in which smitten surfaces occur (Van den Broeke 2005, 608). The combination of different kinds of temper used in the fabrication of Iron

46 The first author studied and reported on all ceramic and metal finds and wrote the chapter, the second and fourth author dealt with a number of the metalwork finds, the third author studied the pottery sherd from the trenches around the barrows, and the fifth author studied all stone artifacts in the Leiden Laboratory for Artefact Studies.

47 This way of surface treatment is hard to translate. *Besmeten* means that during the production of the pot, wet clay is thrown to the surface in order to create an irregular surface.

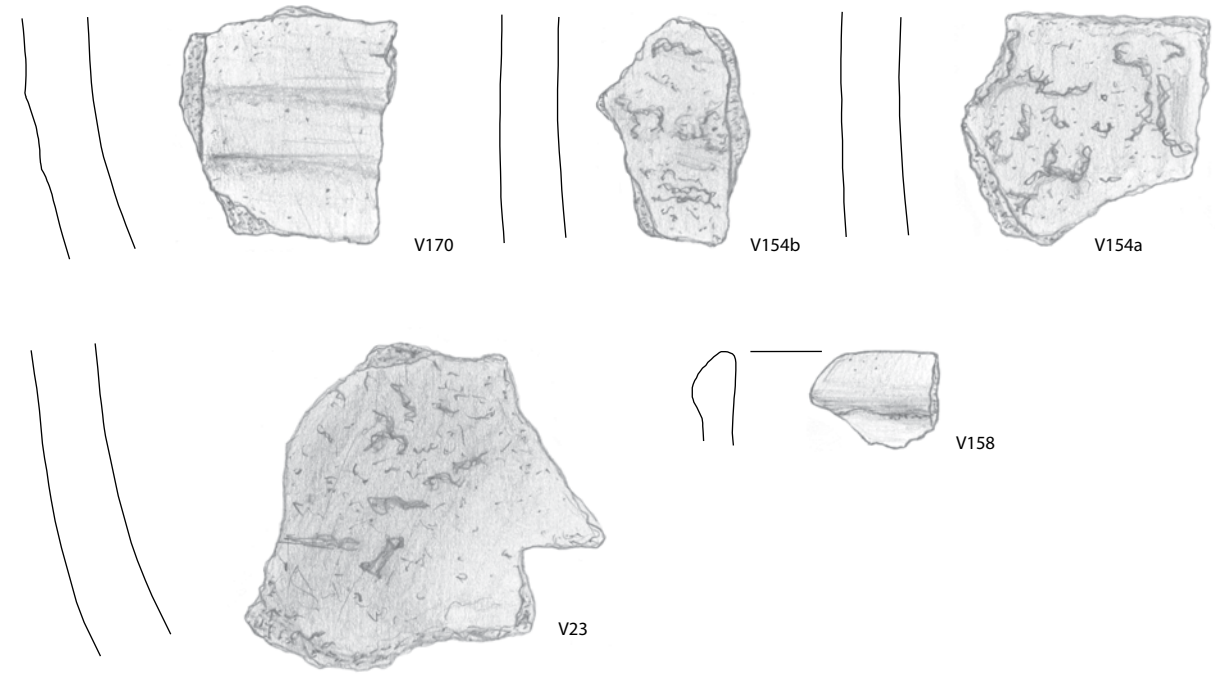


Fig. 6.1 Selection of pottery sherds found in mound 1, mound 2 and in the surroundings of the burial mounds. Scale 1:1. Drawing by A. Louwen.

No.	Context	Category	Temper	(outer)Surface Treatment	Thickness
23	Top level (2)	Wall	Potgrit/Quartz	Smitten	9 mm
29	Top level (2)	Wall	Sand	Indet.	10 mm
35	Top level (3)	Wall	Fine gravel/Coarse sand	Smooth	5 mm
60	Top level (3)	Wall	Coarse quartz/Potgrit	Rough	6-7 mm
61	Top level (3)	Wall	Minerals	Smooth	7 mm
70	Sod level (5)	Indet.	Fine gravel	Indet.	Indet.
76	Top level (3)	Wall	Fine gravel	Indet.	6 mm
154	Old surface (9)	Wall	Potgrit	Smitten	8 mm
154	Old surface (9)	Wall	Potgrit	Smitten	8 mm
154	Old surface (9)	Wall	Potgrit	Smitten	8 mm
154	Old surface (9)	Wall	Potgrit	Smitten	8 mm
154	Old surface (9)	Wall	Potgrit	Smitten	8 mm
155	Old surface (9)	Wall	Potgrit/Fine gravel	Smooth	12-13 mm
155	Old surface (9)	Wall	Potgrit/Fine gravel	Smooth	12 mm
158	Old surface (9)	Rim	Indet.	Polished	4 mm
166	Old surface (9)	Wall	Fine potgrit	Smooth	8 mm
170	Old surface (9)	Wall	Potgrit	Smooth	8-9 mm
181	Old surface (9)	Wall	Minerals	Indet.	8 mm
183	Old surface (9)	Wall	Minerals	Indet.	4 mm
188	Old surface (9)	Wall	Potgrit	Sloppy	8 mm
189	Old surface (9)	Wall	Fine gravel	Sloppy	6-7 mm
197	Old surface (9)	Wall	Fine gravel/Quartz	Smooth	7-8 mm

Table 6.1 Relevant characteristics of the pottery fragments found in/underneath Mound 1. Some important remarks: (1) The first column shows the find number under which the pottery fragments have been registered. (2) The 'context' column shows the find location in the mound. (3) The 'category' column shows which part of the original pot we are dealing with. (4) The addition 'Fine' in the 'Temper' column is only used when the average size of the temper was smaller than 1 mm. (5) 'Smooth' in the fifth column was used to describe all fragments that show some kind of effort in acquiring a smoother surface. (6) The thickness indicated in the sixth column is an average.

Age pottery is rare for the southern Netherlands, but is more common on ceramics found in the eastern parts of the country (Hermsen/Haveman 2009, 182). The other sherd from level 2 is that small and damaged that it is not possible to say how the surface was treated. Both the inner and outer surfaces are oxidized and the temper consists of sand (probably already present in the natural clay). Basing ourselves on the fabric, it is likely that we are dealing with hand made prehistoric pottery. The thickness of the sherd is about 9-10 mm which is in fact too thick for Late Neolithic beaker pottery. A further determination cannot be given.

Because of the weathered appearance of the two sherds and their isolated and near-to-the-surface position in the mound we assume that they do not belong to later internments but probably are loose sherds that were lying at the top and entered the mound at a later stage by trampling and bioturbation. Next to these two pottery sherds a piece of late- or post-Medieval brick (V 24) also comes from level 2. As already mentioned (see section 2.5.2) this piece of brick was found in one of the tracks of the machine that was used for the restoration of the mound. The fragment is heavily burnt (orange colour and shrink cracks) and is tempered with rather large gravel (8-10 mm).

When level 3 was created, four more sherds were collected (V 35, 60, 61 and 76). All four have been tempered with mineral material. The quartz particles in V 60 and V 71 are rather large (3-5 mm). The average size of the mineral temper in V 35 and V 61 is significantly smaller. The thickness of the sherds varies between 5 and 7 mm. The outer surfaces of V 35 and V 61 are smooth, V 60 has a rough surface and V 76 is too damaged to provide us with any information. Because none of the sherds contains decoration or other typological characteristics, it is not possible to date these sherds. All four sherds, especially V 60 and V 76 show gnawing marks by small rodents like mice or perhaps a mole. On top of that, the only sherd that has a larger surface than 2 cm^2 (V 35) has very rounded edges

which means that this sherd endured quite a large portion of trampling or/and weathering before it ended up in the top of Mound 1. Especially the combination of the latter two observations warns us that these pottery fragments could come from anywhere and thus not necessarily belong to the part of the mound they were found in. A third observation strengthens this statement: in the very same level several fragments of a clay smoking pipe have been found (V 42). Such objects became current in the Low Countries in the 17th century *A.D* (Duco 1987).

Levels 4 – 8 were dug into the part of the mound's body where sods were clearly visible. Despite the fact that these levels where carefully laid bare by shovels in order to get a clear picture of the sods-structure only one tiny pottery fragment (V 70, less than 1 cm^2 and heavily damaged) was collected from these five levels all together. Because the sherd is that small and damaged no further remarks can be made on pottery characteristics. The fact that the sod level of mound 1 was 'clean' of pottery refuse indicates that the sods to build mound 1 were coming from an area that was not part of a former settlement.

In contrast to the previous five sod-levels the old surface (level 9) *does* contain a lot of pottery. In total fifteen sherds were collected from the old surface (respectively: V 154, 155, 158, 166, 170, 181, 183, 188, 189 and 197). Until then we had no idea about the age of mound 1. This changed drastically when five smitten (*besmeten*) sherds (V 154, Fig. 6.1) were found lying on the old surface. Compared to the sherds found in level 3 the edges of the sherds found on the old surface were much less rounded. Also the average size of the sherds of level 9 is somewhat larger than the sherds found in level 3 (the largest one, V 188, has a size of 4 x 4 cm). With regard to these observations we argue that the sherds found on the old surface did not end up there by bioturbation but actually represent human activities on the mound's location during the Iron Age. The thickness of the sherds varies between 4 and 12 mm but the bulk of the sherds is about 8 mm thick. Potgrit is mostly used as temper but mineral temper also occurs, often in combination with potgrit (see table 6.1). The size of the minerals (mostly quartz) varies per sherd (>1 – 5 mm). Except for V 158 (small rim, Fig. 6.1) all sherds are wall sherds. The small rim is slightly polished on the inside as well as on the outside. As regards the thickness of the sherd (only 4 mm), we are dealing with very fine pottery. None of the fifteen sherds has any form of decoration. A last sherd that deserves some extra attention is V 170. The smoothening process of the outer surface has left several horizontal and parallel, slightly upstanding lines (see Fig. 6.1). It is not that this form of body treatment is very special but a sherd with a similar pattern has also been found on the old surface underneath mound 2 (V 159, Fig. 6.1). This observation supports the C^{14} dates that point to a quite contemporary erection of both burial mounds (section 3.7). On top of that, a comparable treatment of a vessel's body has also been observed on Late Iron Age/Early Roman Period pottery in Bathmen (Louwen in prep).This might be another indication for dating the construction of both mounds in the later part of the Iron Age. For further characteristics of the pottery found in/underneath mound 1 we refer to table 6.1.

No pottery was found *in* features around or underneath mound 1. Because all sherds from the old surface are undecorated wall sherds (except the one small rim) we lack further indications on the original pot shape. This makes it difficult to date the assemblage more precise than just Iron Age.

6.2.2 Stone artefacts

In total four stone artefacts (V 8, V 30, V 56 and V 245) have been recovered during the excavation of mound 1. Probably, the first three finds all ended up in the barrow's body with the sods and hence predate its construction. V 245, a small

Fig. 6.2 V 30. Pounding stone found in the top layers of mound 1. Scale 1:1. Drawing by E. van Driel.

piece of flint, was found in the old surface covered by the sods (it was found in profile section 9). All are made of stones that can be found in the environment and none can be dated more precisely on the basis of its form. In view of their stratigraphic position all must date to the Middle Iron Age or earlier prehistoric periods.

The first stone object (V 8) was found in the top layer of the mound (level 2). It is an object with a somewhat elongated form. Its size is 80 mm long, 20 mm wide and 13 by 8mm thick. Both its outer edges have been broken off. The stone's appearance is somewhat remarkable: its outer surface is darkish brown-grey but when fragments are being chipped off (which can be done very easily, even with a fingernail) a hard, white and shiny inner structure is revealed. The type of stone most probably is schist which weathered considerably. One part of the outer surface has a somewhat lighter color and is smoother than the rest of the outer surface. These last two observations together with its elongated shape suggest that the object was used as a whetstone.

The next two objects (V 30 (Fig. 6.2) and V 56) both are pounding/polishing stones of a similar type of stone (granite). Both stones have been collected from the top layers of the mound (V 30 in level 2 and V 56 in level 3). The first pounding stone (V 30) has an almost perfectly round shape and shows pounding and rubbing traces all over the surface. Its diameter is about 6 cm. It has several reddish spots on its surface, which are not ochre. The other pounding stone has a more triangular/pyramid-like shape. Its longest diameter is 9 cm. The pounding marks on this example concentrate mostly on one of its longest edges.

The last stone object of mound 1 has been found at the end of the campaign when the profile sections were cleared for documentation. It concerns a small flint flake of a grayish color (V 245). The find location of the flake in one of the sods tells us that the flake must have been produced before the barrow was erected.

A lot of other stone objects have been collected from mound 1 but have later been determined as not being artefacts[48]. This quite large number of "eliminated" artefacts is the result of the precautions taken in the field: every stone that looked like an artefact at first sight has been collected and stored until a trained eye was able to judge these stones. In almost every occasion the presumed anthropogenic traces on these stones appeared to be of a natural origin[49].

48 Karsten Wentink (Faculty of Archaeology, Ancestral Mounds project) was of great help in the sorting out of finds.

49 The find numbers of the non-used stone finds of mound 1 are: V 3, 25, 26, 45, 54, 55, 66, 80, 85, 228, 229 and V 248.

6.2.3 Metal objects

Except for one musket bullet (V 2) in trench 5 that will be described in a later section, all metal objects of the *Echoput* excavation were found in mound 1. Unfortunately, they are poorly preserved and we were unable to determine most of them.

Metalwork from "grave" 1 and grave 2

Three fragments were found in grave contexts (respectively: V 1, V 19 in "grave 1"; V 44 in grave 2). As could be read in Chapter 2, the top levels of mound 1 endured quite some disturbance by the restoration process, tree roots and animals. Therefore we cannot be entirely sure whether all objects actually belong to the context they were found in. Post-depositional disturbances will thus again be taken into account in the following descriptions.

Of the first two iron fragments (V 1 and V 19) we are quite sure that they were part of the grave or pyre debris: they were lying between several pieces of cremated bone in "grave" 1 (S 1). The iron itself is almost completely dissolved and what's left is the corrosion around the original object. The objects were brought to the restoration laboratory of *Restaura* in *Haelen*, where they were X-rayed. There, the restorer tried to fit the crumbling parts together, in order to facilitate determination[50]. Both fragments are iron rectangular strips that measure about 3 cm in length and 8- 9 mm in width. Their thickness is 3 mm. V 1 seems to be some kind of hook. It is incomplete: at its broadest side, it has been broken (Fig. 6.3.). The hook-like "protuberance" below at Fig. 6.3 appears to be corrosion. The X-ray shows that knick was not downwards, but upwards. At the X-ray picture shown here, the corrosion protuberance has been removed in photoshop and a dotted line is added which indicates the way in which the metal was bent originally (Fig. 6.4). V 19 is also an iron hook-like object. There are no breaks visible and the object must be complete (Fig. 6.5). There was another corroded iron fragment found next to it, but as this has breaks it must belong to another object. So, we are dealing with two similar "hook-like" objects. Its function, however, remains unclear and we could not find parallels for it from other Late Iron Age graves.

A little, rectangular, slightly bent plate of corroded bronze (V 44) was found embedded in the concentration cremated bone of grave 2. Even though the size of the bronze fragment is very modest (7 mm x 9 mm x 1 mm) and does not show signs of burning, we are sure that this bronze really belonged to the contents of grave 2. Again it is hard to tell to what kind of object this piece of bronze belonged to.

All in all we must conclude that the presented metal finds do not contribute much in the sense that we cannot derive any typological information from these objects in order to date the contexts they were found in. Thereby, since we are not able to interpret the objects because of the state they are in, our understanding of the people they belonged to does not improve either. The only thing we can state here with certainty is that metal objects were not kept out of the grave.

Material that entered the soil as a result of the 1999 restoration

Two other metal fragments (V 27 and V 31) probably ended up in "grave" 1 due to the heavy machinery used to consolidate the burial mound during the 1999 restoration[51] since they all are pieces of a modern industrial metal alloy. They all belonged to a plate shaped object less than 1 mm thick. The material may have

50 Restoration report *UVL 2011-1,* (letter J. Kempkens and T. Lupak to D. Fontijn).
51 See section 2.2 and 2.5.2.

Fig. 6.3 V 1, iron hook-like object after joining of fragments. Photograph and copyright by Restauratieatelier Restaura Haelen.

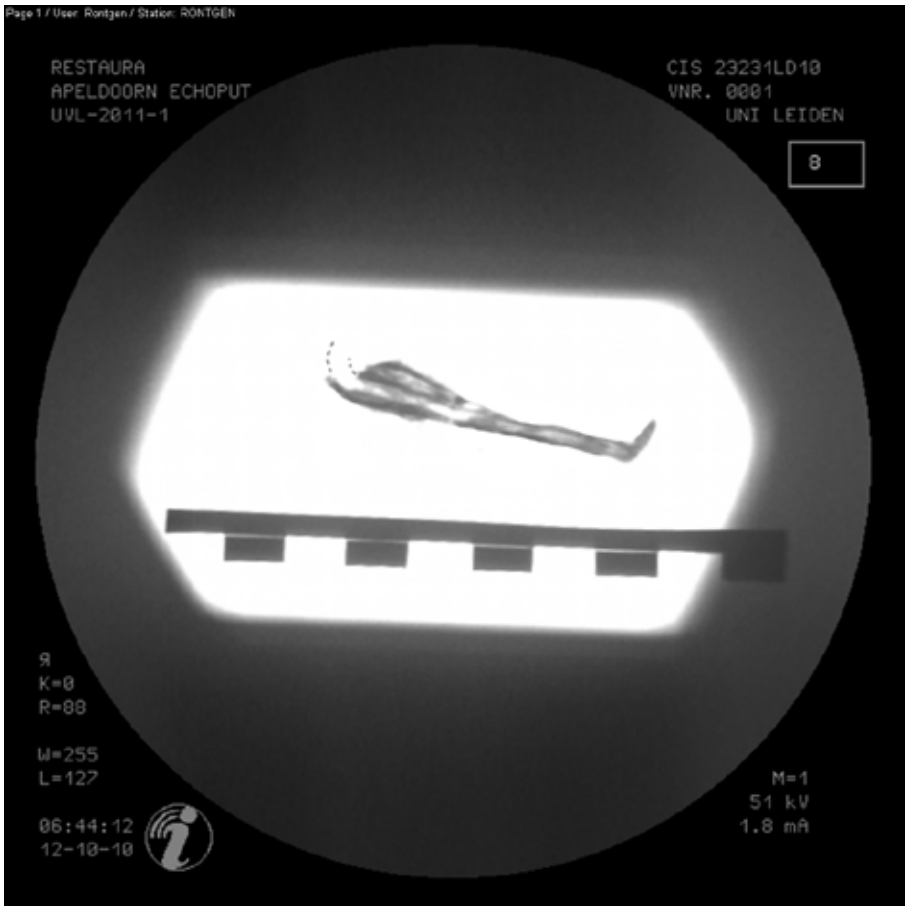


Fig. 6.4 X-ray of iron object V 1. Corrosion protuberation visually removed (photoshop); dotted line shows original form. Photograph and copyright by Restauratieatelier Restaura, Haelen.

Fig. 6.5 V 19, iron hook-like object after joining of fragments. Photograph and copyright by Restauratieatelier Restaura Haelen.

been pressed into the ground by the machine, or transported downwards due to bioturbation. The modest size (3 cm x 1.5 cm x <1 mm) of this modern object makes transportation by roots or animals very well possible.

V 28 is another piece of corroded iron which we cannot determine. It was found just to the side of the track traces of the mobile excavator that was used during the restoration. For this reason, we suppose that it also represents material that was brought in from elsewhere (probably as earth that stuck to the tyres). V 41 is an abraded small (copper or copper alloy) coin (19 mm x 14 mm x 1 mm). The object has not been burnt. Its edges have all been eroded. One side shows a crown with a French lily on top, the other a cross with four circles in its centre. This coin, probably a 18th century *duit*[52] was also found among the debris in the track traces of the machine and is therefore likely to come from elsewhere.

Iron objects from beneath the mound

Two very small fragments of worked iron were found at the prehistoric surface covered by the mound (V 156 and V 157). They were found in the southeastern corner of the quadrant, close to each other. Elsewhere on the surface, we found 15 Iron Age sherds (section 6.2.1). V 156 is a 1.9 cm long. It seems to have been rectangular/square in cross section (sides 3 mm). It looks like a fragment of a pin that is slightly bent. Its top has been flattened . V 157 is very similar to it. It slightly longer (*c.* 2.2 cm). If it was oval or rectangular in cross-section cannot be determined (cross section measures 3 mm). It has a clear knick at the end. Immediately after the knick the metal has been broken, which makes it hard to determine what we are dealing with. We are probably dealing with two fragments of one iron object, perhaps a knicked pin.

6.3 Finds from mound 2

6.3.1 Pottery sherds

Five pottery sherds from different periods were found on different levels in mound. The first three sherds (V 64, V 105 and V 106) are from the first level where sods were clearly visible (level 3). Therefore the most logical explanation for the presence of these sherds in this part of the mound is that they were transported with the sods and not actually relate to the mound itself. It cannot be excluded, however, that some of the sherds were transported through the barrow due to bio-activity (roots or animals). We have seen convincing cases of this in our excavation of the barrows of *Elst-Rhenen* (Bourgeois *et al.* 2010, 96).

The first sherd (V 64, Fig. 6.1) is a small wall fragment. The thickness of the sherd is 7 mm and its outer surface is a little oxidized while the rest of the fragment shows reduced baking conditions. The used clay has been tempered with very fine mineral material. The body decoration consists of parallel lines of small imprints made by a spatula (without teeth). Two parallel lines are positioned horizontally; the other two follow a diagonal pattern. Both fabric and decoration pattern are characteristic for Late Neolithic Bell Beaker pottery.

The next pottery fragment (V 106, Fig. 6.1) is also of a Late Neolithic date (not necessarily Bell Beaker). It shows rounded edges and gnawing marks which indicates that the sherd endured a lot of weathering and bioturbation before it ended it up in mound 2. The fragment is completely oxidized and its thickness is about 6 mm. Very fine mineral material (<1 mm) and a few potgrit particles

52 Thanks are due to drs Jasper de Bruin (Faculty of Archaeology, Leiden) for his help in the identification of this find.

No.	Context	Decoration	Temper	Thickness	Date
64	Sod level (3)	Diagonal, parallel lines of small spatula imprints forming triangles	Very fine gravel	6 mm	Bell Beaker period (2600 - 2000 BC)
105	Sod level (3)	Horizontal line of *Wulst-gruben* on the shoulder	Granite + fine gravel	6 mm	Late Bronze Age/ Early Iron Age
106	Sod level (3)	Parallel lines of narrow spatula imprints	Very fine gravel + potgrit particles	6-7 mm	Late Neolithic
159	Old surface (6)	None	Potgrit	9 mm	???
162	Old surface (5)	None (specific form of body treatment leaving parallel lines on the pot's surface)	Sand and Iron particles (already present in the natural clay)	9 mm	Iron Age?

Table 6.2 Relevant characteristics of the pottery fragments found in Mound 2

Fig. 6.6 Sherd V 170 (mound 1) and V 159 (mound 2), probably part of the same vessel. Photograph by Q. Bourgeois.

have been used as temper. The body decoration consists of parallel lines of small and narrow imprints. In some cases the imprints are situated that close to each other that the series of imprints can almost be interpreted as grooved lines. These grooves on their turn are positioned in a diagonal pattern. Above these diagonal lines starts a new series of horizontal lines.

The third sherd (V 105, Fig. 6.1) from the sods level concerns a wall sherd situated just beneath the shoulder of the original pot. The transition to the shoulder has been marked with a line of horizontal fingertip impressions whereby the clay from the impression is left on the pot's surface directly next to the impression. Such a form of body decoration in combination with granite particle temper most probably suggests a date in the Late Bronze Age (Hermsen, 2007, 110). The original pot must have been baked under reduced baking conditions, only the outer surface has been oxidized. The thickness of the sherd is 6-7 mm.

The last two sherds (V 159 and V 162) were found in/on the old surface beneath mound 2. The second sherd (V 162) is of an indeterminable date and is a rather weathered body sherd. Its thickness is 9 mm and its temper consists of small iron particles and sand (both probably already present in the natural clay). The other sherd (V 159, Fig. 6.1) is the example that has already been mentioned in the previous section: It shows the same remarkable lines left by the body treatment as V 170 from the original surface covered by mound 1 (Fig. 6.6). Its thickness is 9 mm and the temper used consists of small particles of potgrit. This must be a sherd of Iron Age pottery (see the parallel for the surface treatment on V 170 in the previous section 6.2.1).

In all, these stray pottery finds do not add much to the dating of this barrow. In general, it can be said that the finds recovered from the mound itself provide a *terminus post quem* dating as they were brought into the barrow along with the sods used in its construction. Therefore we can state that the barrow was in all

likelihood younger than the Late Neolithic and even the Late Bronze Age/Early Iron Age. The finds also indicate that during both those periods activities on- or near the *Echoput* hill were carried out.

6.3.2 Stone artefacts

In total three stone artefacts have been recovered while excavating mound 2. Just like in the case of mound 1 none of these artefacts can be related to the barrow itself. One object comes from the backfill of the robbery pit (V 83), whereas V 139 and V 201 are from the old surface beneath the mound and therefore must predate the barrow.

The first object (V 83, Fig. 6.7) is a whetstone of a kind of (indetermined) stone that does not occur locally on the ice-pushed ridges of the *Veluwe*. Its length is 75 mm, its width around 25 mm and its thickness 14 mm. All edges on the stone seem to have been used for sharpening (metal) objects. Furthermore it looks like there once was a perforation at one of the outer edges by which it could be hanged on a string. It shows traces of wear. Apparently this part of the whetstone has been broken after which the new edge was also used for sharpening. This kind of whetstones did not occur in prehistoric times. It would therefore be no surprise, regarding its find location in the backfill of the robbery pit that this whetstone belonged to one of the antiquarians/grave robbers.

The next stone find looks like an ordinary cobblestone but is actually a small pounding stone (V 139). Its length is 55 mm and its width varies between 30 and 35 mm. Especially one of the short edges of the cobblestone shows a lot of pounding traces.

The last stone artefact of mound 2 is remarkable (V 201; Fig. 6.8). This example is much different from the example from the backfill of the robbery pit: it is somewhat smaller and flatter (70 mm x 8 mm), is of a different kind of stone and tapers a little from one short edge towards the other. Working traces are visible at each side, demonstrating manufacturing rather than use traces. One broad side is smooth, the other shows a smoothened remnant of the stone's cortex and is still somewhat irregular. The smoother side has a light beige colour, whereas all other sides are dark. As such, it stands out and we assume that it was deliberately done. We must be dealing here with an object that could be used as a whetstone but apparently was not. The pains taken to polish the object and to make the one light

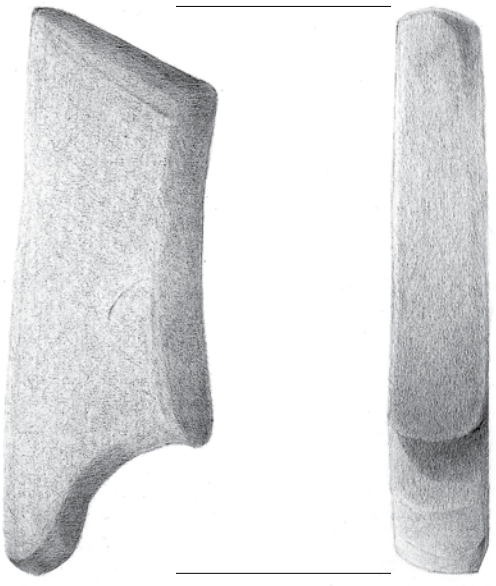


Fig. 6.7 Whetstone, found in the fill of the robbery pit. It probably was part of the equipment of the grave robbers. Scale 1:1. Drawing by E. van Driel.

Fig. 6.8 V 201. Photograph by Q. Bourgeois.

side stand out suggest that it was an object made to be seen. One may think of a stone pendant. Again, a pendant would have a perforation or a ridge to allow a connection to a rope. Something like that is absent on the object, which makes it all the more hard to find out what it was made for[53].

6.4 Finds done in the surroundings of the *Echoput* Mounds

6.4.1 A pottery sherd

Even though the digging of the trenches in the surroundings of the *Echoput* mounds was carried out very carefully and extensively conducted by at least two workers, just one single sherd was found. The sherd was found in trench 6 in the top of pit S 5 (V 78; Fig. 6.1). The sherd is probably a shoulder fragment of a pot. This orange-brownish sherd is decorated with parallel, horizontal grooves in which nail-impressions can be seen. It is 6 mm thick and tempered with minerals (0.1-3 mm). The fabric and decoration of nail impression suggest that the sherd is a fragment of a Pot Beaker. However, nail impressions on Pot Beakers are generally the result of pinching out bands (Lehmann 1965, 3-4). On this sherd the nail impressions form thin grooves. These are reminiscent of the grooves on Protruding Foot Beakers, but grooves on these beakers are cord impressed or made with a plain implement or spatula (Van der Waals/Glasbergen 1955, 7) Protruding Foot Beakers can generally be dated to the Late Neolithic A. Pot beakers can be dated to the Late Neolithic B or Early Bronze Age (Butler/Fokkens 2005, 372-77). So the sherd can generally be dated to the Late Neolithic or Early Bronze Age. This provides a rough date for S 5 (and perhaps for the post alignment), although this small sherd might have entered the feature by sedimentary processes, such as bioturbation (which agrees with the gnawing marks of rodents on the sherd).

53 Several other collected stones appeared not to be artefacts. These are V 22, V 81, V 101, V 103, V 104, V 127, V 138, V 153, V 167, V 229 and V 240.

Fig. 6.9 Quern (V 46), found in trench 9. Scale 1:2. Drawing by E. van Driel.

6.4.2 A granite quern

In trench 9, close to the traces of posts and pits, but unassociated with one of them, we found a large fragment of a granite quern (V 46; Fig. 6.9). It has a flattened surface on one side, and a rounded bottom (235 x 128 x 82 mm). It has the classic form of a quern, but unfortunately not of a form that allows further dating. The macroscopic wear traces on the flat surface show that this tool was used. Due to a bad conservation an interpretation of the worked material was not possible. It was made of granite that occurs locally on the ice-pushed ridges, but not of the reddish granite of which TRB querns are made. These also tend to be much larger than this example[54]. A quern indicates that processing of cereals took place. Assuming that such a heavy stone (3.5 kg), was not transported over large distances, it suggests that it happened fairly close to the place where the mounds were built.

6.4.3 A "royal" bullet?

V 2 is a lead bullet of a musket (16 mm). It has one flattened side, probably caused by the force of impact. Such bullets can be dated to *c.* 1550-1850 *AD,* and are a well-known type of stray find during excavations. They are mainly known from (former) agricultural fields, where they usually evidence rabbit hunt. In this case, at the Royal Estate, we may be dealing with the remnants of a hunting party of the estate owners.

54 Personal comment Annelou van Gijn (University of Leiden, Ancestral Mounds Project).

6.5 Conclusions

Although inconspicuous, at least two important remarks can be made on the basis of the finds described here. At mound 1, a number of the finds in the top of the mound can be explained as stray finds that ended up there due to later processes (including the 1999 restoration). A small number of finds was related to "grave" 1 and grave 2, presumably as grave gifts. These aside, the majority of finds comes from the body of both mounds (inclusions in the sods) and from the prehistoric surface covered by the mound. It is interesting to compare both contexts to what we found beyond the mounds.

Starting with material from the mounds' bodies: it is the most likely that they got there as inclusions in the sods. Many other, larger stones that are not artefacts were also found. They happen to be part of the top soil of the *Echoput* hilltop. As stated elsewhere, we argued that the sods with which the mounds were built were cut locally, presumably at the hilltop itself. The number of finds in the mounds' bodies is relatively low. In the case of mound 1 we counted three pounding/polishing stones and one tiny pottery sherd in one quadrant. We could add a further four to six pottery sherds from the top levels, but as argued above, part of this material is likely to have come from the top and was worked down by bioturbation. In the case of mound 2 we have just three pottery sherds from two quadrants of mound 2 and no stone artefacts from the mound's body. For both cases, it does not suggest that the area where the sods were cut contained a lot of pottery debris. For mound 1, this is in contrast to the surface covered by the mound: here, we found no less than fifteen pottery sherds, as well as two fragments of iron. Perhaps there was a concentration of material on the spot where the mound was built. Alternatively, the mound sealed material that may have lain exposed outside the mound, the latter vulnerable to levelling and trampling. It is conspicuous that we also found a few artefacts underneath mound 2, and that one of those sherds must be from the same vessel as one we found underneath mound 1. The remarkable stone object in pristine condition found underneath mound 2 (V 201) does not look like normal refuse. It cannot be ruled out altogether that the artefacts underneath both mounds were related to funerary activities, or deliberately deposited. Only a complete excavation of both mounds may provide further arguments for this interpretation and in view of our very limited knowledge on contemporary burial practices we must leave this as a hypothesis in need of further study.

The other remark to be made concerns the presence of items related to the processing of cereals (pounding stones, a quern). For the Middle Iron Age and the previous periods (Early Iron Age, perhaps also the later Bronze Age?), pollen evidence neither indicated the presence of agricultural fields, nor of a settlement here. The latter is also not attested by the traces found beyond the mounds (Chapter 4). How are we then to understand the presence of a quern here? Even if we allow that the pounding stones may have had several functions and need not be exclusively related to the processing of cereals, what are we to make of the presence of a prehistoric quern here? The problem – and peculiarity – is that it cannot be precisely dated and is not associated with any of the many post and pit traces found. This leaves open the possibility that the quern dates to a use phase before the period covered by the pollen diagrams, like the Bell Beaker Period. As argued in Chapter 2 and 3, we have evidence that the area was used at that time and that traces dating to it are profoundly hard to recognize.

Chapter 7

Analysis of the cremated bone remains from mound 1[55]

Liesbeth Smits

7.1 Introduction

This chapter describes the results of the analysis of the cremated remains in S 1 ("grave 1") and grave 2. In particular, the minimum number of individuals represented in the grave will be determined, as well as age and sex of the deceased and the presence or absence of any animal bones among the burnt remains. In addition to this, we will discuss if S 1 ("grave 1") represents the remains of the pyre that was used for burning the deceased whose bones were buried in "grave 2".

7.2 Context of the cremated remains

Section 2.5.5 and 2.5.6 already provide detailed information on S 1 ("grave 1") and grave 2. The most important conclusions are repeated here.

In the top of Mound 1 (level 2), remains of cremated bone were uncovered in two features. The first is S 1 or "Grave 1": a find scatter of a few fragments of cremated bone, most of which are very small, charcoal, and two heavily corroded iron hook-like objects (Chapter 6). They were found in a (shallow) pit filled with brown soil recognizable as such within the darker matrix of the mound's top soil. The position of each individual bone, charcoal and iron fragment was drawn on a detailed map. No pattern was recognizable. As it contained the remains of human bone, S 1 was labeled "grave 1" during the excavation. Charcoal from this grave was C14-dated at 2190±35 BP (GrN-32158), calibrated (2σ range): 375-170 cal. BC, later part of the Middle Iron Age-first half of the Late Iron Age.

Grave 2 (S 2) is just to the north of S 1, and was found at level 3. This is a concentration of cremated bone with hardly any charcoal. As argued in section 2.5.6, it is clear that this concentration was dug into the mound from its top. In it, we found remains of a fragmented, bronze object that could not be determined (Chapter 6). The compact, "ball-like" concentration of bone remains indicates that it was probably packed into a (textile or leather?) bag, that kept the bones tightly together but decayed later. In more recent times, a tree grew on top of the cremation grave. The cremation remains were found among its roots. By some whim of fate, the concentration of bone was not really disturbed by root growth. The bone was collected in several levels from top to bottom. 1075 g was collected, after sieving 835 g of cremated bone remained. A bone fragment was C14 dated at 2075 ± 35 BP, calibrated date: 191-1 cal. BC (Late Iron Age-first decade of Roman Period).

55 Text translated from Dutch by D.Fontijn.

The situation of a loose scatter of a few cremated bones and charcoal in the topsoil of the mound and a dug-in collection of cremated bone without charcoal next to it is noteworthy. It made us wonder whether we are dealing here with the remains of a pyre (S 1 or "grave 1") on the one side and the definitive burial of its collected human remains ("grave 2") on the other. As argued in section 2.5.6, this is not necessarily contradicted by the relatively small overlap of both C14-datings (*cf.* section 2.5.6).

7.3 Methods

Cremation changes the composition of bone. High temperatures make organical constituents disappear, only anorganical ones remain (hydroxyapatite).The crystalline structure of the hydroxyapatite mineral is also changed during cremation. Since bone breaks, shrinks and is deformed during the cremation process and is usually fragmented afterwards, determination of cremated bone can be quite difficult. However, if considerable amounts of sizeable bones are left, it may still be possible to determine the minimum number of individuals and sex, and to give an estimation of age of the deceased.

Research of cremated bone remains includes a description of the bones themselves (degree of burning and fragmentation) as well as the description of its physical-anthropological characteristics such as determination of the bone fragments, age, sex, body length, minimum number of individuals and pathologies.

7.3.1 Bone description- variables used

For bone description, degree of fragmentation and of burning have been described.

Degree of fragmentation depends of different depositional and post-depositional processes. If the bones are still hot, they are very vulnerable. If they are cooled down quickly (when the fire is being put out by water) and they are collected they break easily, resulting in further fragmentation. Breakage of bone remains may also occur during excavation, and bone stored in undamaged urns usually are less fragmented than bones that were deposited in pits without a container. Table 7.1 lists the degrees of fragmentation used for the description of fragmentation of cremated bones (following Wahl 1982).

Phase 1	Description	Size of fragment (cm)
1	Very small	< 1.5
2	Small	1.6- 2.5
3	Medium	2.5- 3.5
4	Large	3.6- 4.5

Table 7.1 Degrees of fragmentation of cremated bone (Wahl 1982).

Colour	Degree of burning	Temperature (°C)
Light brown	0= unburnt	-
Dark brown	1= hardly burnt	<275
Black	2= poorly burnt	275-450
Grey	3= averagely burnt	450-650
Chalk white	4= well burnt	650-800
"Old" white	5= very well burnt	>800

Table 7.2 Degrees of burning (Wahl 1982).

Degree of burning can be determined on the basis of a.o. bone colour and shrinkage patterns on the burnt bone fragment. Colour depends of both duration and temperature of the burning process. Table 7.2 shows the different phases of burning that are being distinguished (following Wahl 1982).

7.3.2 Description of physical anthropological characteristics

For determination purposes, it is particularly the bone fragments larger than 10 mm that are being studied, as smaller ones only rarely allow proper identification (Maat 1985). However, the smaller than 10 mm fraction is always checked for fragments that are indicative of age, sex and the minimum number of individuals (MNI). A sieve with a measure width of 1 mm is used for collecting suitable bone fragments, as this is the best way to retrieve small bone fragments like auditory ossicles that are important for determination of the MNI. Table 7.3 lists the groupings used for the inventory of bone fragments. Within each grouping individual fragments have been determined (e.g. *femur*, *radius*). If specific bones have not been recognized, this does not imply that they are not represented. It is well possible that these were fragmented to such an extent that they are too small for determination.

Table 7.3 Groupings used for the inventory of bone fragments.

Skeletal part	Description
Neurocranium	Cranial vault
Viscerocranium	Facial part of the skull
Axial	Scapulae, vertebrae costae pelvis sacrum, claviculae
diaphyseal extremities	Shaft fragments of the arm and leg bones (extremities)
epiphyseal extremities	Joint fragments of the arms and legs

Sex

Sex determination is carried out following the norms of *the Arbeitsgruppe Europäischer Anthropologen* (1979) and is based on a number of characteristics of skull and pelvis that differ in form and size between the sexes. Each feature is attributed a value that varies from -2, -1, 0, +1 to +2. The negative values represent female and the positive values male manifestations of sexual traits on the skull and pelvis. The outcome is based on the weighed average off all the examined features. This is only possible for the bones of adults. The robustness of the post-cranial skeleton can be another indication for sex (Schutkowski/Hummel 1987).

Age

Age determination on the basis of cremated bone follows the same conventions that are used for inhumations. For non-adults, determinations are mainly based on the state of epiphyseal union (*Arbeitsgruppe Europäischer Anthropologen* 1979) as well as on mineralization and eruption patterns of teeth and molars (Ubelaker 1984). For adults, age is estimated on the basis of studies of the pelvis (state of the *symphysis pubica* and the *facies auricularis;* Lovejoy *et al.*1985), and on the state of closure of both the endocranial (Acsádi/Nemeskéri 1970) and ectocranial skull sutures (Rösing 1977). The interior obliteration is scored according to the recommendations by the WEA, the exterior closure according to Rösing.

7.4 Results

7.4.1 "Grave" 1

Twelve burnt bone fragments have been collected from find scatter S 1 ("grave" 1). Three are recently broken fragments of one piece of bone, leaving us with nine pieces for determination. Most fragments could not be determined because they are too small (< 1 mm) to allow further identification. Results are given in Table 7.4. The larger fragments are all recognizable as human and comparable with those from "grave 2" in size, shape and color. The fragments are very well burnt. Bone from S 1 is severely weathered, much more than those from "grave 2". This is to be expected, as the S 1 finds represent material that had been lying on the top of the mound or in a shallow pit, whereas the "grave 2" finds were clearly buried and packed in an (organic) container. The bad condition of preservation of the "S 1" bones prevents us from trying whether bones from S 1 and grave 2 fit together.

Find no.	Content
004	Indet.
005	Indet.
006	Indet.
007	Diaphysis
016	Indet.
017	Diaphysis (human)
018	Diaphysis *femur* (human)
020	Indet.
038	Diaphysis (human)

Table 7.4 Bone fragments from S1 ("grave" 1).

7.4.2 Grave 2

The bone remains of grave 2 are very well burnt (degree 5; *cf.* Table 7.2). Some 835 g of bones were uncovered[56], all of which are human. Animal bones were not observed. All results are presented on Table 7.5. In particular, the more compact parts of the long bones and the skull have been preserved (Fig. 7.1). All skeletal parts are represented, however, which implies that bones were carefully collected from the remains of the pyre. Charcoal is practically absent. Breakage patterns on the long bones indicate that a complete body (including soft tissues) was burnt[57].

The cremated remains represent one male individual. Skull characteristics are as follows:

- Superciliary arch = +1
- Nuchal plane = +1
- Zygomatic bone= +1
- Supramastoid crest = +2
- Orbit (form and margin)= +1

Age is determined at 30-45 years, based on the following characteristics concerning suture closure.

56 As it contained large numbers of gravel, the weight of the small bone fragments in the sieve residu had to be estimated.

57 Tests have shown that the parabolic shaped fractures on the diaphyses of the long bones are associated with the cremation of so called flesh covered bones (Ubelaker 1984).

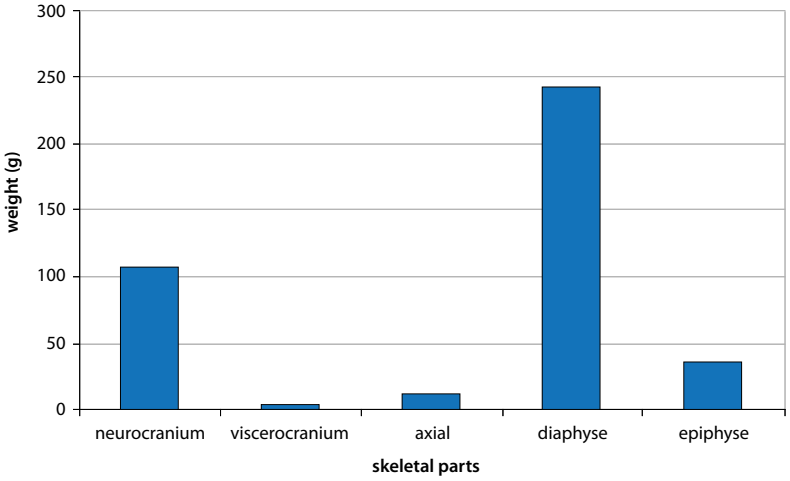


Fig. 7.1 Presence of bone fragment per skeletal part.

- *Coronal suture*: closed on the interior, open on the exterior
- *Sagittal suture:* both on the interior and exterior open (trajectory 2,4)
- *Lambda:* open on both the interior and exterior

No pathologies have been observed on the bone fragments.

7.5 "Grave" 1 and grave 2: pyre and burial?

Suggestive as the possible links between "grave" 1 and grave 2 may be, the analysis of cremated remains does not support the idea that S 1 represents the remains of a pyre on which the individual was burnt whose bones were finally buried as our grave 2. It was simply impossible to re-fit material from both contexts. The idea cannot be entirely refuted either, but we must leave it at that.

7.6 Conclusions

Grave 2 consists of the cremated bone remains of one male individual in the age of 30-45 years. Pathologies were not recognized and animal bones are absent. His entire body (not just the bones) was burnt. Even though the amount of bones is too low for a complete skeleton, all skeletal parts are represented, which shows that the mourners searched the pyre remains with some rigor. "Grave" 1 is a scatter of nine human cremated bones, charcoal and remains of an iron object. Osteological analysis could not support the hypothesis that "grave" 1 represents the remains of the pyre, and grave 2 the burial of cremated remains that were collected from it.

Skeletal part	Weight (g) V 72	Weight (g) V 34	Weight (g) V 52	Weight (g) V 67	Weight (g) V 65	Fragmentation (cm)	Content (+ = observed)	
Neurocranium	66	8	14	7	13	4	*Os occipitale* = occipital part of the skull	+
							Os pariëtale = parietal/ side of skull	+
							Os temporale = temporal bone	+
							Os frontale = frontal bone	
Viscerocranium	4					3	*Orbita* = socket of the eye	+
							Os zygomaticum = cheek bone	+
							Maxilla =upper jaw	
							Mandibula= lower jaw	+
							Teeth/molars	
Axial	11				1	3	*Vertebrae*	+
							Costae = ribs	
							Clavicula = clavicle	
							Scapula = shoulder blade	
							Pelvis	+
Diaphysis	82	25	22	34	80	8	*Humerus* = upper arm	+
							Radius = forearm lateral side	
							Ulna = forearm medial side	+
							Femur = thighbone	+
							Tibia = shinbone	+
							Fibula = lower leg lateral side	+
							Phalanges= hand and foot bones	+
Epiphysis	4		15	15	2	3	Joints of:	
							hand/arm	+
							foott/leg	+
Residu *Due to presence of lots of gravel bone weight has been estimated*	c. 200	c. 50	c. 50	c. 50	c. 60	<1		
Total (human)	367	83	101	106	156	22	835	
Animal	-	-	-	-	-	-		

Table 7.5 Cremated bone from grave 2. Find numbers 37 and 98 contain respectively 1 and 4 g of residue. These remains cannot be determined.

Chapter 8

THE GENESIS AND HISTORY OF THE *ECHOPUT* BARROWS

David Fontijn

8.1 Introduction

This chapter will bring together the conclusions of the investigations reported in the previous chapter. I shall deal with the main questions posed in Chapter 1. When were the barrows built and what is their history of use? Were they the only mounds that crowned the *Echoput* hilltop? What was the relationship between the larger and the smaller mound? Is one markedly older than the other? An important focus of this project concerns the environment into which the mounds stood. In what sort landscape were they built? Are we dealing with a separate "ritual" funerary zone, or rather with mounds situated near the dwellings of those who built them?

8.2 The *Echoput* hill before the barrows

Our excavation yielded information on the pre-barrow period of the *Echoput* mound from three different sources that only partially overlap. The first are the soil features sealed beneath the mounds. We are dealing here with ancient, and relatively vague features that owe their discovery mainly to the fact that they were covered by a mound (described in Chapter 2 and 3). The second are features discovered in the excavation trenches outside the mound (Chapter 4). The problem here is that most cannot be dated and we expect that very old traces (that came into being at a time when soils were not well-developed) may be very hard to recognize. The third source of information are the pollen that are preserved in the ancient soil beneath the mound. Using this pollen record as source of information on the prehistoric landscape has so far hardly been done. I do think, however, that the approach developed by Marieke Doorenbosch in Chapter 5 provides us with an entirely new set of data on landscape history. A problem not solved yet is that we are currently unable to find out what time period is exactly covered by the pollen evidence from such buried ancient soils. Taking into account the limitations of each source of information, the following outline can be given on the history of the hilltop before the barrows were built

8.2.1 Long before the barrows

The hilltop was used by people thousands of years before the barrows were built. This is demonstrated by a pit buried beneath mound 1. In the fill of S 20 charcoal was found. A sample was C14-dated to the Late Mesolithic (7345± 40 BP; calibrated two σ range: 6355-6076 cal. BC). In view of its similarities to S 20, another feature (S 21), very close to it, may have the same age. There are no other traces or finds that can be safely dated to the Mesolithic. Pits containing large numbers of

charcoal and nothing else are known from Mesolithic sites in the vicinity such as *Hattem-Hanzelijn* (Knippenberg/Hamburg 2011). The pit feature(s) underneath mound 1 are the only indications we have of this Mesolithic phase in the history of the *Echoput* hill. No flint debris was found in the trenches excavated around the mound, and only one tiny un-datable flint flake was found in the sods of mound 1 (which represent the ancient top soil of the *Echoput* hill itself). The manual excavation, sieving of pit fills and mound construction material, and the fact the we found very small artefacts from other periods rules out that flint was systematically missed by our excavation. Pit S 20 therefore seems to represent a relatively isolated activity that took place at the highest point of the *Echoput* hill.

Then, there is a possibility that the *Echoput* hilltop was used by people some 2000 years later. Charcoal found in the central pit underneath mound 2 was C14-dated to 5125±35 BP (3990-3800 cal. BC at the 2σ range). No artefacts have been found that can be dated to this period (the Middle Neolithic, in this region the period of the *Swifterbant* culture). For that reason we cannot rule out that it represents wood that burnt as a result of natural causes (forest fires).

8.2.2 An open place

At some point in time, the hilltop became an open space, cleared of trees. We found evidence that shows that people both created this open space and saw to it that it remained like that for a long time. This is indicated by the pollen that was preserved in the old soil sealed beneath the barrow. Analysing the pollen preserved in the A and most of the B horizon, Doorenbosch argues that two zones are recognizable that represent the development of the local vegetation through time, before the barrows were built. The oldest pollen spectrum underneath the mound (zone 1; Chapter 5) indicates that a decrease in forest cover took place (40-20 %), and an expansion of heath and Poaceae. The decline of *Tilia* and the appearance of *Fagus* reflects a broader vegetational change that is usually dated in the Sub-Boreal period (starting *c.* 3800 cal. BC). In the second, younger, pollen zone 2 we see vegetational change set through. *Tilia* gradually disappears, and heath expands with ups and downs, whereas anthropogenic indicators are more prominent among the vegetation than in the older pollen zone. An important point is that these pre-barrow pollen zones reflect human-induced environmental change, but not for the construction of agricultural fields at the hilltop: no pollen of cereals was detected in both zones, and heath vegetation is not to be expected to grow on farmyards. Another significant point is that, once created, this clearing appears to have remained open, and probably even to have expanded somewhat. This longevity is only possible if there was a long-lived commitment of local prehistoric community (-ies) to some form of structural land management in this area. We have reasons to believe that this was particularly done by using the hilltop as pasture for livestock, and probably also by fire management (deliberate burning of heaths).

The evidence of our excavation of the environment becomes important here. As discussed in Chapter 4, an unexpected large number of features was recognized immediately beyond the mounds, but it appeared to be highly problematic to find out what sort of land use and activities created such features. On top of that, the features stand out for being almost completely without any finds. Artefacts (pottery sherds, stone tools, flint) and even the smallest amounts of charcoal are markedly absent, making it very hard to provide even the broadest of datings. With regard to the pollen evidence that demonstrates the existence of an open place that was maintained by human interference, two conclusions from the investigation of soil features are important. The first is that there are indications that the hilltop

was used by people during the Late Neolithic Bell Beaker phase. The second is that in the next period, the Bronze Age and earlier Iron Age, there is no evidence for the presence of a settlement at this place. I will now first describe what we know about both periods, and then come back to the discussion on the use of the hilltop in the period immediately preceding the construction of the barrows.

8.2.3 Activities during the Late Neolithic/Bell Beaker Period

There are several indications that the place was used during the Late Neolithic Bell Beaker phase. This is evidenced by traces of a pit found underneath mound 1, as well as of a very comparable one underneath mound 2. Both had charcoal in their fill and nothing else. It should also be mentioned that there are traces of a second, comparable pit underneath mound 2 (S 3.8.4; Chapter 3). Unfortunately, a sample of charcoal in it has not been C14-dated. The charcoal sample from the pit underneath mound 1 (S 16) is C14-dated to 3875± 35 BP, which is 2470-2210 cal. BC. A charcoal sample from the one under mound 2 (S 3.8.2) yields a C14-date of 3745±35 BP (calibrated to 2281-2035 cal. BC). These dates cover both the older (pit underneath mound 1) and the younger (the one under mound 2) phase of the Bell Beaker Period. In addition to this, one small Bell Beaker pottery sherd was found in a secondary context (in a sod of mound 2), and so was another sherd that can be broadly dated to the Late Neolithic. As the sods must have been cut in the heath in the immediate vicinity of the mounds, such finds provide another –be it indirect- hint that people used the hilltop and/or its flanks during the Late Neolithic. Substantial debris (sherd/flint scatters on the surface or in features) is lacking. This does not in itself prove that the hilltop was not used as a (permanent or seasonal) settlement site, as the nature of such sites, and their fingerprint in the archaeological record, can be very weak (Arnoldussen/Fontijn 2006). One more Late Neolithic sherd (of a Pot Beaker), that cannot be further dated, was found in a pit that was part of a small post alignment outside the barrows. This may indicate that this structure was constructed in that period, but the evidence cannot be pressed too hard.

8.2.4 The use of the hilltop during the Bronze Age and earlier Iron Age

Although we do not know how old the pre-barrow pollen zones exactly are, they can be expected to cover the earlier Iron Age and perhaps (a part of) the Bronze Age as well. After all, we are dealing with pollen from a palaeosol that is sealed off by a fourth/third century BC burial mound. As remarked above, the pre-barrow vegetation (heath and no indications for agricultural fields) already shows that we are not dealing here with an open space that was created and maintained because it was used as a location where people built their houses and ploughed their fields. This is not contradicted by the excavations around the mounds. It is true that most of the features recognized on the hilltop cannot be dated, and may therefore theoretically represent Bronze Age/Iron Age features. However, we did not find any Bronze Age or Early Iron Age pottery sherd – finds that are done on any settlement site of these periods where pits have been preserved (as is the case here). A piece of charcoal found in trench 5 (S 16) was C14-dated to the Middle Bronze Age (3195 ±30 BP; calibrated 1517-1417 cal. BC), but if this reflects human activities remains to be seen. It was found in a shallow depression of which we are not certain that it is anthropogenic (Chapter 4). Apart from that, one Late Bronze Age/Early Iron Age sherd was found in secondary context in a sod of mound 2. The isolated granite quern stone that was found to the north of mound

2 is a characteristic artefact for domestic activity. However, we do not have any clue to what prehistoric period it actually belongs (Chapter 6). A Bronze/earlier Iron Age date cannot be excluded[58], but it is just as well possible that it was used in the Bell Beaker Period, a use phase, after all, for which there is some evidence of local settlement.

Summing up, with regard to the pre-barrow phase reflected in the pollen zones, we are not dealing with an open space that remained like that because people were living at the hilltop itself or had agricultural fields there. Rather, it was kept open for other reasons –the continued presence of heath is best explained by assuming that the hilltop was used as pasture for livestock. The fact that both pre-barrow pollen zones show that the open space continued to exist and even expanded through time, implies that there the local communities used some form of land management. Letting sheep graze is one way to achieve this, but heath burning is another. The presence of very fine charcoal parts all through the sampled A and B horizon covered by mound 1 is best explained as a result of such fire management.

8.3 When were the barrows built?

One of the most surprising results of the excavation concerns the dating of the mounds. Contrary to every expectation, they appeared to date from a period of which it was generally thought that barrows were hardly built anymore, let alone impressive examples like mound 1 of the *Echoput*.

The best way to date a burial mound is by dating the primary grave. Unfortunately, datable evidence from such a context is lacking for both mounds. Still, we could collect sufficient data to provide a well-founded estimation of the time period in which both mounds were constructed.

First of all: the Iron Age sherds found underneath both mounds are already a clear hint that both barrows were built in (or after) the Iron Age (Chapter 2 and 3). The presence of *carpinus* among the pollen evidence from the ancient soil buried underneath the mounds, and from the sods is another hint in that direction (Chapter 5).

Then there is the charcoal that was found in the fill of the ring ditches around both mounds. As set out in Chapters 2 and 3, this charcoal was part of the original ditch fill and its C14-dating must therefore be seen to represent a *terminus ad* or *post quem* dating. For mound 1, this charcoal is C14-dated to 2225±30 BP, calibrated to 384-203 cal. BC. For mound 2, it is dated to 2240±35 BP, calibrated to 392-204 cal. BC. These datings are nearly identical. They indicate that both mounds were built in or after the fourth or third century BC. For mound 1, the presence of two dated features dug into the top of the mound give a *terminus ante quem* dating for this mound. The oldest of them comes from S 1 (a grave or deposit of pyre debris). Charcoal from pit S 1 is C14-dated to 2190 ± 35 BP; calibrated this comes down to 375-170 BC. For the larger part this overlaps with the *post quem* dating from the ditch fill, suggesting that not much time elapsed between the digging and filling-in of the ditch and the events taking place at the top of the mound that are evidenced by pit S 1[59]. Combining *post* and *ante quem* dates, mound 1 is likely to have been constructed in the 4th or 3rd century BC.

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58 Although Iron Age querns are usually made of tephrite (Van Heeringen 1985).

59 In Chapter 2, we argued that it is unlikely that the ring ditch was a secondary feature of the mound, which was dug in relation to grave 2/S 2 (and "grave" or deposit of pyre debris S 1): these features are not in the center of the circle described by the ring ditch.

For mound 2, the *terminus post quem* date is nearly identical to that of mound 1, but we lack a *terminus ante quem* date for this mound. Mound 2 is very similar to mound 1, however. This applies to the soils underneath the mound, and the sods, as well as to the way the sods have been stacked. The pollen spectra from both soils and sods of mound 1 are similar to those of mound 2 (Chapter 5). In addition to this, both mounds have a narrow ring ditch, containing charcoal, and both have a scatter of Iron Age sherds on the surface beneath the mound. What is particularly revealing is that we found a sherd underneath mound 1 that finds a parallel in a sherd found underneath mound 2. It is likely that both come from the same pot (Chapter 6). Summing up, it is very likely that mound 1 and 2 were built at the same time, or one relatively quickly (within less than a generation) after the other one. What has been said on the dating of mound 1 can therefore reasonably be applied to mound 2 as well. This means that both mounds must have been constructed in the 4th or 3rd century BC, in the later part of the Middle Iron Age- earliest decades of the Late Iron Age.

8.4 In what kind of environment were they built?

Pollen preserved in the A and B horizons underneath the mound informs us on the earlier vegetational history of the hilltop. Pollen preserved at the old surface itself, as well as in the A horizon of the sods provides us with evidence on the environment as it was at the moment when the mounds were constructed. The pollen composition of the old surface is the same on the old surface as in the A horizon of the sods, corroborating the idea that the sods were cut in the immediate surroundings of the mounds. The pollen specta indicate that the top of the hill must have been open, dominated by heath vegetation (*e.g. Calluna vulgaris)* and grasses (Poaceae), which already must have existed for a longer time. This fits in well with the observations from the soil beneath the mounds mentioned above. After all, these also indicate that there already was a heath at this place before the mounds were built. The pollen from the old surface further show indicators of human activity like *Plantago lanceolata* but no evidence for the local presence of agricultural fields. There probably was some standing water locally from time to time, and here we may think of a prehistoric version of the pools of water that normally remain at the *Echoput* hilltop for a long time after a rainy day. Hazel (*Corylus)* and oak (*Quercus)* probably grew at the flanks of the hill, whereas there was an alder carr in the lower lying parts of the landscape near stream valleys. There is indirect evidence (the dominance of alder) that the landscape beyond the hilltop was open as well.

8.5 How were the mounds built?

The barrows were built with sods that were cut in the immediate environment. We have two indications for this. The first is that the pollen from the A horizon preserved in the sods is very similar to what is found in the soil covered by both mounds. The second is that most sods that we could study in the profile sections show a thin gravel layer underneath the A horizon (Dutch: *grindsnoer)*. Systematic inspection of the profiles of all trenches show that such a lithic component is particularly present on the hilltop itself, but less so in the profiles of trenches we dug in the flank of the hill (Chapter 4). As we created many artificial levels during the excavation of both mounds, and have drawn each individual sod that we could recognize, we have a fairly detailed picture of the way in which sods were stacked.

The excavations around the mounds show that there were no other burial mounds at the hilltop, and if there were an urnfield around it, we would have found traces of it. One or two isolated flat graves with cremation remains may theoretically be situated in the unexcavated parts of the hilltop, but in general it can be stated that there was no cemetery or other burial mound here, apart from the ones we excavated. This leaves us with two contemporary barrows, one large, the other somewhat smaller.

As argued, not much time passed between the construction of the two mounds. It is likely that they were built within the same generation, and it can even not be excluded that they were built at the same time. Since the sods are very likely to have been cut from the heath at the hilltop itself, a large part of the top must have been stripped for their construction. Calculations show that approximately 947 m^2 of the hilltop needed to be stripped to build both mounds (Chapter 5). This is approximately half of the hilltop[60]. Interestingly, the soil beneath both mounds has been left intact. Clearly, sods were not taken from the place where both mounds were built. This means that if the mounds were not constructed at the same time, people already reserved a place for the creation of a second one while they were cutting sods for the first one. With regard to the way in which the mounds were built, the following points can be made.

8.5.1 Mound 1

Mound 1 was created on a gravelly natural outcrop, probably the highest point of the entire hilltop. In the quadrant excavated by us, we did not find the remains of a central grave. Assuming it is situated in the centre of the circle created by the ring ditch, it must be just south of our excavated quadrant. The foundation of the mound was made by placing rectangular sods (*c.* 60 by 25 by 20 cm, but with variations) on the surface which was not stripped or leveled in advance (level 8). Sods consist of the A and part of the B horizon of the local ground, and must have been cut with vegetation (the roots of which keep the ground together). Practically all sods we found were placed with the vegetation part downwards, apart from a few sods placed in the centre. Against the sods in the centre, people placed the surrounding sods like the tiles of a roof, tipped towards the centre. Closer to the centre, sods are more often placed in a horizontal position. Basing ourselves on evidence from other burial mounds, we think that the horizontal ordering of sods in the centre serves to seal something (a pit or pyre debris; see further Chapter 2 for a more lengthy discussion). At any rate, these horizontally stacked sods form the core around which the rest of the mound was built. Basing ourselves on the excavation of only 25 % of the entire mound, we cannot say anything definitive on the general way in which the mound was built. Our sample, however, indicates that there was a general system of placing the sods. The local varieties can be explained by the fact that the sods are not of a standardized size, and that it would have been necessary to adjust sod arrangement locally in order to fill in gaps. It is possible, but cannot be proven due to the small size of our sample, that some of the local differences in sod arrangement reflect the activities of different groups of people, each building their own part of the mound in their own way.

The mound as excavated by us represents one construction phase – the mound was not extended or heightened at later times. It ended as a mound with a gentle slope and – very uncommon- a broad platform on its top. Around the mound,

60 The thin gravel layer that can be found in the sods was only found in the subsoil of the highest parts of the hilltop. By approximation, this is an area with a diameter of some 50 m (Chapter 4).

a narrow ring ditch was dug. No posts seem to have been standing in the part investigated by us. Patches of charcoal in its fill may reflect activities related to activities that took place just after the mound was finished.

8.5.2 Mound 2

Mound 2 was built 20 m to the north of mound 1. The primary event here seems to have been the digging of an oval pit 175-200 cm long and 80 cm wide, and some 30 cm below the prehistoric surface. It is oriented north-south. The form of the pit suggests that we are dealing here with a pit that contained an un-burnt human body. Positive evidence for this is lacking, however. No artefacts were found in it, although the way in which the pit was robbed in modern times strongly suggests that there was some object in it that the robbers took away. The pit was sealed with sods that were placed in a horizontal position. The sods were less well visible here than in the case of mound 1, but the way in which they were used to build a mound can be reconstructed. Recorded lengths of the sods range from 50 to 80 cm, thickness from 25 to 40 cm. Smaller sods (length between 40-50 cm) were also observed. At least two layers of sods were stacked horizontally on top of each other on the central pit, creating a small sod core. The vegetation side (A horizon) was below. Against this core, sods were placed in a diagonal position, tipped towards the centre. The farther one gets from the center, the more horizontal the sods were placed. Again, the sods were mainly placed upside-down (vegetation side below). Within this system, there is some variety in the ordering of sods per segment. In the southwestern quadrant (trench 2), most recognizable sods tend to be placed perpendicular to the radius of the mound. In the northeastern quadrant (trench 3), recognizable sods are parallel to it. The mound was constructed in one phase. As the centre was severely damaged later on, we cannot know for sure if it originally had a round or a flat top. A ring ditch was dug around the mound. At least four posts were placed in the ditch in the southwest quadrant – no clear indications for the presence of posts were found however in the ditch in the northeast quadrant. The posts therefore do not seem to have functioned as a peripheral boundary in the normal sense, but rather may have had a specific –yet unknown – function in activities that took place at or around the barrow. The charcoal that was found in the ditch may be another indication thereof.

8.5.3 Similarities between the building method of mound 1 and 2

There are conspicuous similarities between both mounds.

The first is the presence of Iron Age sherds at the old surface covered by both mounds. As argued in Chapter 6, we are unable to make out if the presence of sherds here, and the absence of any artefact outside the mounds is only due to selective preservation. The observation that sherds of the same pot were found under two mounds suggests that things were more complicated than that. We should therefore at least remain open to the hypothesis - not mentioned above- that the distribution of sherds represents a deliberate, meaningful deposition related to the central burial event.

The second similarity concerns the way the sods are stacked. Most sods were placed upside down, and the stacking was organized from a core of sods that were placed horizontally. Sods were placed in a diagonal position against this core, tipped towards the centre (like tiles of a roof). These similarities are not unique to the *Echoput* mounds; we found evidence for comparable orderings in *Oss-Zevenbergen* and *Toterfout-Halve Mijl* (*cf.* Chapter 2 and 3). They may represent widely-shared "best practices" on how to construct burial mounds. More specific for this case

is the variation between sods that are placed perpendicular to the radius of the mound, and those that are placed parallel to it. We saw examples in both mounds. So far, they were explained as local adjustments to the general system of stacking sods, caused by the lack of standardized sizes of sods. We should be very cautious here, as we only excavated one quadrant of mound 1, and the information from mound 2 was not optimal with regard to the sod-stacking. We do not have the entire picture on the way in which the barrows were built. What is clear, is that mound 1 and 2 were built in a similar way. If the similarities result from a specifically local tradition, is a question that we cannot answer at this moment.

A third point is that we are in both cases dealing with a mound that was built in one phase. That we are dealing with contemporary or near-contemporary mounds of differing sizes therefore is interesting: these size differences were apparently relevant to the builders, laying visual emphasis on mound 1. On the other hand, the size differences should not be exaggerated. Mound 1, with its original diameter of 18.7 m and original height of 1.08 m is not that much larger than mound 2 (original diameter 14.5 m and height 1.0 m)

A fourth point is that both mounds were surrounded by a narrow ring ditch. It is very likely that in both cases the ditch was dug when the mound already was there. Both ditches have been rather irregularly dug (depths vary considerably). The ditch was not dug as a foundation for a palisade, or even a regular post setting. In both ditches we found patches of charcoal, whereas charcoal is lacking on the prehistoric surface covered by both mounds.

There are also differences between the two mounds. The most important one, that was clearly intentional, is the size difference. Other differences can be the result of selective preservation and selections made in our research, but need not necessarily reflect structural differences. These are as follows. Mound 1 has a flat top (a platform) on which there were one or two graves. This has not been found on mound 2, but we need to realize that the entire center of mound 2 was disturbed by the robbery. The ring ditch in mound 2 has posts in the southwest quadrant. Traces of such posts were not found in the ditch around mound 1. As set out in Chapter 3, however, also in the case of mound 2 posts do not seem to have been a structural feature of the ring ditch. It is possible that we are dealing with a barrow type where certain segments were not marked with posts.

Summing up, apart from size, the similarities between both mounds are more conspicuous than their differences. If we realize that it is very likely that both mounds were built in the same phase, or even at the same time, this does not come as a surprise. We are dealing here with the work of the same community- or with different people working within one and the same tradition. As they appear to have been the only barrows at this hilltop, we might even consider to see them as "twin barrows" . Although this term is incorrect in a strict sense (sizes are different) it does catch something of the similarities between both mounds.

8.6 The outlook of the barrows

What did the *Echoput* hilltop look like, once the mounds were built? We do not have pollen evidence that informs us on the time immediately after they were built. Still, the following points can be made.

As argued before, it is likely that the sods with which the mounds were built were cut in the immediate environment. Where exactly they were cut remains unknown- later soil development may be expected to have obscured the extraction zones. The calculations of the size of the area that the builders had to strip, however, shows that a considerable area must have laid bare after the mound was built (approximately 50 % of the hilltop, see Chapter 5 and above). This is ofcourse

even more so, if both mounds were built not long after each other, or even at the same time. Taking into account that the *Echoput* hilltop is not that large, the mounds must have been standing in an area that was partly stripped of any vegetation and soil. They may have stripped small plots in different places, or removed the top soil from one continuous area. In the latter part, there is the risk of deflation which would create further degradation of the ground. Whatever method the builders may have chosen, it would have taken some time until such an area was green again, and during all this time the local landscape would show off the traces of the sod cutting- this would probably have taken some 20 years (Chapter 5). It has been suggested that the last layer of sods was placed with the vegetation part upwards (Chapter 2). This would be the best way to stabilize the mound, to allow growth and to prevent animals from damaging the mound that was just created. We cannot prove that this was indeed the case (later soil development on the top has obscured all traces of sods in the top soil), but if it were, the green mounds would have stood out all the more among the partly stripped landscape. What we do know is that a number of posts was placed along the rim of mound 2.

8.7 Activities relating to funerary practices during and not long after construction

The posts that stood for some time in the ditch of mound 2, but probably also the patches of charcoal that were found in the ring ditches of both mounds testify to activities that were carried out after they were built. As argued before, the silting up of the ditch (and hence the charcoal entering it) cannot have taken a very long time. An important event which also cannot have taken place very long after the barrow was built, is the interment of human bones at the top of mound 1. A shallow pit was dug in ("grave" 1 or S 1). In its content we found several pieces of cremated bone, of which four could be determined as human (Chapter 2 and 7). The other ones are too small to allow identification. Apart from the bones, lots of charcoal were found as well as fragments of an iron object (perhaps a buckle, Chapter 6) . The bones are weathered, suggesting that they have been lying at the surface for a while. As the pit contains human bones, it might be classified as a grave. The number of bones, however, is small (12 fragments). The iron object does not show signs of burning. A C14-dating of some charcoal provides us with a date of 2190 ± 35 BP (375-170 cal. BC). As remarked before, this is hardly different from the dating of charcoal in both ring ditches. Wood that was only slightly younger than the charred wood in the ditch was used at the top. Still, the fact that S 1 (and S 2 as well) was not in the centre of the circle described by the ring ditch of mound 1, makes it unlikely that this ditch was a later addition to an older mound related to the graves S 1 and S 2 at the top. S 2 is a packed, ball-like, concentration of human cremated bone situated just to the northeast of S 1. It hardly contains any charcoal, but does have a lot of bone (835 g). There is also a fragment of an un-burnt bronze object (indet.). The bones are all from one human individual, a male in the age of 35-40 (Chapter 7). The bones are in a better condition than those in S 1. The condition in which it was found suggests that the bones were packed in some organic container that later decayed. A piece of cremated bone was C14-dated as well, and yielded a date of 2075±35 BP (191-1 cal. BC). This is later than the date of the charcoal from S 1, and only leaves a small overlap between both, but there appear to be problems in comparing both (respectively the "old wood effect" for charcoal and a possible contamination of the cremated bone (*cf.* the discussion in Chapter 2)). We may be dealing here either with two separate Late Iron Age graves. In that case, one contains a lot of charcoal which may therefore represent an in situ cremation, or indicate that the

pyre was nearby. Because of its low number of bones, it would be a *pars pro toto* burial (Fontijn/Cuijpers 1998/1999). Alternatively, S 1 might represent debris of the pyre on which the individual was burnt whose remains were buried as our grave 2. This is not strictly excluded by the C14-dates, and bones from both features burnt at comparable temperatures. On the other hand, bones from S 1 did not fit those from S 2 (Chapter 7). We must leave this puzzle unresolved. At least, the presence of S 1 and S 2 show that this remarkable platform on the top of this mound did have a function. They possibly lighted a fire (charcoal remains in S 1) and/or intentionally buried cremation remains remains there. In the open landscape around the mounds, such performances on the largest mound may have been have been visible from a distance.

8.8 History of the barrow landscape in historical times

For the period that followed the burying of a deceased, nothing is known. There is no pollen evidence for it, nor do we have any artefact or feature that can be dated to the Roman or the Early Medieval Period. As set out in Chapter 1, we have many indications that the *Apeldoorn* region saw intensive occupation during that time, particularly in association with production of iron. When this text was written, the municipality of *Apeldoorn* was excavating remains of a Roman Period settlement near the *Herderstraat*[61], in the lower-lying area to the southeast of the *Echoput*. Here, evidence for iron production was found. If the open landscape at and around the mounds was maintained as such, is unknown. In Chapter 1, it was noted that historical evidence suggests that there was a settlement in or near present-day *Hoog Soeren*, with heath areas around it, but also dotted with small forests. What happened during all that time at the *Echoput* hilltop remains unknown. The first indications we have of activities in the Late Medieval- early Post-Medieval Period, are from pollen found in a number of features. Many of the fills of posts and pits traces found by us around the mounds were sampled for pollen analysis. A number indeed appeared to contain enough pollen to construct a pollen spectrum (Chapter 5). In general, they have a markedly different composition than the pre-barrow pollen diagram and the spectra from the prehistoric surface covered by the mounds and in the sods. It also does not reflect the vegetation that has been standing here during the last (two) centuries: a forest in which locally pine trees and larches are dominant. Notable is the absence of *Tilia,* and the dominance of *Fagus* and *Carpinus* among the arboreal pollen in our features, which differs from the (pre-) barrow pollen. The pollen research also points to the presence of *Secale, Fagopyrum* and *Centaurea cyanus.* The latter two are characteristic for Dutch pollen sequences from the Late Medieval Period onwards. In sum, the pollen evidence strongly suggests that the fill of these features in Late Medieval or Post-Medieval. All these historical spectra suggest that there then was a landscape that had an even much more open heath than in the Iron Age (the alder forestation in the lower, watery parts of the landscape are no longer there). Given the fact that we obtained these pollen spectra from samples taken from the fill of features, what can be said on these post traces? As already mentioned earlier, we found large numbers of them, but for some reason they are entirely devoid of any artefacts or datable material like charcoal. Unfortunately, most fills that have yielded pollen cannot be interpreted to a clear structure, except for one case. These are the traces of what must have been a small round, somewhat irregularly built "hut" just to the east of the large mound 1. Here, two features could be sampled for pollen, yielding comparable spectra . They stand out for a very high

61 Personal communication M. Parlevliet, municipality of *Apeldoorn.*

percentage of *Calluna*, even much higher than in the other Late Medieval/Post Medieval spectra. It might be that this is caused by heath being part of the building itself, for example to cover a roof. We seem to be dealing here with a simple temporary dwelling, that may have been built to provide temporary shelter to a (post-) Medieval sheep herder, guarding his sheep in the by then extensive area of the *Veluwe* heath.

8.9 Recent times: a hunting party and grave robbers/early antiquarians

There are two events of more recent times of which we found traces at the *Echoput*. A musket bullet found in trench 5 is the only witness we have of a (royal?) hunting party that took place here somewhere between the 16th and 19th century. The other event is the robbery of the central grave in mound 2. Here, people dug a very broad oval hole in the centre of the smallest mound. The pit is broad enough to allow space for two people digging simultaneously. They dug almost one meter deep, until they must have bumped on something that drew their interest. We could reconstruct that they deepened this pit somewhat, apparently to take something out. We saw the traces of a smaller, oval pit that was dug through the centre of the prehistoric oval central pit. What they found in there will remain unknown forever, unfortunately. During their activities, they lost a whetstone (undoubtedly used to sharpen their shovels): it got covered up by sand thrown out of the mound, only to be found again by us (Chapter 6). We will probably never know who did this and what happened to the object(s) that they found in it. What we could reconstruct is that the robbery must have taken place a very long time ago, probably already in the 19th century. The way in which it was done demonstrates clearly that the people who did this were only interested in the content of the grave, and to get this as quickly as possible. This might have been one of the reasons why they chose the smallest mound. Reaching the centre of mound 1 would have taken more time (as we noted ourselves, it is not so easy to determine where the centre of the mound is exactly. This must only has become much harder when the mounds were overgrown with trees, as was the case before the 1999 restoration. Another reason to select mound 2 may be that this mound cannot be seen from the major road (the *Amersfoortse weg*), and only from one of the paths in the interior of the forest. This brings us to the question of the identity of the perpetrators, and to the question if we should see call them early antiquarians or grave robbers. In the 19th century, the difference in excavation method between people who dug mounds from a genuine interest in the past, and those who were only interested in objects that could be sold or added to collections, were not that large. This activity, however, took place on the Royal domain, and there is no evidence for antiquarian collections from this area in the Heritage of the Royal family who lived at the *'t Loo* Palace. The first member of the Royal family to have an interest in archaeology was queen Wilhelmina. She invited the archaeologist dr J.H. Holwerda to excavate a number of the barrows at the Royal Estate (see Chapter 1). During the years in which he investigated them, she is known to have kept a warm interest in the archaeological finds Holwerda did. If she would have known of any collections of antiquarian objects from her Estate, it is likely that she would have discussed them with Holwerda. Another group of people with interest in the past who were active during that time, is the *Felua* society. They are known to have dug in a number of mounds, where they collected pottery and urns. We do not know if they were active on the Royal Estate, but if they were, any finds are likely to have remained in the possession of the Crown – owners of this estate. For both

reasons, we hold it for likely that we are dealing here with an event that was done by another group of people, who did not have permission at all. It would then be best to speak of grave robbers rather than of early antiquarians.

8.10 The *Echoput* barrows: unexpected results

As set out in Chapter 1, we started the research in *Apeldoorn* with the intention to get some insight into the nature of all those mounds in this large municipality. How old are they? What were they used for? In what sort of landscape were they situated through time? An important background question – not explicitly stated - was: in what way are the barrows in this part of the *Veluwe* comparable to those from much better known areas like the province of *Drenthe* in the northeast, or *Noord-Brabant* in the south? This last question actually became much more important than we initially thought, as what we found at the *Echoput* does not really fit into the general picture we have of barrows from those better-known regions.

An important lesson learnt has to do with the expectations we had before we started. As shown in this book, they proved to be wrong. Instead of with Middle Bronze Age barrows, we appear to be dealing with "twin barrows" from the Middle-Late Iron Age. That the mounds would date to the Iron Age was already clear during the excavation (by the pottery we found) but that they would date to the later part of the Iron Age really came as a surprise. Middle and Late Iron Age burials from the southern Netherlands (including the river area) are as a rule not monumental at all and were often not marked with mounds (Fontijn 1996; Gerritsen 2003; Hiddink 2003). Burial mounds from this period are known from the province of *Drenthe* where they usually cover pyre debris (Van Giffen 1943, 503 ff.). Roy Van Beek's study on the region that is immediately east of the *Veluwe*, and south of *Drenthe*, however, shows that the Iron Age graves in that region are somewhat different from both *Drenthe* and the southern Netherlands (Van Beek 2009). It is not so easy to compare the evidence from the eastern Netherlands as published in Van Beek's book, with what we found here. Many of the Middle and Late Iron Age burials in the eastern Netherlands are leveled sites. It is interesting though, that Van Beek shows that a few of those Middle-Late Iron Age funerary sites do have peripheral structures with a relatively large diameter, comparable to the *Echoput* mounds[62]. In size, the latter have more affinities to Middle Iron Age mounds that are found in more northern regions (*Drenthe*). The oval pit beneath mound 2 is uncommon for this period, and if we are dealing with an inhumation grave (which is far from certain), then it would be quite exceptional. Middle Iron Age inhumation graves have recently been discovered in the eastern river area (around *Lent*, near *Nijmegen;* Van den Broeke/Hessing 2005). The same holds true for the remarkable flat top of mound 1, and to the "concept" of two similar, probably contemporary mounds built close to each other but separate from other graves. All this makes the point that both our general models on burial ritual and barrow landscapes, basically derived from patterns found in the northern or the southern Netherlands, cannot be simply used for understanding the numerous barrows in the region of the *Veluwe*.

Another "lesson" learnt from this excavation is that it was possible to prospect the environment for features. And, as we have seen, those features were numerous and very well preserved. For an important part, this must be related to the fact

62 *Friezenveen* (D.= 17 m); *Dorper Es, Wierden* (D.= 11 m) (Van Beek 2009, 437); The Unitas 4 mound from the *Utrechtse Heuvelrug* dates to the Middle-Late Iron Age and measures some 8.5 m (Arnoldussen/De Kort 2010). Burials with peripheral structures of comparable sizes are exceptional in the southern Netherlands (rare examples are Lummen-Meldert (D. 20 m) and Oss-Kraaijennest (D. = 16 m; see Arnoldussen/De Kort 2010, 129).

that this part of the Royal Estate never was plowed mechanically. We have seen that this can have devastating results for archaeological features during a later excavation at *Apeldoorn-Wieselse Weg*. Why many of the features are so well visible here (and almost invisible at other sites with a Moder Podzol, like *Elst-Rhenen* (Bourgeois/Fontijn 2010) is a problem that is not so easily solved. This will be something that we will deal with in future publications.

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Administratieve gegevens

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Uitwerking/rapportage:	2010-2011
Opdrachtgever	N.v.t.
Uitvoerder	Universiteit Leiden (Ancestral Mounds project)
Bevoegd gezag	Gemeente Apeldoorn
Locatie	
Gemeente:	Apeldoorn
Plaats:	Apeldoorn
Toponiem:	Echoput
Depot:	Gemeentelijk depot van Apeldoorn
Projectcode	AECHO-
Onderzoeksmeldingsnummer	23231
Archis-vondstmeldingsnummer	
Coördinaten plangebied	188.500 / 472.000 188.300 / 472.000 188.500 / 472.200 188.300 / 472.200
Geomorfologie	Top van stuwwal, bestaande uit opgestuwde, oude Maas/Rijn afzettingen bestaande uit grof grindig en lemig zand.
Bodem	Hoofdzakelijk moderpodzol

IRON AGE ECHOES

Groups of burial mounds may be among the most tangible and visible remains of Europe's prehistoric past. Yet, not much is known on how "barrow landscapes" came into being . This book deals with that topic, by presenting the results of archaeological research carried out on a group of just two barrows that crown a small hilltop near the *Echoput* ("echo-well") in *Apeldoorn*, the Netherlands.

In 2007, archaeologists of the *Ancestral Mounds* project of Leiden University carried out an excavation of parts of these mounds and their immediate environment. They discovered that these mounds are rare examples of monumental barrows from the later part of the Iron Age. They were probably built at the same time, and their similarities are so conspicuous that one might speak of "twin barrows".

The research team was able to reconstruct the long-term history of this hilltop. We can follow how the hilltop that is now deep in the forests of the natural reserve of the *Kroondomein Het Loo*, once was an open place in the landscape. With pragmatism not unlike our own, we see how our prehistoric predecessors carefully managed and maintained the open area for a long time, before it was transformed into a funerary site. The excavation yielded many details on how people built the barrows by cutting and arranging heather sods, and how the mounds were used for burial rituals in the Iron Age.

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