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Rapporten

053

Farmers, fishers, fowlers, hunters

*Knowledge generated by development-led
archaeology about the Late Neolithic, the Early
Bronze Age and the start of the Middle Bronze Age
(2850 - 1500 cal BC) in the Netherlands.*

H. Fokkens, B.J.W. Steffens & S.F.M. van As

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Colofon

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In 1992, the member states of the Council of Europe co-signed the European Convention on the Protection of the Archaeological Heritage in Valletta (Malta). This treaty, often referred to as the *Valletta Convention*, paved the way for development-led archaeology. It compels real estate developers to prospect for archaeological remains prior to construction activities and to deliberate with archaeologists and authorities on whether to excavate, preserve or ignore these remains. In many countries, this obligation completely changed the archaeological order of decision making and the allocation of responsibility for the protection and documentation of heritage.

In the Netherlands the new order led to many new players in the field: many excavation and consultancy companies came into being. These are guided by a norm, the Dutch Archaeology Quality Standard (AQS), and by a National Research Agenda Archaeology to produce optimal results. Fifteen years after the new system started, the question is: has development-led archaeology been able to generate new knowledge about the past? Has increased prospection and excavation activity paid off? Should we continue in the same style, or should we formulate new kinds of research questions?

These are the kinds of questions that the present book aims to discuss. The main goal is to assess the gain in knowledge resulting from development-led archaeology, notably for remains of the period 2850-1500 cal BC: the Late Neolithic, the Early Bronze Age and the start of the Middle Bronze Age. We know this period very well from burial mounds and bronze hoards. Bronze objects and burial assemblages are widely discussed in international literature, for the Bell Beaker period even with the Netherlands as a typological role model. The question we raise in this book is whether development-led archaeology has confirmed this picture, or whether large scale excavations in 'Malta-context' have generated other types of evidence. Have we been able to detect houses from these periods, or settlements? Are these comparable for all regions or are there regional differences? Do we have indications for social stratification; for migrations?

The answers to such questions are hidden in the many reports that development-led archaeology has produced in the last 15 years. The problem is

that so many site reports have been produced, that it is a huge task to synthesise these data and translate them into coherent models. Therefore the Cultural Heritage Agency of the Netherlands (RCE) commissioned the authors to go over all the data assembled in the last 15 years, present them to the wider public in a synthesised form, and answer a number of research questions. Because these data are published in Dutch language site reports, this book has been written in English to make the data available to a European (scientific) public. Relevant sites have all been summarised in Chapter 7, which therefore has become the central part of this publication. A synthesis of the Dutch data was formulated in Chapter 8, demonstrating that especially settlement evidence has dramatically changed our perception of the period. The traditional image based on burial data needs to be altered completely. This has implications for the international discourse on the Beaker period as well.

The book ends with a large number of methodical and theoretical avenues that can be followed to gain more knowledge in the next fifteen years of development-led archaeology. We advocate a far more integrated approach between all specialists involved in archaeological excavation and post-excavation analysis. Only then we will be really able to generate new knowledge about the past.

In 1992 ondertekenden de lid-staten van de Raad van Europa het Europees Verdrag inzake de bescherming van het archeologisch erfgoed in Valletta (Malta). Dit Verdrag, vaak aangeduid als het Verdrag van Valletta, heeft de weg gebaand voor de ontwikkeling van de door verstoring betaalde contractarcheologie. Het dwingt de onroerendgoedontwikkelaars voorafgaand aan bouwactiviteiten te onderzoeken of er archeologische overblijfselen aanwezig zijn en te beraadslagen met archeologen en autoriteiten over behoud, opgraving, of negeren van deze resten. In veel landen heeft deze verplichting de archeologische volgorde van besluitvorming en de toewijzing van verantwoordelijkheid voor de bescherming en documentatie van het erfgoed volledig veranderd.

In Nederland leidde het nieuwe bestel tot veel nieuwe spelers in het veld: veel opgravingsbedrijven en adviesbedrijven werden opgericht. Deze worden begeleid door een norm, de Kwaliteitsnorm Nederlandse Archeologie (KNA), en door een Nationale Onderzoeksagenda Archeologie (NOaA) om optimale resultaten te produceren. Vijftien jaar na het starten van het nieuwe systeem, is de vraag: is de contractarcheologie in staat geweest om nieuwe kennis over het verleden te genereren? Heeft de toename van prospectie- en opgravingsactiviteiten resultaat opgeleverd? Moeten we in dezelfde stijl blijven doorgaan, of moeten we nieuwe soorten onderzoeksvragen formuleren?

Dit zijn de soorten kwesties die dit boek wil bespreken. Het belangrijkste doel is om te beoordelen wat de winst in kennis is die voortvloeit uit contractarcheologie, met name voor overblijfselen van de periode 2850-1500 cal BC: het laat-neolithicum, de vroege bronstijd en het begin van de midden-bronstijd. We kennen de graven en bronsdepots uit deze periode goed. Bronzen voorwerpen en grafcomplexen worden uitvoerig besproken in de internationale literatuur, voor de periode van de klokbekercultuur zelfs met Nederland als een typologisch rolmodel. De vraag die we in dit boek stellen, is of contractarcheologie dit beeld heeft bevestigd, of dat grootschalige opgravingen in 'Malta-context' andere soorten bewijs hebben gegenereerd. Zijn we in staat geweest huizen uit deze perioden te ontdekken, of nederzettingen? Zijn deze vergelijkbaar voor alle regio's of zijn er regionale verschillen?

Hebben we indicaties voor sociale stratificatie, voor migraties?

De antwoorden op dergelijke vragen liggen verborgen in de vele verslagen die contractarcheologie in de afgelopen 15 jaar heeft geproduceerd. Het probleem is dat zoveel siterapporten zijn geproduceerd, dat het een enorme taak is de gegevens te synthetiseren en deze te vertalen naar samenhangende modellen. Daarom heeft de Rijksdienst voor het Cultureel Erfgoed (RCE) de auteurs de opdracht gegeven alle gegevens die de afgelopen 15 jaar zijn verzameld sinds het begin van contractarcheologie te bestuderen, en te onderzoeken welke meerwaarde zij hebben opgeleverd voor onze kennis over het laat-neolithicum, de vroege bronstijd en de midden-bronstijd A. Omdat deze gegevens zijn gepubliceerd in Nederlandstalige rapporten, is dit boek geschreven in het Engels om daarmee de resultaten ook te kunnen presenteren aan een internationaal publiek. Samenvattingen van de relevante siterapporten hebben we weergegeven in hoofdstuk 7, dat het centrale deel van deze publicatie is geworden.

Een synthese van de Nederlandse data werd geformuleerd in hoofdstuk 8, waaruit blijkt dat vooral nederzettingsgegevens onze perceptie van de periode veranderd hebben. Het traditionele beeld gebaseerd op grafgegevens moet volledig worden aangepast. Dit heeft directe gevolgen voor het internationale discours over de bekerperiode. Het boek eindigt met een groot aantal methodische en theoretische mogelijkheden die kunnen worden gevolgd om in de komende vijftien jaar meer kennis te generen. Wij pleiten voor een veel geïntegreerdere aanpak door alle specialisten die betrokken zijn bij archeologische veldwerk en de analyse daarvan. Alleen dan zullen we echt in staat zijn om nieuwe kennis over het verleden te genereren.

1.1 Introduction

This work presents a synthesis of the Dutch Late Neolithic, Early Bronze Age and Middle Bronze Age A (2850-1500 cal BC) based on data generated by (mainly) Dutch commercial archaeological projects. It is part of the Valletta Harvest (*Oogst voor Malta*) project that was initiated by the Dutch government, because in the last decades many sites have been excavated by different parties without proper synthetic evaluations. The Valletta Harvest project aims to evaluate the scientific gain of commercial archaeology since the Valletta Convention came into effect in Dutch archaeological practice. Despite the fact that this treaty became a Dutch law in 2005, we have taken 2001 as starting point for this synthesis. In 2001 the Valletta Convention came into force in the Netherlands because the Dutch Archaeology Quality Standard (AQS 1.0) effectively became the standard for archaeological practice.

The Valletta Harvest project is part of the programme ‘*de Kenniskaart Archeologie*’.¹ This title translates as ‘Archaeological Knowledge Kit’. This serves as a metaphor for a coherent data package of utilities which can be used in Dutch archaeology, including the mapping of a wide range of relevant archaeological information. As such, the present publication can be seen as a ‘tool’ for future projects part of a larger box of utilities. However, this work also presents a reflection on the available information and creates a new *status questionis* of our knowledge about the Late Neolithic, the Early Bronze Age and beginning of the Middle Bronze Age. Below, we briefly explain how the Valletta Harvest projects fits into a coherent strategy of the Ministry of Education, Culture and Science to evaluate the effects and products of new heritage legislation. Furthermore, we elaborate on the aims for this project on the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A.

1.2 The development of development-led archaeology in the Netherlands

In 1992, the member states of the Council of Europe co-signed the European Convention on

the Protection of the Archaeological Heritage in Valletta (Malta). This treaty became known as the *Valletta Treaty* or the *Valletta Convention*. It aims ‘to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study’.² One of the articles in the Valletta Treaty that had most impact is article 6, which regulates the financing of archaeological research and conservation.

According to the Malta Treaty of Council of Europe, each Party undertakes:

- to arrange for public financial support for archaeological research from national, regional and local authorities in accordance with their respective competence;
- to increase the material resources for rescue archaeology;
- by taking suitable measures to ensure that provision is made in major public or private development schemes for covering, from public sector or private sector resources, as appropriate, the total costs of any necessary related archaeological operations;
- by making provision in the budget relating to these schemes in the same way as for the impact studies necessitated by environmental and regional planning precautions, for preliminary archaeological study and prospection, for a scientific summary record as well as for the full publication and recording of the findings.³

Article 6 paved the way for development-led archaeology. It compels real estate developers to prospect for archaeological remains prior to construction activities and to deliberate with archaeologists and authorities on whether to excavate, preserve or ignore these remains. This obligation completely changed the archaeological order of decision making and the allocation of responsibility for the protection and documentation of heritage. It was W. Willems, who realised what was required to properly organise the transition to the implementation of ‘Malta’. Willems was at the time director of the ROB, the State Service for Archaeological Heritage, and later the director of Archaeological Quality and the head of the Archaeological Inspectorate (RIA). He coached Dutch Archaeology towards the implementation of the Valletta Convention, and ultimately to the current archaeological system.

¹ Lauwerier 2016: <http://cultureelerfgoed.nl/dossiers/verbeteracties-archeologie/kenniskaart-archeologie> (reviewed 3 September 2015).

² For the entire text of the treaty (revised version) see: <http://conventions.coe.int/Treaty/EN/Treaties/Html/143.htm>.

³ For the entire text of the treaty (revised version) see: <http://conventions.coe.int/Treaty/EN/Treaties/Html/143.htm>.



Figure 1.1 The committee that prepared the Dutch Archaeology Quality Standard ('Vorbereidingscommissie Kwaliteitszorg'). Official photo taken 12 March 1999 in the offices of consultant P. Pollen in Amsterdam. From left to right, top to bottom: W. Willems, E. Jacobs, P. Pollen, A. Habib, M. Meffert, H. Fokkens, K. Esser, J. Morel, State Secretary R. van der Ploeg, R. Brandt and M. Smit (photographer unknown).

Willems retrospectively describes how the implication of the treaty started in 1993 with the *Betuweroute* project as the first and formative test case for Dutch (semi-)commercial archaeology.⁴ In 1998, National Rail (NS) began the construction of a new railway from the harbour of Rotterdam to Germany, the so-called *Betuweroute*. Willems, at that time the director of the State Service for Archaeological Heritage⁵, convinced National Rail that the Valletta Convention obliged them to investigate or preserve any archaeological heritage that would be endangered by the construction process. Consequently, the whole track would have to be surveyed, followed by targeted excavations of valuable archaeological sites in the project area. Conform these demands, National Rail set up a team of archaeologists and managers (*projectbureau Betuweroute*) to direct archaeological surveys and excavations; formulate schemes for these investigations (*Programma van Eisen* or *PvE*), and co-ordinate the documentation and publication of these archaeological activities. All of the excavations were carried out by university-founded firms. On the one hand, the involvement of

the universities guaranteed the quality of the archaeological work; on the other hand, the universities did not have of the financial means at their disposal to cover the risks of the excavations. Hence the founding of these archaeological companies.

The establishment of 'market principles' in archaeology by the State Secretary for Education, Culture and Science R. Van der Ploeg in 1999 formed the second step towards a different organisation of the Dutch archaeological system.⁶ These market principles entailed the creation of a free, decentralised market in which archaeological companies competed over contracts offered by real estate developers who were obliged by the Valletta Convention to excavate archaeological remains at their construction sites. This development also necessitated the privatisation of the excavation unit of the State Service for Archaeological Heritage. Until 1999 staff members of the 'State Service' had carried out excavations, but the neo-liberal government dictated that executive work like excavations should be done by non-public parties. Therefore, the excavation unit of

⁴ Willems 2007.

⁵ The State Service underwent several reorganisations and name changes over the past decades. It started as the *Rijksdienst voor het Oudheidkundig Bodemonderzoek* (ROB), then became the *Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten* (RACM), and is presently called the *Rijksdienst voor het Cultureel Erfgoed* (RCE). The institute is colloquially referred to by its abbreviations, ROB, RACM or RCE, or as the State Service (*Rijksdienst*). In this book we have only used the present name: Cultural Heritage Agency of the Netherlands, or RCE for short.

⁶ Willems 2007, 47.

the State Service became the Archaeological Service Centre (ADC: *Archeologisch Diensten Centrum*) under direction of R. Brandt. Brandt had previously founded and directed the only other commercial firm in the Netherlands, RAAP, which was specialised in prospection (auguring mainly), but had no excavation licence. The foundation of the ADC paved the way for other private companies; dozens of private excavation companies and advisory bureaus developed shortly after. These developments necessitated a quality system because it was desirable to prevent developers from minimising quality, and to set a standard for archaeological procedures.⁷ This norm was devised by a national committee, 'De Voorbereidingscommissie Kwaliteitszorg', installed by the State Secretary for Culture, Education and Science (Fig. 1.1). Development-led archaeology boosted the system after the

ratification of the Valletta treaty in 1998. The number of commercial firms rose exponentially, as did the number of professionally employed archaeologists.⁸ The number of archaeological interventions (research projects) rose from about 100 per year in 1995 to over 4000 in 2010. Most of those interventions were carried out by private firms (Fig. 1.2). This increase in projects resulted in the generation of large amounts of new data. Moreover, the new archaeological quality guidelines prescribed a publication of these data within two years after finishing the fieldwork and the deposition of these publications in a national repository that allowed for open access. This national repository, called DANS (Data Archiving and Networked Services), was set up by the Dutch Academy of Science (KNAW). The Archaeology Quality Standard was

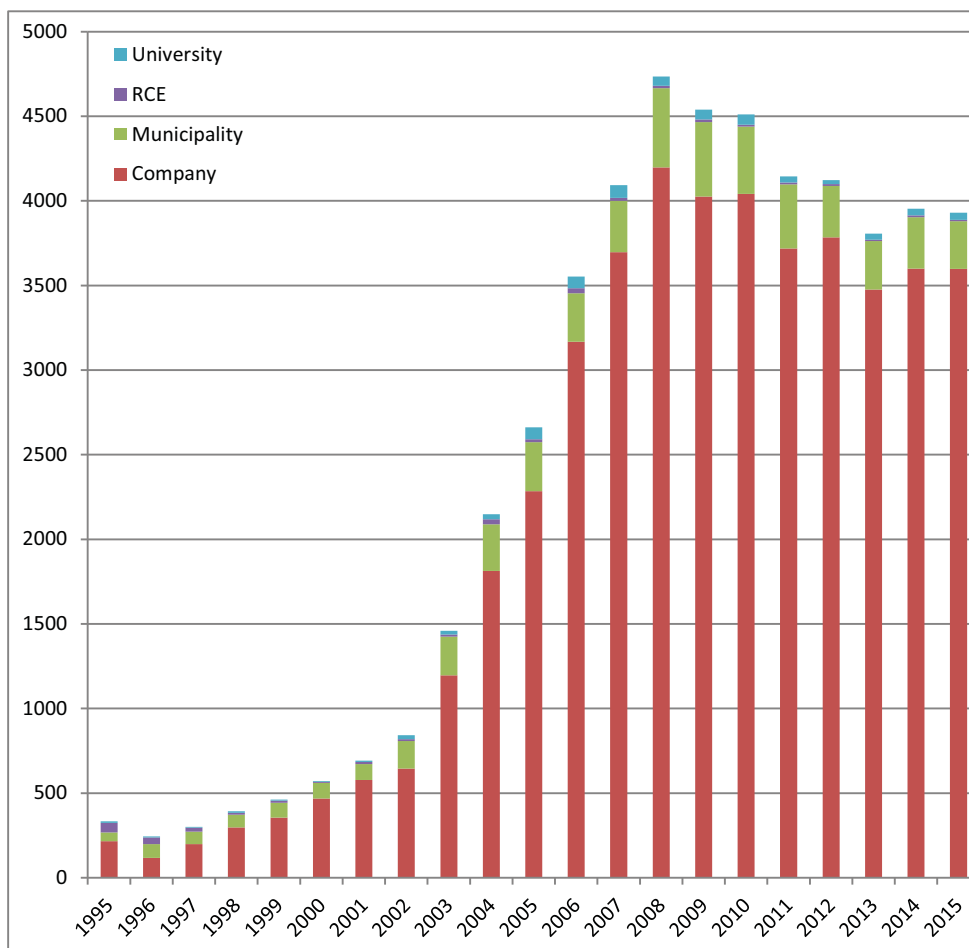


Figure 1.2 The number of officially registered archaeological projects sky-rocketed during the period 2000-2010 (data compiled after <http://erfgoedmonitor.nl/indicatoren/archeologisch-onderzoek-naar-uitvoerder>, visited nov. 2015).

⁷ Willems & Brandt 2004.

⁸ Willems 2007, Fig. 1.

designed as one part of the quality system. The other parts were the Inspectorate of the Ministry of Culture, Education and Science, and a registry of professional archaeologists. The Archaeology Quality Standard formulates a minimal or basic standard for the quality of archaeological practice. Willems and Brandt feared that developers who commissioned archaeological research would (in general) only be interested in minimising the expenses of archaeological research at the cost of quality. Willems and Brandt argued that there would always be firms who would be willing to offer just that in a free market. The Archaeology Quality Standard would dictate non-negotiable standards. But the Archaeology Quality Standard was only setting a standard for the practice of carrying out Archaeology, not for its scientific content. Therefore, academic archaeologists and the 'State Service' decided that a National Research Agenda Archaeology was required that would act as a guide for scientifically informed research strategies and design in commercial archaeology.⁹ Work on the National Research Agenda Archaeology started in 2003 and the first version came online in 2006. This work involved around one hundred people from universities, archaeological companies, consultancies and the RCE, who jointly proposed key issues for the archaeology of all periods, regions and themes in the Netherlands. The supervisors of the process decided that the agenda would focus on gaps in knowledge and as such to guide future studies to the creation of new knowledge. It aims were stated as: 'If a site is marked as 'worthy of protection', the National Research Agenda Archaeology (*Nationale OnderzoeksAgenda*) helps to formulate research goals and to make scientifically informed choices. In addition, the National Research Agenda Archaeology offers scientific inspiration when research briefs are conceived (our translation).'¹⁰

1.3 The Valletta Harvest programmes

In the Dutch archaeological system after the Valletta Convention, all archaeological projects should be published within two years after completion of the fieldwork. Moreover, these publications are to be deposited in DANS, where

they are accessible for scientists. The role of academic archaeologists in this system consists of synthesising this information and crafting a better understanding of the past. Preferably, these activities would involve the firms that had carried out the fieldwork. However, in practice, this seldom occurs because both academic and commercial archaeology lack the capacity to perform these tasks. Commercial firms simply do not have the resources to conduct scientific research. Similarly, academic institutes were cut back over the years: currently, only a small body of academic archaeologists works in the Netherlands.¹¹ Moreover, the primary responsibility of these people lies in education and publication in international peer-reviewed journals. Consequently, syntheses of 'Malta-generated' data are scarce, despite the explosive growth of this body of data.

The above-mentioned situation forms one of the crucial motivations for the Netherlands Organization for Scientific Research (NWO) and the ministry of Education, Culture and Science to make funds available for the Valletta Harvest programme. The programme started in 2003 and provided in a number of small grants (max. €50.000) and a few larger ones (max. €500.000) for synthetic research that involved both excavations carried out under the Valletta Convention and older, unpublished studies: 'Archaeology eventually tells a story. But just like a novel is not a loose collection of citations, the archaeological story is not a recital of data, no matter how carefully these data are collected or documented. The possibilities to place all that data in a bigger picture have not kept pace with the increase in scale of archaeological fieldwork. The universities do not have enough capacity to rework the hundreds of extensive site reports that have been published since 1992 into scientific syntheses.'¹²

This first synthetic programme ended in 2009 with a number of PhD-theses and other publications, as well as a book in which the results of development-led archaeology were presented to the general public.¹³ However, the end of this programme also meant a stand-still for synthetic studies of the past, because of the renewed lack of time and funding.

In 2011, ten years after the official coming into force of legislation based on the Valletta Convention, the Ministry of Education, Culture and Science evaluated the results of this

⁹ Fokkens, Groenewoudt & Jungerius 2001.

¹⁰ <http://archeologieinnederland.nl/bronnen-en-kaarten/nationale-onderzoeksagenda-archeologie-10>, accessed on 3 September 2015.

¹¹ The present number of staff members (Full-Time Equivalents) working on Dutch archaeology at universities is roughly 15: six in Leiden, four in Groningen and six in Amsterdam.

¹² https://easy.dans.knaw.nl/ui/dms?command=AIP_info&aipId=twips.dans.knaw.nl-8109073467006952119-1246345461810, accessed on 3 September 2015 (our translation).

¹³ Van Ginkel & Verhart 2009.

new archaeological system. This evaluation demonstrated that many new data had been generated and that the practical aspect of the archaeological system worked well, but that the generation of new knowledge from this data (still) formed one of the weak points. It is important to note that this outcome defies the very goal of the heritage cycle that the Dutch Archaeological Heritage Management cycle (AMZ-cycle) envisaged. The Archaeological Heritage Management cycle departs from the idea that just 'adding more data' is insufficient to form an image of the past. This data needs to be evaluated and synthesised to create new insights into and ideas about the past. Subsequently, these should form the basis for more accurate archaeological prediction models on which future policy could be based;¹⁴ hence the name 'heritage cycle' (Fig. 1.3).

Following up on the evaluation in 2011, the Secretary of State wrote a letter to the Dutch House of Representatives (*Tweede Kamer der Staten-Generaal*) stating that in order to achieve progress, a new Valletta Harvest project should be founded within the programme of '*de Kenniskaart Archeologie*'.¹⁵ The main purpose

of this project was to initiate reflective studies that combined and synthesised the reports of the excavations of individual sites. Universities, archaeological companies and governments would work together on these projects. The Cultural Heritage Agency of the Netherlands supervises this project and divided it into a number of sub-projects. Each of these sub-projects focusses on gaps in the National Research Agenda Archaeology 1.0. The aim of the Valletta Harvest project and therefore also of this book, is 1) to test whether ten years of development-led archaeology have been able to fill in gaps in our knowledge as identified in the existing National Research Agenda Archaeology 1.0, and 2) to identify new research questions for an updated version of the National Research Agenda Archaeology, version 2.0.¹⁶

1.4 Structure of the project

In the context of the Valletta Harvest project, the Cultural Heritage Agency in 2013 described seven relevant thematic, chronological and regional

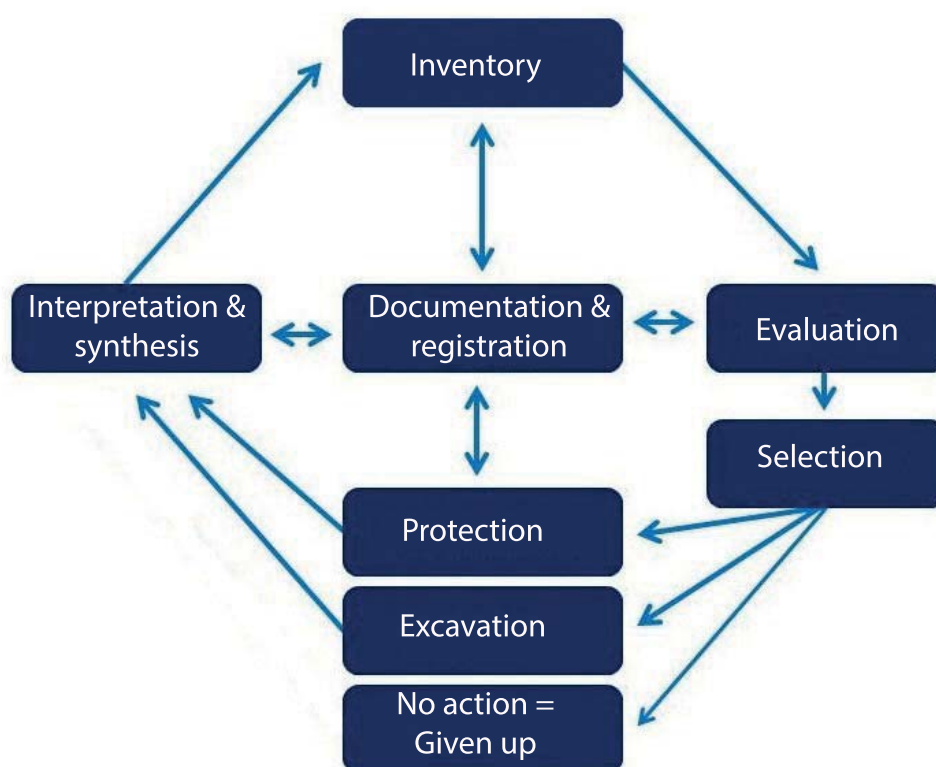


Figure 1.3 The schematic Archaeological Heritage Management cycle (after: www.archeologieinnederland.nl).

¹⁴ 'Uitvoeringsplan voorstellen beleidsreactie evaluatie archeologiewetgeving, Rijksdienst voor het Cultureel Erfgoed, mei 2012'.

¹⁵ Letter to the Dutch House of Representatives dated. February 7th 2012, Session year 2011-2012, 33 053, no. 3, page 7.

¹⁶ De Groot & Groenewoudt 2013, 4.

research projects on the basis of the formulated ‘opportunities for knowledge’.¹⁷ In the following two paragraphs this text is summarised for one of these research projects and subject of the present study.

The Late Neolithic, Early Bronze Age and Middle Bronze Age A (c. 2900–1500 cal BC) are periods of which relatively little is known in the Netherlands.¹⁸ This becomes clear if one compares for instance the number of house plans from different periods. Prior to the initiation of development-led archaeology we knew no more than five Late Neolithic plans, one or two Early Bronze Age houses and no Middle Bronze Age A houses.¹⁹ However, dozens of houses were known from the Middle Bronze Age B (1500–1100 cal BC) from the Pleistocene sandy soils and from the Holocene deposits in West Frisia.²⁰ For burials there is yet another pattern: we know many barrows from the sandy soils throughout the Netherlands,²¹ but few from West Frisia and the other parts of the Holocene Netherlands.

Our knowledge of the Middle Bronze Age A, especially in terms of palaeography, settlements and choice of location, has grown over the past decade.²² Several excavations produced features from the Late Neolithic and the Middle Bronze Age A. Excavations such as the ‘Hanzelijn’ route, the business parks Hattemerbroek and Veldhoven-Habraken yielded very interesting settlement complexes. Furthermore, there is a considerable amount of ‘bycatch’: prehistoric features and finds found at sites with mainly finds and features from different periods. So there is an ‘opportunity’ to fill gaps in our knowledge. All this data is written down in a fair number of reports. What remains now, is the evaluation and combination of this data. A synthesizing study on a national level, based on the published reports, is expected to cast new light on the poorly visible habitation during this period.

The original assignment from the RCE presents several research questions. In Chapter 2, we discuss these research questions in more detail. The next chapter describes the research methodology, which involves an analysis of data that is present in the different databases and DANS. Furthermore, we provide an overview of the acquisition of the data. Lastly, Chapter 3 addresses *status questionis* of research before development-led archaeological research started. This chapter is a kind of baseline for the analysis in Chapters 8 and 9.

In Chapter 4, we discuss the methodology of the data studies and especially of the databases that we have used. Chapter 5 discusses the data that was extracted from the major databases, and the problems involved in the interpretation of this data. This discussion leads to a selection of the key sites that are discussed in detail in Chapter 7. Before that discussion can take place, however, we have discussed criteria for analysing house plans and structures in Chapter 6. The reason to write a separate chapter on houses is that there are many claims, but very little critical analyses of house structure. Chapter 6 aims to provide a better basis for discussion. Chapter 8 draws on these discussions to outline a new *status questionis* for the Late Neolithic, Early Bronze Age and Middle Bronze Age A in the Netherlands. Furthermore, this chapter answers the research questions from Chapter 2. This enables the formulation of research goals for the new Research Agenda Archaeology in Chapter 9.

1.5 Acknowledgements

We would thank the Cultural Heritage Agency of the Netherlands (RCE) for offering the opportunity to execute this synthetic analysis of a highly interesting period of the past: the transition from the Neolithic to the Bronze Age. The project manager Eelco Rensink (RCE), often gave us a free hand and kept us time and time again to new deadlines. We are grateful to our sparring partners Stijn Arnoldussen (Groningen University), Corrie Bakels (Leiden University), Sandra Beckerman (Groningen University), Quentin Bourgeois (Leiden University), and Liesbeth Theunissen (RCE) for their stimulating comments and for the time invested in reading the text. Erik Kroon (Leiden University) was indispensable when (copy)-editing the texts. Timothy Stikkelorum (Leiden University) undertook the thankless task to prepare the long reference list. Kelly Fennema corrected the one but last version of the English text. Marc van der Linden (University College London) read and reviewed the manuscript. We thank them all. This project was made possible by a grant from the Dutch Science Foundation for the ‘Farmers of the Coast project’ (NWO 360-60-100) and from the RCE at Amersfoort.

¹⁷ De Groot & Groenewoudt 2013, 15–17.

¹⁸ Archeologiebalans 2002, 21, fig. 4, periode IV (Lauwerier & Lotte 2002).

¹⁹ Bourgeois & Arnoldussen 2006.

²⁰ Fokkens & Fontijn 2012.

²¹ Theunissen 1999; Bourgeois 2013.

²² From the *Erfgoedbalans* 2009, afb. 4.11, period IV (De Boer *et al.* 2009).

2.1 Introduction

The assignment that was formulated for the research presented in this book divided into a few themes with a number of issues to target. The main goal is to assess the gain in knowledge resulting from development-led archaeology, and at the same time assess the effectivity of the research themes and methods formulated in the National Research Agenda Archaeology. Finally, these assessments are used to formulate – when necessary – new approaches to investigate archaeological remains of the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A in the following years. In this chapter we discuss the different themes that were formulated in the original research assignment in more detail and translate these into a structure for the book as a whole. These themes are:

1. Was new knowledge generated in the last 15 years for the period from 2850 to 1500 cal BC?
2. How do farmsteads and settlements from this period manifest themselves in the archaeological record?
3. How can the settlement systems best be described?
4. Are there indications are there for variation in the use of the cultural landscape?

We will discuss each of these themes in more detail and discuss how these particular themes can be addressed.

2.2 Theme 1: was new knowledge generated in the last 15 years?

Theme 1 addresses the core theme of this study: has development-led archaeology in the last 15 years produced new knowledge for the period from 2850 to 1500 cal BC? This is relevant because with the onset of development-led archaeology in 2000 a new order was implemented: commercial firms were allowed to excavate, guided by a Dutch Archaeology Quality Standard (AQS) and a National Research Agenda Archaeology.²³ It is important to evaluate whether the system has been successful in generating new knowledge, and if necessary what can be done to improve the system. That is

the main goal of this study.

This theme can be approached in many different ways. The assignment specifically requested a focus on the kinds of sites that were discovered, and on the differences in kind between sites that were discovered through research targeted on the period from 2850 to 1500 cal BC, or as chance finds. This question not only aims to discuss the character of sites that were discovered, it is also a methodological question: were the methods applied to prospect for sites suited to detect all types of sites? Since all development-led archaeological research in the Netherlands starts with prospective research, followed by an advice for excavation, protection or discard, it is relevant to assess too how effective these methods were. Therefore we will try to get statistics on that aspect.

We provide an answer to this question in two steps. The first step consists of consulting two information sources: the national repository DANS and the national databank ARCHIS. The aim of this stage is to allocate and select relevant sites that have a potential to answer questions for any of the research themes of this study.

The national repository DANS houses all reports and data from archaeological projects that post-date 2001.²⁴ DANS allows users to query both the digitally stored documents and a list of key words for each document. The latter list systematically records the periodisation and site type for each archaeological report. We compiled a list of key words and ran this list through both the digitally stored documents and lists of key terms in DANS to extract all relevant files.²⁵

The second source of information, the National Archaeology Database ARCHIS, contains summarised site information and adds a GIS utility. Whereas DANS provides the site reports and background data, ARCHIS provides data on location, date, content, etc. in a coded manner. Therefore it enables more complex queries that combine multiple variables.

The second step is to analyse the sites proper. Both data sources provide us with information on sites with a potential to answer questions. As step two, the reports on these sites form the basis for the discussion of themes 2, 3 and 4 in Chapter 7, and the results of the analysis in Chapter 8.

²³ Cf. Chapter 1.

²⁴ Given that Dutch law demands that archaeological reports be filed within two years after the closing date of the project, the backlog should never exceed two years' worth of publications. In actual practice, that is of course far from reality, but the majority of publications can be accessed indeed.

²⁵ Cf. Chapter 4.

2.3 Theme 2: farmsteads and settlements

The second research theme is: ‘how do farmsteads and settlements from this period manifest themselves in the archaeological record?’ This question can be understood better if we realise that only a handful of settlements and houses from the Late Neolithic and Early Bronze Age settlements were known in the Netherlands prior to 2001.²⁶ Moreover, the *status questionis* of 2001 hints at regional differences: all known houses are located in the wetland of the western Netherlands, whereas the Pleistocene up-lands yield virtually no evidence for houses. It follows that the evaluation of development-led archaeology should enquire after its success in casting new light on houses and settlements from these periods.

A first step to discuss this theme, is to analyse what constitutes a house from the period under discussion. This presents a problem in itself, because there are many contradictory attributions of houses, but little critical discussion and few good data to rely on.²⁷ A key question that is lacking in discussions on houses from these periods appears to be: what are the criteria for recognising Late Neolithic or Early Bronze Age houses? Rather than accepting the extant attributions of house plans to specific periods at face value, our analysis departs from this question. Therefore we discuss what constitutes a house and what archaeologically recognisable characteristics of such dwellings are in a separate chapter.²⁸

The second step of the analysis is to determine whether regional traditions existed in settlement types or house plans. This involves a comparison of excavated sites with high quality data from different regions.²⁹

2.4 Theme 3: the settlement system

The third theme involves the ‘settlement system’. Though this concept appears to refer to the systems theory approach as advocated by K.V. Flannery, for instance, we use it as a more general catchall term for the ways in which people organised their existence with associated forms of settlement.³⁰ This was very much a

point of discussion in the eighties and nineties of the last century. A summary of that discussion, and a working model was proposed by Louwe Kooijmans in 1993,³¹ and therefore it was also one of the research themes identified by Van Heeringen and Koot in the National Research Agenda Archaeology.³²

Since the settlement system is thought to have been connected closely to the ways in which people exploited the landscape, an important question is also: what was the basis of the subsistence economy in these periods? According to the model presented by Louwe Kooijmans,³³ the subsistence economy during at least the Early Bronze Age became fully agricultural with arable land, stock raising, farmsteads and stable settlements. But maybe that model has biased our understanding of settlement in the period under discussion. This also may have prompted us to look for settlement in the wrong places. These are the kinds of questions we will answer by discussing relevant site data in Chapter 7 and by analysing the results in Chapter 8.

2.5 Theme 4: variation in the cultural landscape

The fourth theme is concerned with variation in the cultural landscape. Traditionally excavations have focussed on domestic sites and in the last century on burial mounds. These were the sites that were easy to recognise. However, since in the last 15 years systematic prospection has become obligatory other types of sites may have been discovered as well. Therefore it is interesting to investigate whether that practice changed our assessment of the cultural landscape. Are we now able to identify zones of the landscape suited for particular types of sites, or for different uses? Are burial mounds present everywhere? Were they the only way of disposal of the dead? Can we predict where bronze deposits were made, or which parts of the landscape may have had special meaning to their inhabitants? The National Research Agenda Archaeology indicated that special attention should be given to the role of relicts of the past in the settled landscape. Did abandoned places have a special meaning to people?³⁴ These questions are discussed in

²⁶ Cf. Chapter 3.
²⁷ Cf. Chapter 7; Lange *et al.* 2014.

²⁸ Cf. Chapter 6.

²⁹ Cf. Chapter 8.

³⁰ Flannery 1976.

³¹ Cf. Chapter 3.

³² Van Heeringen & Koot 2005.

³³ Louwe Kooijmans 1993; cf. Chapter 3.

³⁴ Gerritsen, Jongste & Theunissen 2005; cf. Chapter 8, Chapter 9.

the site analyses in Chapter 7, but we will also address them in Chapter 8 and in Chapter 9 propose ways to target these questions better in the future.

2.6 Towards a new National Research Agenda Archaeology

The final aim of this study is to identify key themes for future research.³⁵ If we know what

the *lacunae* in our present state of knowledge are, we can start to define avenues of approach to expand on existing knowledge? We emphasise that apart from knowledge gaps, international research themes need to be addressed in the new National Research Agenda Archaeology as well. The Late Neolithic and the Early Bronze Age are formative periods in the transformation to a more complex Bronze Age world. The Dutch data, especially the settlement data, has the potential to play an important role for the international study of this transition.

³⁵ Cf. Chapter 9.

3.1 Introduction

An assessment of the knowledge gained from development-led archaeology since 2001 requires a discussion of the knowledge of the archaeological record prior to 2001. We draw from three sources to outline this *status questionis* (Fig. 3.1). The first is the National Archaeological Research Agenda Archaeology of 2005 which summarises the *status questionis anno* 2004. The second source is the English edition of *Nederland in de Prehistorie*³⁶ (The Prehistory of the Netherlands).³⁷ Given that the completion of this work took five years, it also represents the *status questionis anno* 2001. The last source is the overview of the Late Neolithic in the Netherlands by E. Drenth.³⁸ This work summarises his extensive work on this period, often written in co-operation with W.J. Hogestijn. Little overlap exists between *The Prehistory of the Netherlands* and the *National Archaeological Research Agenda Archaeology* in terms of content, because the *Prehistory of the Netherlands* was conceived as a synthetic ‘state of the art’ study, whereas the *National Archaeological Research Agenda Archaeology* would act as an instrument for generating new knowledge. As a result, the focus of the former work is (the interpretation of) known information and the focus of the latter work the blind spots in our understanding of the past and the research questions to fill in these blind spots. Consequently, both products are more or less complementary. However, the two works differ in the scope of the analysis. The *National Archaeological Research Agenda*

Archaeology is structured around so-called archaeological regions (Fig. 3.2). The State Service for Cultural Heritage defines these regions as areas with comparable physical landscapes and archaeological phenomena that are distinct from other regions. The *National Archaeological Research Agenda Archaeology* describes diachronic developments within these archaeo-regions. This division is logical from the perspective of heritage management and urban planning, but less relevant for scientific purposes. *The Prehistory of the Netherlands* took on the role of outlining comparisons and research questions that transcend these regions. Our summary of the *status questionis anno* 2001 highlights five interconnected themes:

- chronology and periodisation;
- settlement structure and organisation;
- the economic basis of prehistoric communities;
- burial and other ritual practices;
- social structure and social organisation.

3.2 Chronology and periodisation

In the Netherlands, the Late Neolithic begins with the advent of the Single Grave Culture, which is internationally known as the Battle Axe Culture or Corded Ware Culture. The Single Grave Culture is grouped with the Late Neolithic Bell Beaker Culture and Early Bronze Age Barbed Wire Beaker Culture to form the so-called Beaker Cultures. There is some discussion about the start of the Single Grave Culture period. This discussion revolves around the interpretation

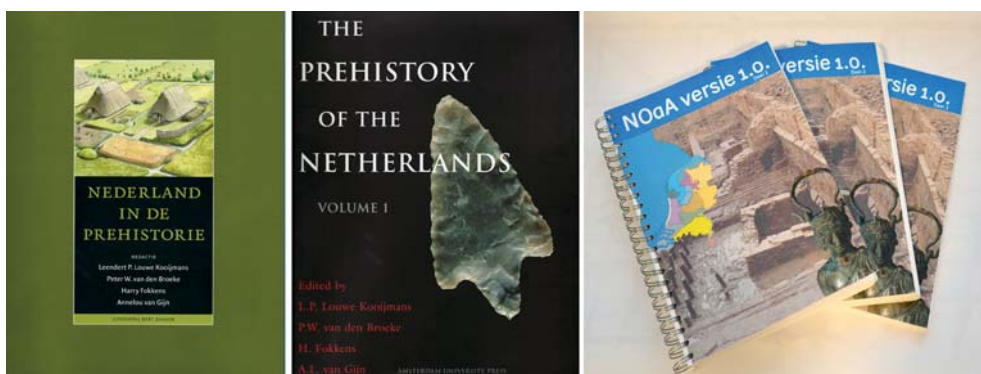


Figure 3.1 The main sources of information about pre-development-led archaeology: *Nederland in de Prehistorie* (left), the English version (centre), the National Archaeological Research Agenda Archaeology 1.0 (right).

³⁶ Louwe Kooijmans et al. 2005a.

³⁷ Louwe Kooijmans et al. 2005b.

³⁸ Drenth 2005.



Figure 3.2 The Netherlands divided into archaeological regions: regions in which physical landscape and archaeological features are comparable (source: Cultural Heritage Agency of the Netherlands).

and calibration of the earliest Single Grave Culture artefacts and contexts. Lanting and Van der Plicht propose a date of 2800 cal BC,³⁹ but Drenth and Lanting opt for a starting date at 2900/2850 cal BC.⁴⁰ The authors of *The Prehistory of the Netherlands* propose a starting date at 2900 cal BC, but admit that this date is uncertain due to the platforms in the ¹⁴C-calibration curve for this period and the resulting range of the calibrated ¹⁴C-dates (Fig. 3.3).⁴¹

The above-mentioned discussions on periodisation and chronology rarely feature a second group of Late Neolithic cultures from the Netherlands: the Vlaardingen Culture and Stein Culture. The reason for this oversight is that the Vlaardingen Culture dates from 3400 to 2500 cal BC. Consequently, these cultures both predate and overlap with the Late Neolithic and cannot be used to co-define the start of that period.⁴²

The *Prehistory of the Netherlands* divides the Late Neolithic into the Late Neolithic A and the Late Neolithic B. The basis of this division is the appearance of the Bell Beaker Culture around 2500 BC.⁴³ According to the conventional chronology, the Bronze Age begins in 2000 cal BC. This date relies on the conventional

typological date of the Wageningen hoard which contains a number of bronze items, notably a dagger and a halberd, that are seen as hallmarks for the Early Bronze Age.⁴⁴ Given recent doubts on the exact date of this hoard, recent publications often take the appearance of Barbed Wire Beakers as the indicator for the Early Bronze Age.⁴⁵ Problematically, no reliable dates for the first appearance of the Barbed Wire Beakers are available. The dates offered in the *Prehistory of the Netherlands* again form the convention for the Dutch chronology. This convention holds that the Early Bronze Age is a short period between 2000 and 1800 cal BC that is characterised by the occurrence of Barbed Wire Beakers.⁴⁶ The Middle Bronze Age A (1800–1500 cal BC) follows this period.⁴⁷

The *National Archaeological Research Agenda Archaeology* utilises the conventional periodisation as a point of departure, but also indicates that future studies should target the weak points in this chronology. A number of proposals that address these flaws have been made since the launch of the *National Archaeological Research Agenda Archaeology*. Van Heeringen and Koot indicate that investigation of West Frisian settlements could clarify the

³⁹ Lanting & Van der Plicht 2002.

⁴⁰ Drenth & Lanting 1991.

⁴¹ Van den Broek, Fokkens & Van Gijn, 29; Fig. 1.10.

⁴² Cf. Van den Broek, Fokkens & Van Gijn, 28; Van Heeringen & Koot 2005.

⁴³ Lanting & Van der Plicht 2002, 94; Van den Broek, Fokkens & Van Gijn, 28.

⁴⁴ Cf. Fokkens 2001 for a review.

⁴⁵ Lanting & Van der Plicht 2003, 152; cf. Chapter 8 for a discussion.

⁴⁶ Van den Broek, Fokkens & Van Gijn, 27.

⁴⁷ Cf. Fokkens 2001; Van den Broeke, Fokkens & Van Gijn 2005.

| (C14) years ago | years BC | archaeological period | | culture / group / tradition | | | |
|-----------------|----------|-----------------------|---------------------|-----------------------------|--------------------|--|-------|
| | | north | south | north | south | | |
| 2000 | 12 | Iron Age | Roman period | | Frisian | other native-Roman and Iron Age groups | |
| 2250 | 250 | | Late Iron Age | | | | |
| 2450 | 500 | | Middle Iron Age | | Zeijen | Niederrheinische Grabhügel | |
| 2600 | 800 | | Early Iron Age | | | | |
| 2900 | 1100 | Bronze Age | Late Bronze Age | | Sleen | Hilversum | |
| 3300 | 1500 | | Middle Bronze Age B | | Elp | | |
| 3450 | 1800 | | Middle Bronze Age A | | | | |
| 3650 | 2000 | | Early Bronze Age | | Barbed Wire Beaker | | |
| 3950 | 2500 | Neolithic | Late Neolithic B | | Bell Beaker | | |
| 4300 | 2900 | | Late Neolithic A | | Single Grave | | |
| 4700 | 3400 | | Middle Neolithic B | | Funnel Beaker | Vlaardingen | Stein |
| 5300 | 4200 | | Middle Neolithic A | | Hazendonk-3 | | |
| 6000 | 4900 | | Early Neolithic | | Michelsberg | | |
| 6400 | 5300 | | Early Neolithic B | | ? | | |
| | | | Early Neolithic A | | Rössen | | |
| | | | | | Linear Pottery | | |

Figure 3.3 The periodisation of the Late Prehistory of the Netherlands according to The Prehistory of the Netherlands (after Van den Broeke *et al.* 2005, fig. 1.10).

chronological relations between Single Grave Culture, Bell Beaker Culture and Barbed Wire Beaker Culture, because these sites commonly exhibit good stratigraphy.⁴⁸ Gerritsen, Jongste & Theunissen argue that more dates from closed contexts are required to come to a better understanding of the origins and developments of the different Beaker Cultures and the Hilversum Culture.⁴⁹ Furthermore, Van Heeringen and Koot stress the importance of the creation of an accurate typology of Middle Bronze Age A and B ceramics for further research.⁵⁰

3.3 A short history of research

In order to be able to place the results of the per-Malta period in context, it is important to have a quick view on research foci and research themes that were dominant in the past. These have generated and biased the pre-2001 *status questionis*, and will have to be evaluated in order to determine to what extent development-led archaeological research has been able to change that picture.

3.3.1 Barrow excavations and Beaker typology

For a long time, studies of the Late Neolithic and Bronze Age were limited to the archaeology of visible monuments (primarily burial mounds) and spectacular objects (grave goods and hoards). The study of settlement sites remained sporadic, although the western Netherlands formed an exception.

In the Netherlands, three archaeologists form the first generation of barrow excavators: A.E. van Giffen, J.H. Holwerda and F.C. Bursch. The most important pre-war summary and synthesis of barrow research is *Die Bauart der Einzelgräber* by Van Giffen.⁵¹ Van Giffen took a leading role in barrow excavations and transferred his passion and skills to his pupils W. Glasbergen, J.D. Van der Waals and P.J.R. Modderman. Glasbergen wrote his dissertation on the Bronze Age barrow landscape of Toterfout-Halve Mijl, near Eindhoven in the southern Netherlands.⁵² Van der Waals worked as Van Giffen's assistant in Amsterdam and excavated among others barrows in West Frisia.⁵³ Modderman excavated

⁴⁸ Van Heeringen & Koot 2005, 17.

⁴⁹ Gerritsen, Jongste & Theunissen 2005, 20.

⁵⁰ Van Heeringen & Koot 2005, 17.

⁵¹ Van Giffen 1930.

⁵² Glasbergen 1954.

⁵³ Van der Waals 1961; 1966.

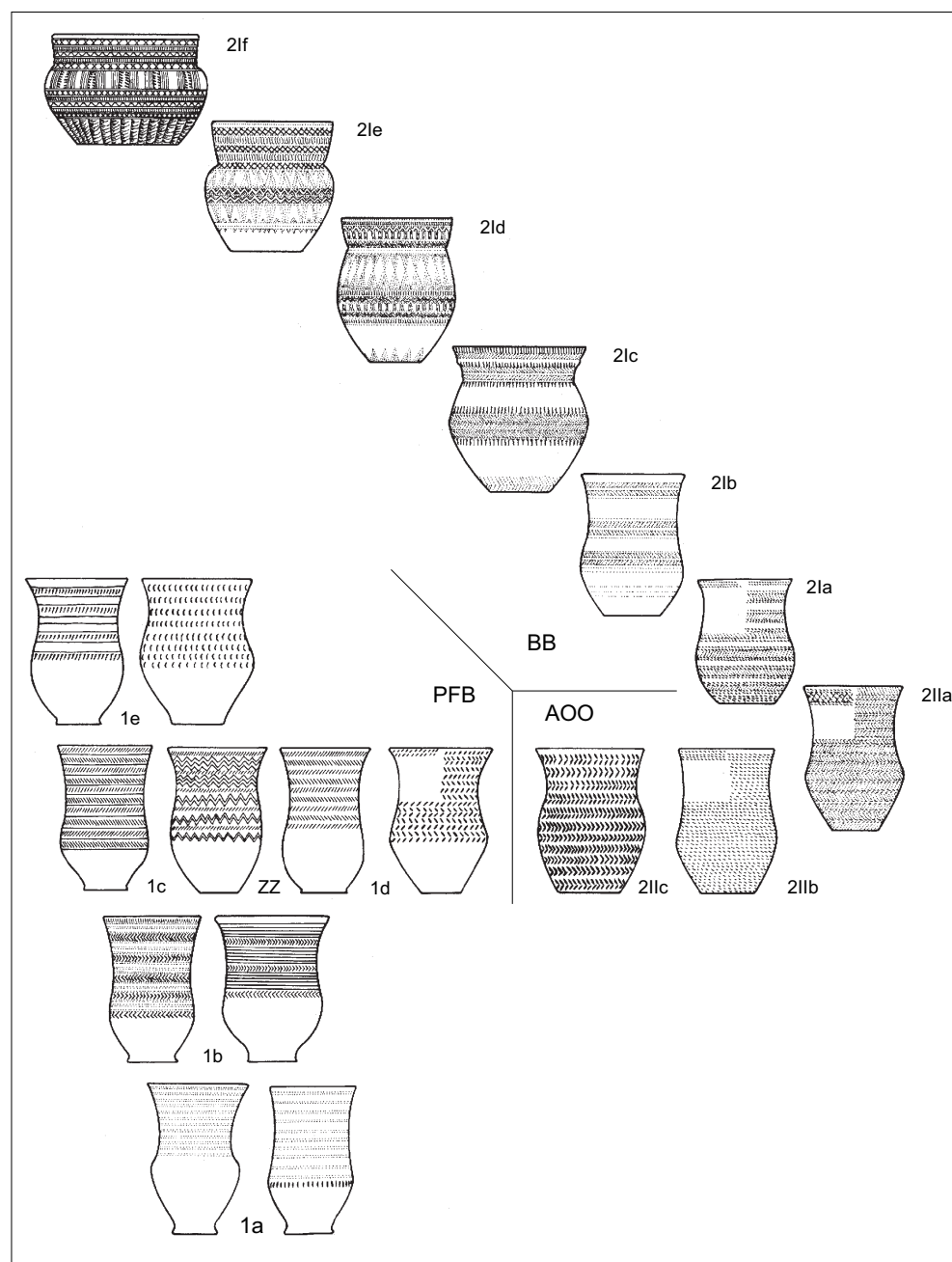


Figure 3.4 Beaker development as presented by Lanting and Van der Waals (1976). The abbreviation PFB (Protruding Foot Beaker) indicates Single Grave Culture pottery, BB Bell Beakers and AOO indicates All Over Ornamented Beakers. Small numerals indicate the names of the types.

a series of barrows on the Veluwe in the central Netherlands.⁵⁴ In the southern Netherlands these barrow groups were generally exclusively Bronze Age barrows, while in the central and northern Netherlands they also included barrows erected during the Late Neolithic.⁵⁵ Despite the fact that Van Giffen published the

excavated burials and barrow structures, his pupils largely are responsible for the analysis of the finds. These analyses formed the basis of the first typological study of Protruding Foot Beakers and Bell Beakers in the Netherlands, published by Glasbergen and Van der Waals.⁵⁶ In turn, this work acts as the basis for the

⁵⁴ Modderman 1954.

⁵⁵ Bourgeois 2013.

⁵⁶ Van der Waals & Glasbergen 1955.



Figure 3.5 The excavation at Zandwerven in 1958 (photo: Van Heeringen & Theunissen 2001, 231).

seminal study of Lanting and Van der Waals⁵⁷ on the continuous typological development of Protruding Foot Beakers to Bell Beakers that was published 20 years afterward (Fig. 3.4). This study put the Lower Rhine basin on the map as the possible homeland of the Bell Beakers Culture; a position still held by several scholars today.⁵⁸

For the Bronze Age, the dissertation of W. Glasbergen about the barrow cemetery of Toterfout-Halve Mijl set the stage for burial analysis of the Middle Bronze Age A and B, but also for the definition and typological sequencing of the Hilversum Culture.⁵⁹ The period of intensive barrow excavations came to an end in the 1960's when the focus of archaeological excavations shifted to areas threatened by urban development. Since barrows were generally not part of these development areas the excavation of barrows became less frequent and emphasis shifted towards settlement excavations.

3.3.2 Settlement research

Late Neolithic and Early Bronze Age settlement research started with the excavation of Zandwerven in West Frisia (Fig. 3.5). This site was discovered by amateur archaeologist W. Butter and the scene of two excavations. The first excavation was conducted by Van Giffen in 1929, and the second by J.F. van Regteren Altena

in 1957 and 1958.⁶⁰ Other early Late Neolithic settlement excavations studied the Vlaardingen sites of Hekelingen⁶¹ and Hazendonk.⁶² For a very long time the dissertation on the Late Neolithic and Early Bronze Age settlements of the Schoonrewoerdse Stroomrug was the only and most detailed report on settlements in the western Netherlands from these periods.⁶³ These sites were all discovered because of their thick buried soils or rather occupation layers, especially in West Frisia. This was not only true for Vlaardingen settlements, but also for Single Grave Culture settlements. For a long time the Aartswoud site was the only example of a Late Neolithic site in that region. It was excavated on a small scale between 1972 and 1978 by Glasbergen and Van Iterson Scholten.⁶⁴ In the 1980s a few other sites followed: Kolhorn (excavated by the Groningen Institute for Archaeology)⁶⁵, Mienakker, Zeewijk and a number of other sites, excavated by the Cultural Heritage Agency of the Netherlands. None of these sites, however, was published properly, at least not until after 2001.⁶⁶

At Bornwird (Friesland) and Oostwoud (West Frisia) the first patches of Late Neolithic arable land were discovered.⁶⁷ This demonstrated that people of the Late Neolithic Single Grave Culture were farmers as well (Fig. 3.6), which was not self-evident in 1980. Until then the general idea was still that SGC pastoralists had invaded our regions from the east around 3950 BP, and forcefully replaced the Funnel Beaker Culture (TRB)⁶⁸ farmers who exploited small

⁵⁷ Lanting & Van der Waals 1976.

⁵⁸ E.g. Needham 2005; Sheridan 2008.

⁵⁹ Glasbergen 1954; Theunissen 1999.

⁶⁰ Van Heeringen & Theunissen 2001, 228.

⁶¹ Modderman 1953.

⁶² Louwe Kooijmans 1985.

⁶³ Louwe Kooijmans 1974.

⁶⁴ Cf. Van Heeringen & Theunissen 2001, 101.

⁶⁵ Van der Waals 1989.

⁶⁶ These sites are therefore also summarised in Chapter 7.

⁶⁷ Bornwird: Fokkens 1982; Oostwoud: Van Giffen 1961; 1962.

⁶⁸ Trichterbecher Culture or Funnel beaker Culture. We use TRB as a generally accepted acronym throughout this book.



Figure 3.6 Excavation of tumulus 1 at Oostwoud. The post holes of the Middle Bronze Age barrow cross-cut a Late Neolithic arable plot with Bell Beaker sherds in it (photo: provincial depot Noord-Holland).

plots of arable lands near their farms. In the analysis of the Bornwird site, with arable land containing late TRB and SGC pottery, Fokkens in contrast suggested continuity between the two cultural groups.⁶⁹ Fokkens' ideas were met with scepticism, because calibration had not had any impact yet at the time, and the ¹⁴C-dates of late TRB and early SGC appeared to overlap for several decades (3950–3800 BP). Only when calibration showed *post* rather than *juxta* position, did this idea become accepted without any further discussion.⁷⁰

Early Bronze Age and Middle Bronze Age A settlement sites were hardly known before 2001. Louwe Kooijmans had published an important complex from Molenaarsgraaf⁷¹ and other sites in the river area, but other Early Bronze Age settlements were virtually unknown. The settlement sites from Steenendam and Oldeboorn remained unpublished and were only mentioned in passing.⁷²

3.3.3 Material culture studies

Material culture studies other than for the sake of typology do not have an elaborate history in the Netherlands. Pottery, disc wheels, bronzes,

and flint implements are amongst the best studied object classes. Studies on bronzes and the Bronze Age always have been connected with J.J. Butler, who's *Nederland in de Bronstijd* was one of the first popular books about prehistory in the Netherlands.⁷³ Butler has devoted his entire life to the study of bronzes and bronze typology, in the last decades supported by H. Steegstra.⁷⁴ His focus was especially on relative dating. The context of the finds had largely been ignored; hoards were only studied for typological reasons. Their context and explanation became only became a research subject in the late 1990's, culminating in the dissertation of D. Fontijn.⁷⁵ But in 2001 that study was still under way and did not yet have any impact on archaeological practice. Late Neolithic object studies were dominated by J.D. van der Waals, A.E. and J.N. Lanting and E. Drenth. Van der Waals wrote his dissertation on Late Neolithic (SGC) disc wheels found in the peat bogs of the northern Netherlands.⁷⁶ Lanting and Drenth wrote numerous articles on beaker typology and associated artefacts⁷⁷, and Bloemers wrote a study on Early Bronze Age flint daggers from the Netherlands.⁷⁸ Pottery studies predominantly focused on typology and periodisation. A few studies had focused also on technological aspects

⁶⁹ Cf. Drenth 2005, 334; Fokkens 1982, 1986, 1998.

⁷⁰ Cf. Lanting & Van der Plicht 2002; Van den Broeke, Fokkens & Van Gijn 2005; Fokkens 2005a.

⁷¹ Louwe Kooijmans 1974.

⁷² Fokkens 1998.

⁷³ Butler 1969.

⁷⁴ E.g. Butler & Steegstra 1997, 1998, 2005.

⁷⁵ Fontijn 2003.

⁷⁶ Van der Waals 1964.

⁷⁷ Cf. section 3.1 and Chapter 8.

⁷⁸ Bloemers 1969.

of pottery production. Louwe Kooijmans had written about technological aspects of Vlaardingen pottery⁷⁹, Van der Leeuw wrote his still much cited study on Beaker technology, executed in cooperation with the pottery technology laboratory of H. Franken.⁸⁰ Bronze Age pottery was less well studied, very much so because larger assemblages were lacking. The study of Ten Anscher about a settlement pit at Vogelenzang was important for the technological and typological aspects of the Middle Bronze Age A pottery of the Hilversum Culture.⁸¹

In absence of settlement remains, or at least well stratified settlement remains, the analysis of flint material remained limited to occasional remarks; coherent studies lacked.

3.4 Settlement structure

3.4.1 Background: the environment

In 2001, everyone was still working with the palaeogeographic maps that Zagwijn had produced in 1975. It was clear that these maps were no longer up to date, but up to that point there were no alternatives. Hence, in the Prehistory of the Netherlands these maps were remastered by Van Gijssel & Van der Valk, but without revisions.⁸² For the period under consideration, one map was available, namely the map of the geomorphological situation around 3000 cal BC (Fig. 3.7a).⁸³ The next map closest to this timeframe presented the situation around 1250 cal BC (Fig. 3.7b) which falls in the Middle Bronze Age B.⁸⁴ The 3000 cal BC map shows that the Pleistocene uplands of the Drenthe boulder clay plateau were almost connected to the boulder clay outcrops at Texel and Wieringen in the north-western Netherlands. This implied that TRB and SGC farmers, possibly also Bell Beaker Culture farmers from the eastern part of the plateau, had an overland connection to the Western Netherlands and to the belt of coastal barriers that protected large lagoons and inland lakes against the North Sea. The discovery of a TRB sites at Slootdorp in West Frisia confirmed this image.⁸⁵ An important impression left by the map of

3000 cal BC is that a site like Schokland-P14, on the former boulder clay island of Schokland, lay once completely isolated in a marshy area between a vast tidal lagoon in the west and the peat bogs bordering the Drenthe plateau on the east. The Western Netherlands are presented as a vast eutrophic peat marsh. Nevertheless, it is from this area that we have most of the data for Late Neolithic and Early Bronze Age settlements. The idea was that the people living there were restricted to the coastal barriers and to river dunes that had formed in the Late Pleistocene period (Fig. 3.7a).⁸⁶ In the northwest, the salt marshes south of the boulder clay plateaus of Wieringen and Texel were also settled.⁸⁷

If we look at the changes in palaeogeography between 3000 cal BC and 1250 cal BC (Fig. 3.7), two major developments become clear. One is that the tidal inlet through the coastal barriers in the northwest had closed (the Bergen inlet). This caused stagnation of water drainage and peat formation. Therefore on the 1250 cal BC map the entire northwest is covered in peat. The former salt marshes of West Frisia were left open because it was known that these were still inhabited in the Middle Bronze Age B. But, according to the then known development model, that also came to an end around 800 cal BC as the region was thought to have drowned under a layer of peat.⁸⁸

The second major change between the two maps is the development of vast oligotrophic peat bogs on top of the former salt marshes and on the sandy soils in the north. The problem is that most oligotrophic peat is gone now: it was exploited for economic reasons in the last centuries. Since an accurate model of peat growth is lacking, according to the map no peat growth occurred in the central, southern and eastern Netherlands.

The environmental stage is now set for our pre-2001 understanding of the Late Neolithic and Early Bronze Age cultural landscape. There appear to have been several different ecological zones that provided different possibilities to the people living there. In general there is a difference between the forested uplands and the marshy lowlands of the Meuse, Rhine and Vecht deltas. This contrast probably overstates the evidence, but still, habitation in the Rhine-Meuse-Vecht delta was thought to be restricted to river dunes and the former barrier ridges along the coast.

⁷⁹ Louwe Kooijmans 1976.

⁸⁰ Van der Leeuw 1976.

⁸¹ Ten Anscher 1990.

⁸² Van Gijssel & Van der Valk 2005. The revised version became only available in 2011, and since then has been integrated in the on-line version of the NRA (Vos & De Vries 2013).

⁸³ Cf. Prehistory of the Netherlands plate 4.

⁸⁴ Cf. Prehistory of the Netherlands plate 5.

⁸⁵ Peeters 2001.

⁸⁶ Cf. Zagwijn 1986.

⁸⁷ Theunissen *et al.* 2014; Smit *et al.* 2014.

⁸⁸ Van Geel, Buurman & Waterbolk 1996, 457.



Figure 3.7a Palaeogeographic situation around 3000 cal BC (Zagwijn 1986; Van Gijssel & Van der Valk 2005).

Transport and communication must have been almost exclusively river based.

The contrast that the maps show between the Holocene west on the one hand and the Pleistocene north, east and south on the other, is dramatic. However, it is a misconception to believe that the Pleistocene regions were easily traversable dry land. It must have consisted of a patchwork of dense forests with many wild animals, or sometimes large moors, smaller rivers and of patches human-induced heath. The latter landscape type may have been more common in the central, northern and eastern Netherlands than in the south.

The reason for the above-mentioned differences in landscape is that the northern, eastern and central parts of the Netherlands have been shaped by land-ice during the penultimate glacial period (Fig. 3.8).⁸⁹ Ice-pushed ridges with boulder clay in the subsoil and a relatively thin layer of cover-sand dominate in the central, northern and eastern parts of the Netherlands. In the south, wind-blown dunes and plateaus dominate, but also a number of rivulets draining the southern, higher soils. Here also the Meuse, with a relatively steep river valley, is the main drainage course. Figure 3.8 also shows a division in the southern sandy areas. The south drains

⁸⁹ Zagwijn 1986.



Figure 3.7b Palaeogeographic situation around 1250 cal BC (Zagwijn 1986; Van Gijssel & Van der Valk 2005).

into the southwestern low area and the Rhine-Meuse-delta. The central, eastern and northern river systems drain into the IJssel-Vecht basin to the north. Seen this way, the Rhine-Meuse delta constitutes a dividing zone between two large drainage systems.

In these landscapes we can now project Late Neolithic, Early Bronze Age and Middle Bronze Age A farming communities. Given this

environmental diversity, one would expect not the exact same kinds of data everywhere. In the Holocene West, organic materials will have been preserved because of the wet conditions, while this is not expected for the Pleistocene sands. On the other hand, on the uplands, one might expect sturdier constructed farms, because of the availability of oak timber, more persistent clearings and development of heath,

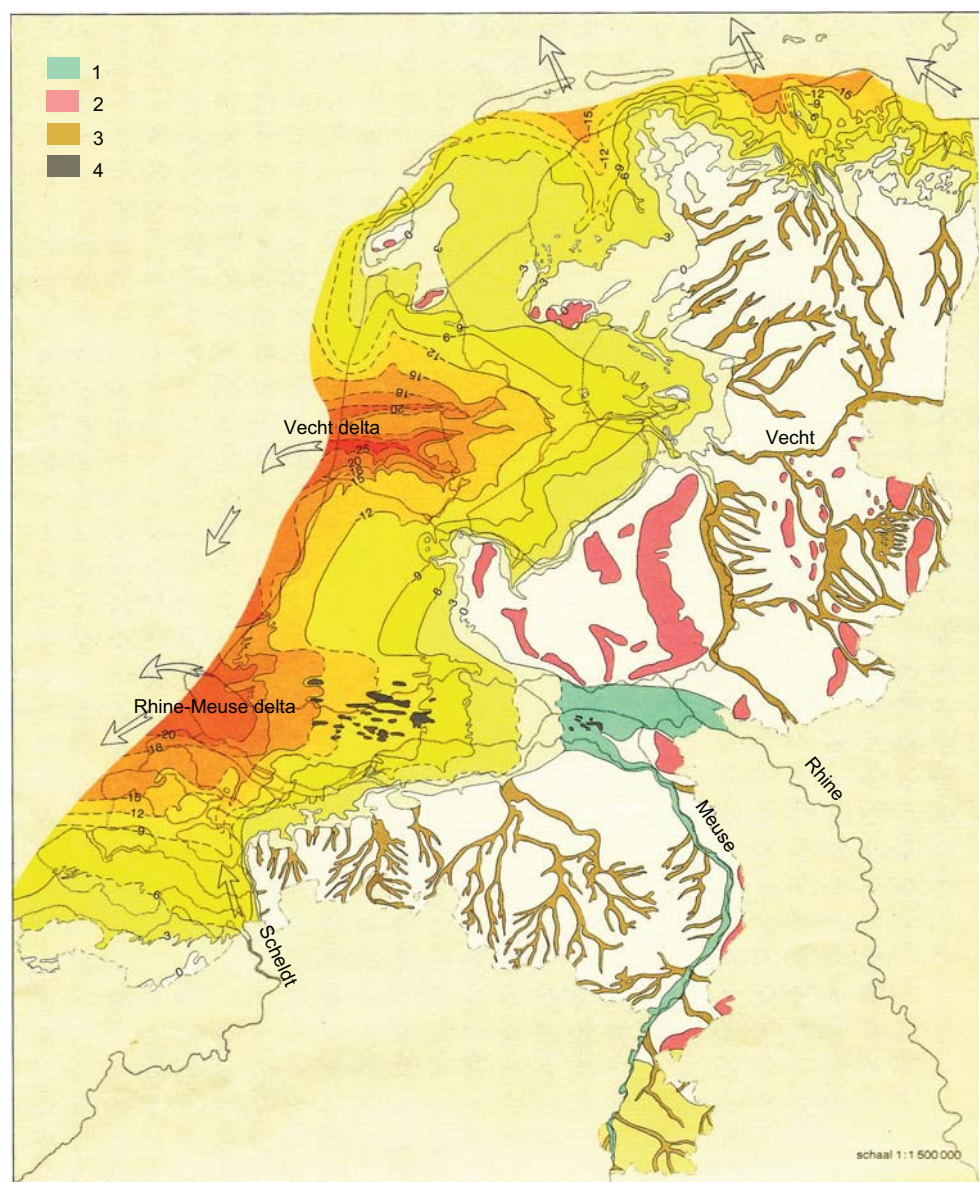


Figure 3.8 The Netherlands during the Pre-Boreal. Legend: 1: river valley, 2: ice-pushed ridges, 3: brooks and small rivers, 4: Late Weichselian-Pre-Boreal river dunes (after Zagwijn 1986, map 1).

eventually resulting in a more open landscape. In the Holocene areas hunting, fishing and fowling might constitute a larger component of the subsistence economy than in the North, East and South because in Holocene landscapes those activities are easier to carry out.

3.4.2 The archaeology of settlements

A discussion of settlement structure is difficult, because in 2001 virtually none of the sites excavated in the past had been published. Most of the data used for the National Research Agenda Archaeology and the Prehistory of the Netherlands derived from preliminary reports. For West Frisia, one of the important source areas for information, the most comprehensive

analysis was (and to some extent still is) the evaluation of sites and their potential for future research by Van Heeringen and Theunissen.⁹⁰ This analysis brought together all known evidence of the West Frisian sites. So the situation in 2001 was that we knew several sites throughout the Netherlands from which houses that were thought to be present had been published, as well as some of the specialist analyses, but not the sites proper. Because of that, the pottery of the known settlement sites had been studied only superficially in passing. Site chronology was based on ¹⁴C-dating and on pottery types that could be recognised and placed in the existing typologies. So, for instance, the West Frisian settlement sites were all presented as SGC sites. The Vlaardingen component that in theory could be present because of the overlap in time was ignored. The above-mentioned situation shows that in 2001 the Beaker typology of Lanting and Van der Waals⁹¹ and its setting in time guided our thinking, even though some people realised that the wiggle platforms in the third millennium BC caused problems. We all talked about Early SGC Beakers and Late SGC Beakers, All Over Ornamented (AOO) Beakers and Bell Beakers as if they were rooted in time: a 1A SGC Beaker implied an early date, probably between 2900-2700 cal BC. Therefore, a site with 1A beakers was 'early'. Similarly, much discussion about the beginning of the Bell beaker Culture was based on typological and ¹⁴C-arguments. No one questioned the existing typology. One of the reasons for our rock solid belief in J.N. Lanting's work is that he published all known Dutch ¹⁴C-dates, and commented on them. Therefore he has always been considered the authority on Beaker Cultures and on ¹⁴C-dating and periodisation in general. This reputation was further strengthened by the fact that he published most of his work in co-operation with W. Mook and H. van der Plicht, who became subsequent directors of the renowned Groningen ¹⁴C-laboratory. With the above-mentioned constructivist background in mind, the idea was in 2001 that we knew quite a few VLC settlements, some with house plans, all situated in the western Netherlands. After the excavations at Zandwerven and Hekelingen a few new sites were discovered, especially near Vlaardingen,⁹² Leidschendam and Voorschoten.⁹³ At

Voorschoten-Boschgeest, it became clear that Late Vlaardingen was associated with (Late) Single Grave pottery. Louwe Kooijmans classified this as phase 2b of the Vlaardingen Culture, which in his view occurred around 2600-2500 cal BC (Fig. 3.9).⁹⁴ His interpretation was in line with the views of that time:

'Taking everything together we think that the situation is similar to that in Drenthe, with Vlaardingen here in the role of the TRB on the sands. After a period of peaceful coexistence of two pottery traditions in the same district with very incidental contacts of the older Vlaardingen communities with the new beaker communities (in which we still like to see at least for a part new people arriving from elsewhere), a phase of assimilation can be distinguished the phase VL-2b, 2200-2100 b.c. The degree of assimilation is reflected in the percentage of decorated sherds and the change to more beaker-like forms of the undecorated pottery.'⁹⁵

Early third millennium BC settlement sites of the Single Grave Culture were virtually unknown. There was the unpublished site of Steenendam⁹⁶, and the arable land at Bornwird would have been connected to a settlement, but a settlement proper was not found.⁹⁷ The West Frisian SGC sites were supposed to span the whole range of the Single Grave Culture, even though it was clear that the point of gravity tended more to the late part, because AOO pottery was found in most settlements. Bell Beaker Culture sites were almost non-existent in West Frisia. The only site that had been published in 2001 was the settlement of Molenaarsgraaf with an intriguing Bell Beaker Culture flat grave cemetery.⁹⁸ A two-aisled plan was published by Louwe Kooijmans as a house plan from the Early Bronze Age. Another Bell Beaker Culture settlement was excavated at Oldeboorn in Friesland, but never published.⁹⁹ Settlement sites from the Early Bronze Age were very rare, from the Middle Bronze Age A even absent. Apart from the Molenaarsgraaf house, a clear plan was published from Noordwijk-Bronsgeest.¹⁰⁰

Settlement systems

The pre-2001 ideas about the settlement systems of the Late Neolithic and the Early Bronze Age are presented Louwe Kooijmans' comprehensive 'Wetland exploitation and upland relations of prehistoric communities in the Netherlands'.¹⁰¹ Louwe Kooijmans brought

⁹⁰ Van Heeringen & Theunissen 2001.

⁹¹ Lanting & Van der Waals 1976.

⁹² Glasbergen *et al.* 1961.

⁹³ Glasbergen *et al.* 1967a; 1967b.

⁹⁴ Louwe Kooijmans 1976, 286.

⁹⁵ Louwe Kooijmans 1976, 287. The dates

used were not yet calibrated.

⁹⁶ Cf. Section 7.9; Fokkens 1998.

⁹⁷ Fokkens 1982.

⁹⁸ Louwe Kooijmans 1974.

⁹⁹ Cf. Section 7.8; Fokkens 1998.

¹⁰⁰ Jongste *et al.* 2001.

¹⁰¹ Louwe Kooijmans 1993.

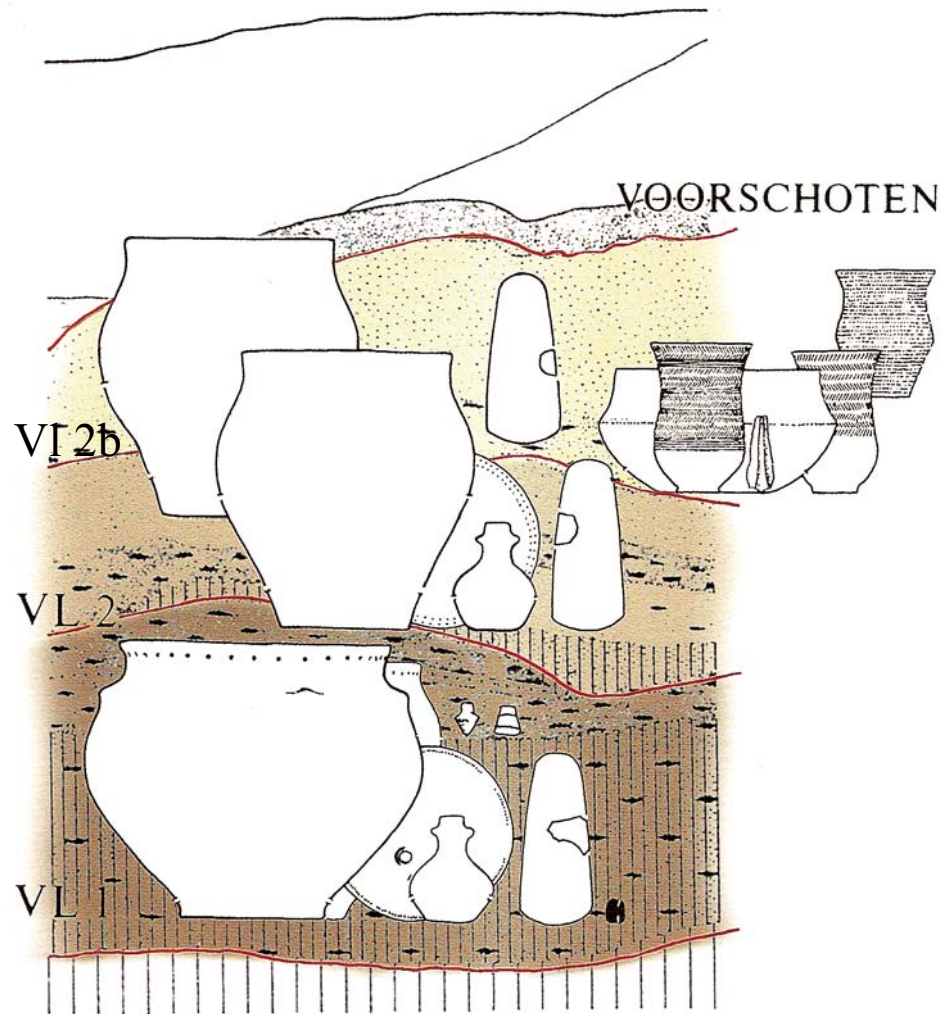


Figure 3.9 The sequence at Voorschoten-Boschgeest (Verhart 2010, 124; after Louwe Kooijmans 1976 and Glasbergen *et al.* 1976, 27).

together all known evidence for the period from the Neolithic to the Iron Age and distinguished between different settlement systems in five different ecozones. The abstract offers the following, condensed statements of which we can check the validity.

The ecozones that Louwe Kooijmans distinguishes in the Rhine-Meuse Delta are: coastal barriers and dunes, river estuaries, fresh water tidal zones, creek systems, peat zone, rivers, river dunes (*donken*), river sedimentation area, uplands.¹⁰² The settlement systems that his model outlines for the Late Neolithic and the Early Bronze Age settlements consist of 'restricted residential mobility' and 'independent logistic mobile systems'.¹⁰³ In his system of restricted residential mobility, exploitation of the landscape is based on long-term seasonal (*i.e.*

summer and winter) occupation of settlements in different ecozones, with optional extraction camps. His independent logistic mobile systems describes self-sufficient communities that exploit predominantly wetlands and uplands. Louwe Kooijmans distinguishes several variants (C1-C6; Fig. 3.10):¹⁰⁴

C1. Permanent wetland exploitation from permanent settlement in the wetlands. Site generally separated from upland by other ecozones or subzones. Territory generally covering various landscape units. Optional extraction camps and expeditions for the exploitation of other ecozones including upland areas. Exchange relations with upland sites only for specific raw materials and valuables;
C2. direct wetland exploitation from upland sites on a daily basis, without wetland satellite sites.

¹⁰² Louwe Kooijmans 1993, 73.

¹⁰³ Louwe Kooijmans 1993, 97. His terminology and modelling is rooted in Binford's seminal 'Willow smoke and dogs' tails' (Binford 1980).

¹⁰⁴ Louwe Kooijmans 1993, 97-100.

Site location on the margins of upland areas.

Territory covering both upland and wetland. Two variants shown;

C3. as 2, but with subordinate sites at the margins of upland areas;

C4. indirect wetland exploitation based on subordinate, seasonal base camps;

C5. indirect wetland exploitation from upland sites, based on wetland satellite camps. Travel camps optional.

If we summarise his conclusions as short statements, we get the following points that we can check in the following analysis. Late Neolithic sites (3300-2600 cal BC) are typified as 'The end of natural bio-resource exploitation'. Their characteristics are:¹⁰⁵

a. In the fresh water tidal and peat zones:

- semi-agrarian;
- summer-seasonal domestic sites;
- restricted residential mobile systems;
- very different origin of the flint used at the sites;

b. Meuse estuary linked with the south in the basin of the River Scheldt;

c. West-Frisian embayment linked with the north and north-east;

d. River dunes (donken) part of settlement systems that extended to the east;

- extended broad spectrum economy is continued;

e. the coastal dunes and the river clay district:

- animal husbandry is dominant and combined with crop cultivation;
- agrarian aspect demonstrates a considerable variability, no clear link to environmental conditions;
- no evidence for cattle stalling;
- evidence for ploughing is very restricted;
- high proportions of domestic pig point to the importance of swine herding;
- only link between crops and livestock might have been the occasional grazing of livestock on the stubble fields and fallow land: *quasi mixed farming*;
- long fallow cultivation characterised by the use of hoes and digging sticks and occasional ploughing;
- high degree of self-sufficiency;
- relatively high mobility and, therefore, a settlement System C2;
- hardly any social restrictions existed: people (still) had a great appreciation for a wide variety of natural resources;

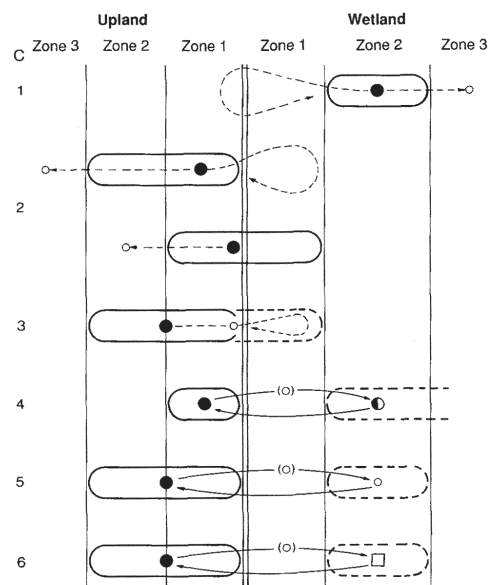


Figure 3.10 'Schematic representation of settlement systems in Dutch wetland and upland margins, for permanently settled communities. Extraction camps optional for pre-Bronze Age only' (text and image from Louwe Kooijmans 1993, 101, fig. 6.22).

This changes rigorously in the next phases.

Sites of the Late Beaker / Early Bronze Age phase (2600-1700 cal BC) are characterised as 'short fallow agriculture. Initial mixed farming'. They are characterised as:¹⁰⁶

- the last semi-agrarian communities seem to have disappeared;
 - basic subsistence was agrarian;
 - in bone spectra wild animals are nearly absent;
 - pig is still relatively important;
 - wheels and plough marks demonstrate the use of draught animals (oxen);
- evidence for housing is scarce and contradictory; origin of the fully developed mixed-farming of the Middle Bronze Age;
- not yet fully dominated by cattle;
 - option for the development of a farm with byre;
 - settlement systems all focused on permanent settlements at upland locations;
 - for the first time also at selected wetland locations;
 - small extraction sites are in use for activities in distant ecozones (C5)
 - the wide margins of subsistence had considerably narrowed during this phase.

¹⁰⁵ Louwe Kooijmans 1993, 103.

¹⁰⁶ Louwe Kooijmans 1993, 103-104.

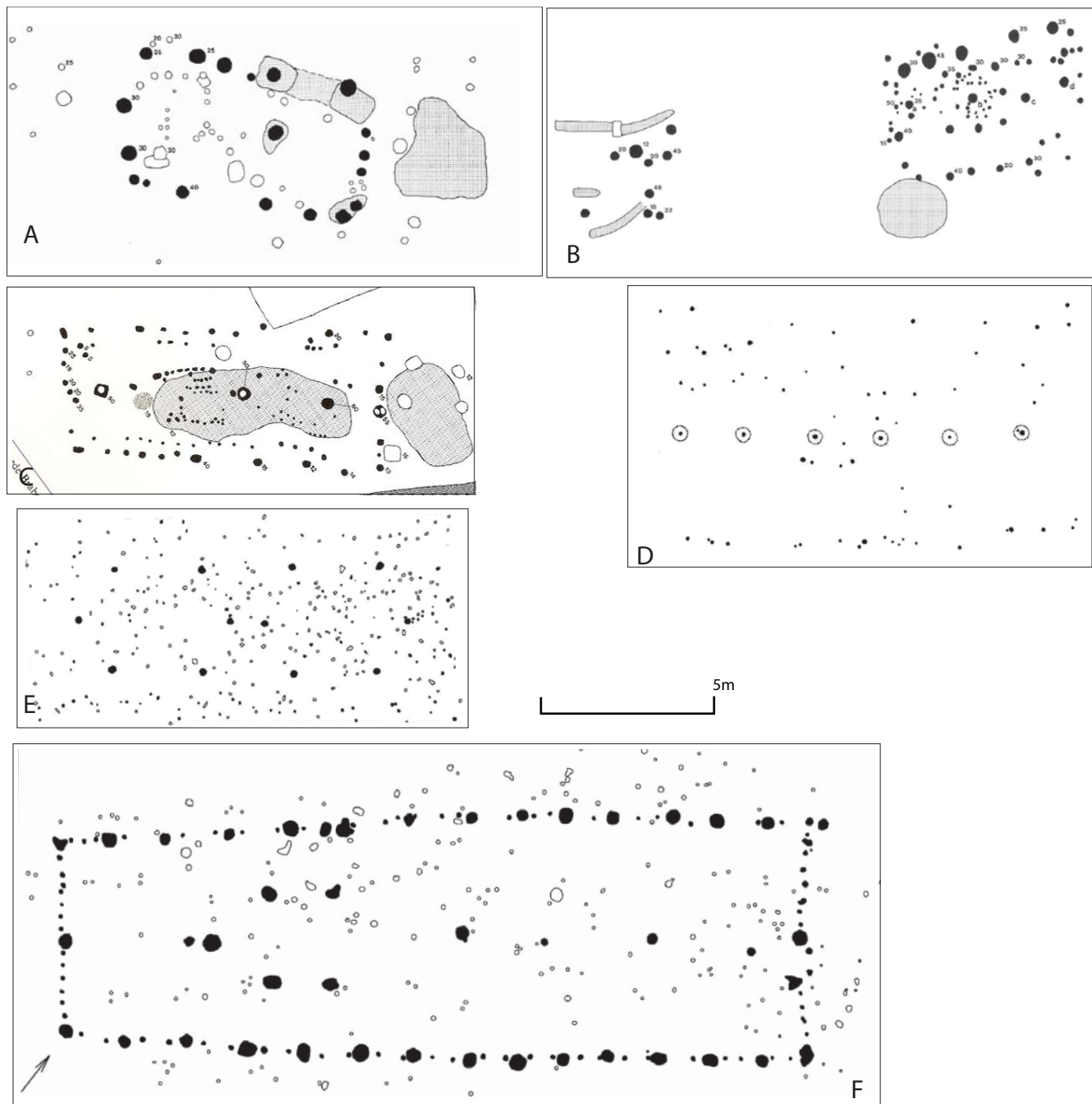


Figure 3.11 Late Neolithic houses as published in the 1990s. A: Haamstede Brabers 2, B: Haamstede Brabers, C: Haamstede Brabers 1, D: Vlaardingen, E: Vlaardingen, F: Zeewijk-Oost (A-E: Verhart 1992, F: Hogestijn 1997).

¹⁰⁷ Even if this model is not very often referred to in Dutch literature, it explains why so much effort is invested in finding out what 'the nature of the site' in Dutch commercial archaeology. Verlinde 1984.

¹⁰⁸ Louwe Kooijmans 1974.

¹¹⁰ Van Heeringen, Van der Velde & Van Amen 1998; Jongste *et al.* 2001; Fokkens 2001, 252.

Especially Louwe Kooijmans' division of sites into different settlements systems appears to be testable. However, this test depends on a validation of the site location in combination with, often restricted and biased, botanical and zoological assemblages. The difference between the C3-5 systems is difficult to decide

on in actual practice because the nature of these camps is difficult to establish.¹⁰⁷

Evidence for structures

Apart from the claimed house from Vasse,¹⁰⁸ only plans from Molenaarsgraaf¹⁰⁹ and from Noordwijk¹¹⁰ were known in 2001. Middle Bronze

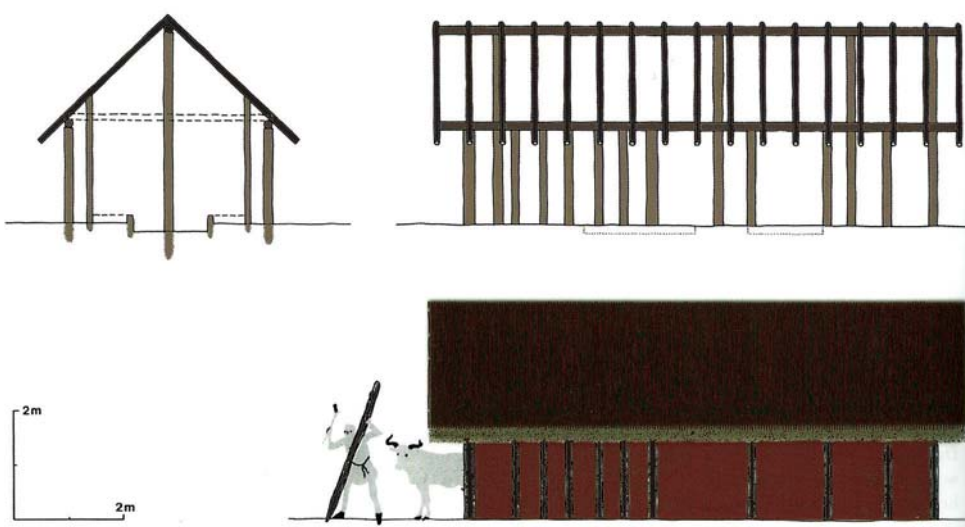


Figure 3.12 Reconstruction of Haamstede-Den Brabers house 1 (from Verhart 2010, 174).

Age A houses were absent. Not only were house plans lacking, settlement sites in general were notoriously invisible. We knew of isolated pits with Barbed Wire Beaker Culture material and Early Hilversum pottery, but no substantial sites. The only material from an Early Hilversum settlement context came from the dune area, at Monster and Vogelenzang, but these were only small-scale excavations.¹¹¹

The house plans we knew in 2001 all fit in one image (Fig. 3.11). Verhart has published a few plans from the Vlaardingen sites of Haamstede-Brabers and Vlaardingen.¹¹² These seem to indicate permanent structures, even though some of these are rather irregular. Much more regular, but still similar in terms of construction, is the SGC house discovered at Zeewijk-Oost.¹¹³ It is attributed to the Late Single Grave Culture (between 2600 and 2400 cal BC; Fig. 3.11).¹¹⁴ It clearly shows that even in the mid-third millennium BC, houses with a regular structure of roof supports existed.

Judging by the evidence excavated, there were at least two housing traditions. One of the VLC structures with a line of central post pits, a gable roof, but with walls that are sometimes more difficult to indicate. This may be a continuation of traditions that existed in the same area in the Middle Neolithic. The Schipluiden plan, for instance, shows a wall ditch without any signs of posts. This implies that either the wall was made of sods, carrying a wall plate, or that the roof ends were positioned directly on or in the soil.¹¹⁵ The VLC houses did have a wall that carried a

wall plate, and therefore may have looked much more like a proper house (Fig. 3.12). The problem with the reconstruction by Verhart, however, is that the dotted line connecting the wall supports in the cross-section have little function this way. Their function should be to support the rafters, but then higher up (Fig. 7.3.10 top left). Moreover, this way, the wall would have to be at least 2 m high in order to let people pass.¹¹⁶ The walls therefore have been reconstructed as the only elements carrying the rafters.

The houses were not very large, c. 4 x 10 m, but that is still large enough to house a family and even some animals. The idea is that these houses represent permanent 'stable' farming settlements.¹¹⁷ Verhart, however, discusses the evidence of the houses from a different perspective and concludes that even if the houses were permanent, the settlement system was not necessarily permanent.¹¹⁸

The other tradition then, of which only one example had been found, entailed a much more structured construction in terms of straight post alignments, of regular distances between posts and of a clear rectangular wall structure.¹¹⁹

The Zeewijk-Oost house was substantial (5 x 25 m) and therefore it was interpreted as a special house, possibly a community building for special gatherings.¹²⁰ The general idea was that a normal house would be more like something found at the VLC sites. Also there were already some indications that not all sites were permanent farming settlements. The Keinsmerbrug site had yielded data that pointed

¹¹¹ Monster: Glasbergen & Addink-Samplonius 1965; Vogelenzang: Groenman-Van Wateringe 1966; Ten Anscher 1990.

¹¹² Verhart 1992.

¹¹³ Hogestijn 1997; Van Heeringen & Theunissen 2001; Hogestijn 2005.

¹¹⁴ See Chapter 7.32.

¹¹⁵ Hamburg & Louwe Kooijmans 2006.

¹¹⁶ Cf. Chapter 6.

¹¹⁷ Glasbergen *et al.* 1967; Louwe Kooijmans 1986.

¹¹⁸ Verhart 1992, 94.

¹¹⁹ Hogestijn 2005.

¹²⁰ Hogestijn 2005, 431.

at SGC extraction camps.¹²¹ Also the Bell Beaker Culture site of Oldeboorn was thought to have been an extraction camp, in that case for fishing pike.¹²² From the northern, central, eastern and southern parts of the Netherlands, we had no data about house plans in 2001. To sum up, we knew relatively little about houses in 2001, which is why according to the National Research Agenda Archaeology, research of the years to come should focus on the excavation of house plans, and on analyses of local communities. In Chapter 7 we discuss whether this has indeed happened.

3.5 The 'economic basis' of prehistoric communities

From the Late Neolithic onwards, farming is supposed to have been the main source of subsistence in all regions of the present Netherlands. Maybe with some hunting and gathering, some extraction camps, but in general we were dealing with mixed farming communities.

3.5.1 Farming

The conventional thoughts on Late Neolithic and Early Bronze Age livelihood are based on the idea that by the end of the Middle Neolithic, crop cultivation and animal husbandry had become the mainstay of the subsistence system.¹²³ And indeed, from the little evidence that we have on the subsistence economy, it is clear that arable farming was practiced and that farmers used the ard to plough their fields. These fields were by no means small. For instance, at Bornwird such a field measured at least 50 x 50 m.¹²⁴ Also from West Frisia we have evidence for arable farming.¹²⁵ At Oostwoud, plough marks were visible underneath and around a Bell Beaker Culture barrow. This demonstrates the barrow was erected on arable land, but also that people had continued using and ploughing the land in later periods.¹²⁶

Though in the Late Neolithic a combination of crop cultivation and stock keeping was practiced everywhere, hunting, fishing, fowling and gathering were still very much part of the

subsistence economy.¹²⁷ The analyses of pollen, macro remains and bone material underline this image.¹²⁸ Bakels and Zeiler speak of small-scale farming communities that exploited the environment around them by means of hunting, fishing and collecting, as well as transforming parts of it into an increasingly open man-made and maintained landscape. It is clear that barrows were erected on heath, but they suggest that these heath fields were still limited in size.¹²⁹ The general impression is that on the Pleistocene soils, the TRB people opened up the forest, and that those clearings for arable land and for the living in principle were permanent.¹³⁰

Within about a thousand years from its introduction, agriculture evolved into what may be called true integrated mixed farming.¹³¹ The sustainable balance of integrated crop cultivation and animal husbandry that was established in those early days was to remain the economic basis for farming. Louwe Kooijmans¹³² stated it like this: 'In Late Beaker times people started, we might say, to live with their backs to nature or, in more modern terms, an essential change in the perception of the landscape had taken place. (...) These communities concentrated fully on agriculture, which apparently offered a safe livelihood. Hunting must have occurred on a very opportunistic basis, except amongst the Iron Age estuarine communities. No specialisation or concentration on any special game demonstrates any concentrated attention to any of the surrounding richness.'

This implies that arable farming and husbandry determined settlement locations. Even though this was seldom explicitly stated, settlements were thought to be situated on higher soils, in areas where we with our present-day perception, would locate farmsteads. Another possible location for farmsteads was close to river valleys that would function as grazing grounds, but also close to arable land on higher soils. Despite the finds at Molenaarsgraaf and in West Frisia¹³³, few people would situate Late Neolithic and Early Bronze Age farmers in river valleys or in dynamic environments.

¹²¹ Hogestijn 2005, 431.

¹²² Fokkens 1998.

¹²³ Louwe Kooijmans 1993.

¹²⁴ Fokkens 1982.

¹²⁵ Van Giffen 1962.

¹²⁶ Van Giffen 1962; Lanting & Van der Plicht 2002.

¹²⁷ Bakels & Zeiler 2005.

¹²⁸ Cf. Bakels & Zeiler 2005.

¹²⁹ Groenman-Van Wateringe 2005.

¹³⁰ Cf. Fokkens 1986.

¹³¹ Louwe Kooijmans 1993.

¹³² Louwe Kooijmans 1993, 80.

¹³³ Hogestijn 1991; Louwe Kooijmans 1974.

3.5.2 Metal production and consumption

The production and ‘consumption’ of copper and bronze are important aspects of the Late Neolithic and the Bronze Age, though aspects about which we were poorly informed. Even if we have very little evidence for the production of bronzes¹³⁴, the general idea is that this was common knowledge and practiced on a wide scale, especially in the Middle Bronze Age.

For the period before 1600 BC we have very little evidence of metal production, however. What does seem to be fairly certain is that regional differentiation is observable in the Bronze Age. Typological studies of the bronzes in particular have shown that the northern and eastern parts of the Netherlands formed part of the Scandinavian and North German networks, whereas the southern part of the country belonged to the Belgian-French and, more generally speaking, the Central European exchange networks.¹³⁵

What is particularly difficult for us to understand is how the bronze objects found in the Netherlands were obtained. For the Late Neolithic Bell Beaker Culture period, the Netherlands has relatively good evidence for copper working, even though all copper must have been imported.¹³⁶ About 70 examples of Early Bronze Age metalwork are known¹³⁷, but production sites are unknown. Bronze objects rarely occur in settlement sites, nor do they generally appear in Early Bronze Age burials. In 2001, only a few examples were known, notably from burials in the Middle Bronze Age A Sögel-Wohlde tradition in the northern and eastern Netherlands.

3.5.3 Production and distribution of stone artefacts

Since most of the data that we had about sites from the Late Neolithic and the Early Bronze Age was derived from burials, the knowledge of the use of flint and stone was limited. One of the research questions of the National Research Agenda Archaeology was: ‘The people of the Western Netherlands in the Late Neolithic and Bronze Age used flint. What was their flint

source? Are there clues for multiple- and re-use of flint objects, due to the relatively scarceness of the material.’¹³⁸ This shows that there was in fact limited knowledge about the use of flint and stone tools in general. Vlaardingen sites, especially the Early Vlaardingen sites, had been studied by Verhart, and were relatively well known. But Late Neolithic flint and stone use was almost unexplored territory apart from special objects like flint daggers, axes and hammer axes. Also other materials like amber and jet, known to have been used for ornaments, had predominantly been discussed in funerary contexts.

3.6 Burial and other ritual practices

We have seen that the settlement data are unevenly distributed over the Netherlands (Fig. 3.13). Most Late Neolithic and Early Bronze Age settlement sites have been discovered in the western Netherlands, only very few on the Pleistocene soils of the north central and eastern Netherlands.¹³⁹ With respect to burial sites, the situation was the exact opposite. We knew quite a number of SGC burial mounds from the central and northern Netherlands, but none from the western and relatively few from the southern and eastern Netherlands (Fig. 3.13).¹⁴⁰ It appeared therefore that the Vlaardingen Culture practiced a different burial ritual than the Single Grave Culture, a ritual that we had very little insight in. Flat graves may have been present in settlement contexts, as was the case in older Middle Neolithic Vlaardingen sites,¹⁴¹ but formal burial grounds appeared to have been absent. Even though there are several SGC settlements known from West Frisia, no burial mounds from that period were found in that area. However, at Mienakker and Sijpekarspel SGC flat graves were discovered in settlement contexts, but they were not associated with grave gifts.¹⁴² There is but one burial mound known from West Frisia: the Late Bell Beaker Culture and Early Bronze Age barrow of Oostwoud-Tuithoorn.¹⁴³ Furthermore, in the Rhine-Meuse delta Bell Beaker Culture burials mounds are absent, but a few flat graves are known.¹⁴⁴

Very little was known about the distribution of barrows in the landscape. Many questions were being asked, like for instance: Were they

¹³⁴ Cf. Kuijpers 2008.

¹³⁵ Cf. Fontijn 2003, 77, 109, 143.

¹³⁶ Butler & Van der Waals 1966; Fontijn 2003.

¹³⁷ Kroon 2016, 18 based on ARCHIS data.

¹³⁸ Van Heeringen & Koot 2005, 15.

¹³⁹ Cf. Van Beek 2009, 64-65.

¹⁴⁰ Lanting & Van der Waals 1976; for the eastern Netherlands; Cf. Van Beek 2009, 65; for the southern Netherlands Cf. Theunissen 1999, 57.

¹⁴¹ We refer to the Ypenburg site, excavated in 1996 and 1997, but only published by Koot *et al.* 2008.

¹⁴² Van Ginkel & Hogestijn 1997, 77, 103.

¹⁴³ Van Giffen 1962; De Weerd 1966; Dekker & De Weerd 1975; Lanting & Van der Plicht 2002; Van Heeringen & Theunissen 2005. Van Giffen considered all burials Bronze Age burials, but ¹⁴C-dating proved him wrong.

¹⁴⁴ Louwe Kooijmans 1974.

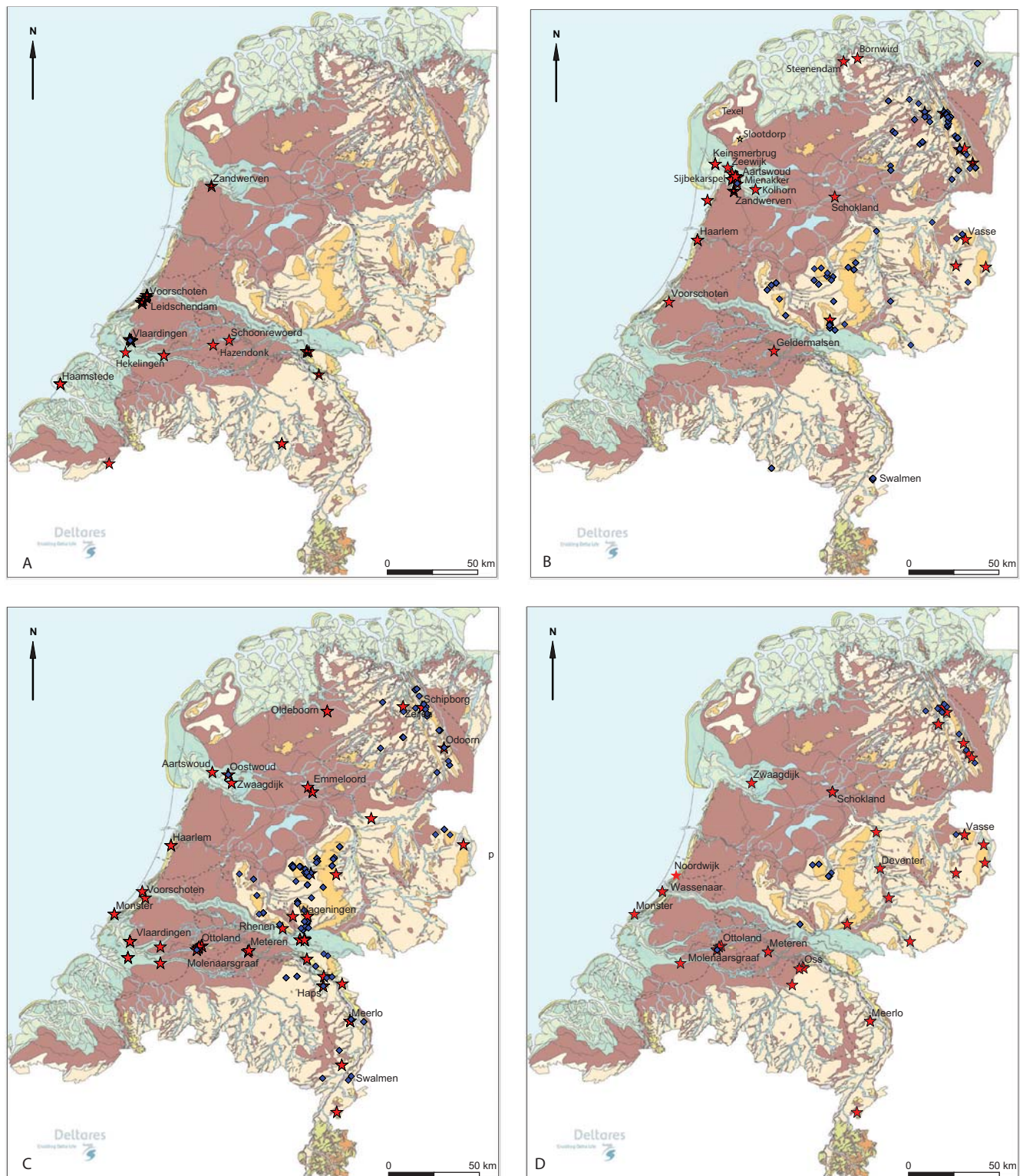


Figure 3.13 Palaeogeographic map of the Netherlands ca. 2750 BC displaying settlement sites (indicated as stars) and burials (indicated as diamonds) discovered between 2001 and 2015 (indicated in red) and finds discovered before that period (indicated in blue). A: Vlaarding culture sites; B: Single Grave culture sites; C: Bell Beaker sites; D: Barbed Wire culture sites (data from ARCHIS, map: Vos & De Vries 2013).



Figure 3.14 The Wassenaar collective burial (photo: L.P. Louwe Kooijmans).

territorial markers?¹⁴⁵ How are burial mounds connected to local communities? These were difficult questions to answer, but the National Research Agenda Archaeology nevertheless hoped that future research would find answers. The relation between the Vlaardingen Culture and the Single Grave Culture had not really been studied in 2001, nor had detailed attention been devoted to the distribution of Bell Beaker settlement sites in the Netherlands. Lanting's 2008 survey had not been published when the National Research Agenda Archaeology and the Prehistory of the Netherlands were being written. In the National Research Agenda Archaeology there is a call for aDNA and isotope sampling in order to look at mobility and origins, for instance of the Bell Beaker and Barbed Wire Beaker people (Oostwoud, Molenaarsgraaf).¹⁴⁶ Even if these do not give direct answers to such questions, aDNA and isotope studies are definitely needed to study these processes in more detail.¹⁴⁷

Early Bronze Age barrows and burials were relatively scarce; most of those had been published by Lanting.¹⁴⁸ It is clear that the Later Beaker traditions continued in the Early Bronze Age in burials accompanied by Barbed Wire Beakers.¹⁴⁹ Middle Bronze Age A burials, in contrast, appear to be known in relative abundance, but only in the southern and central Netherlands.¹⁵⁰ This is largely due to the rise of a tradition of cremating the dead, which started in

the Late Neolithic, but gained momentum in the Middle Bronze Age A of the southern and central Netherlands. Theunissen counted 5 Early Bronze Age cremation burials, 69 Middle Bronze Age A and 154 Middle Bronze Age B cremations.¹⁵¹ In the north and the east inhumation burial continued to be practiced, generally not accompanied by grave gifts or urns. Therefore very little is known about burial rites from the Early Bronze Age and the Middle Bronze Age A in that part of the country.

There is one other burial that has to be mentioned because it gives insight into an aspect that remained undiscussed so far: warfare. In 1987 near Wassenaar an Early Bronze Age collective burial was discovered of twelve individuals including two children, two adolescents and eight adults, both men and women (Fig. 3.14).¹⁵² It was clear that some of these had sustained lethal injuries, one person had been killed by an arrow, and the head of a young child had been severed from the body.¹⁵³

The conclusion is that this group of people was killed, probably in a raid of some kind. The careful way in which the dead had been deposited seems to show that they were buried by people from their own community who had survived the attack.¹⁵⁴ This burial is unique in the Netherlands, but there are many more examples in other parts of Europe.¹⁵⁵ The Wassenaar burial demonstrates that warfare, or primitive warfare in the form of raiding, was also a feature of the

¹⁴⁵ Van Heeringen & Koot 2005, 15.

¹⁴⁶ Gerritsen, Jongste & Theunissen 2005, 18; Van Heeringen & Koot 2005, 18.

¹⁴⁷ Cf. Chapter 9.

¹⁴⁸ Lanting 1973.

¹⁴⁹ Cf. Lanting 1973; Fokkens 2001.

¹⁵⁰ Glasbergen 1954; Theunissen 1999.

¹⁵¹ Theunissen 1999, 84.

¹⁵² Louwe Kooijmans 1990; 2005.

¹⁵³ Louwe Kooijmans 2005, 461.

¹⁵⁴ Louwe Kooijmans 2005, 461.

¹⁵⁵ Cf. Harding 2000. In general: Harding & Carman 2009.

Late Neolithic and the Early Bronze Age in the Netherlands.

3.7 Social structure and organisation

The limited amount of evidence that we had in 2001 suggested that in the Late Neolithic and Early Bronze Age most local communities consisted of a few households.¹⁵⁶ There is no evidence for central sites or large communal projects that suggest that the society moved towards greater social complexity. There are Bell Beaker Culture burials with gold ornaments and copper daggers on the Veluwe. But in our view it is too simplistic to equate these artefacts with wealth and therefore with high status and power. Social complexity never has been a matter of much discussion in Dutch archaeology. We do not seem to think much in terms of elites and power, and certainly not with respect to the late Neolithic and the Early Bronze Age. Drenth has suggested that in the Single Grave Culture large flint blades are ‘pseudo’ Grand-Pressigny (GP) daggers, imitations of real GP daggers and therefore might represent individuals of lower status.¹⁵⁷ But in our view there is no critical discussion of the social processes involved or of the social theory behind such assumptions. Apart from that, the analysis of other burial data does not indicate that burials with GP daggers are systematically richer or have larger mounds than burials with ‘pseudo’ GP daggers. Their numbers are far too small to corroborate that suggestion.

Imports of copper and bronze are said to have severely influenced the Bell Beaker Culture and Early Bronze Age world. The exchange networks that had to be established to obtain bronzes will certainly have played an important part in shaping Bronze Age communities. However, to what extent that was the case in the Netherlands is not clear. Almost all bronzes that we have were deposited in marshes, rivers and wet places in general, but rarely in graves. How this strange practice has to be explained if bronzes really were so precious, in 2001 was (and now still is) still a matter of research and debate.

Generally bronzes are considered to have been prestige goods, circulating in a prestige good economy. There is an international consensus that the Bronze Age was organised

in institutionalised chiefdoms that controlled critical resources like land, labour and the exchange of prestige goods like amber, bronzes and gold.¹⁵⁸ Warfare was seen as heroic and ritual in these societies. Conflicts involved raids for slaves and cattle.¹⁵⁹ Exchange networks, especially between elite groups in different regions, were seen as crucial. In 2001 scepticism about this ‘oversimplification’ of Bronze Age economies had only started, and became anchored only in 2003 in the work of D. Fontijn on Bronze Age hoards in the southern Netherlands.¹⁶⁰ But in the National Research Agenda Archaeology and in the Prehistory of the Netherlands the results of that research and the social theory behind it, had not yet gained sufficient impact to be included.

The social organisation of settlements and communities has seen very little research in the Netherlands. In 2001 we had not identified any elite residences or elite houses. We had not identified that many settlement sites at all. Therefore there were virtually no statements at all to be found in Dutch literature about social organisation in the period under discussion.

¹⁵⁶ Fokkens 2005b.

¹⁵⁷ Drenth 1990.

¹⁵⁸ Kristiansen 1998, 38.

¹⁵⁹ Kristiansen 1998, 39.

¹⁶⁰ Fontijn 2003.

4.1 Introduction

In Chapter 3 we discussed the state of knowledge in 2001, and how the questions in the National Research Agenda Archaeology 1.0 were formulated to fill in the gaps in this image. Our assignment is to assess whether development-led archaeology in the last 15 years has succeeded in gaining new knowledge. We follow a two-way approach. Firstly, we analyse how and which kind of new data has been gathered since 2001;¹⁶¹ secondly, we assess the scientific impact of that data.¹⁶² Moreover, an explicit goal of the assignment is to discuss whether development-led archaeology has been able to successfully target research for the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A.

4.2 Sources

This research focuses on the analysis and synthesis of ‘grey literature’ from the last 15 years. Since the start of development-led archaeology in the Netherlands, thousands of reports written in the Dutch language have been generated. After the Dutch Archaeological Quality Standard came into force in 2001, research had to be reported within two years after completion of the fieldwork. By and large that is indeed what has been done. This is an important improvement relative to the ‘pre-Malta’ era, because before 2001 the lack of professionals meant that much was excavated, but little was published. That has changed dramatically because of the legal obligation to publish within two years after the fieldwork has ended. In principle, all reports are filed at least in the library of the Cultural Heritage Agency of the Netherlands and also in the national repository DANS-EDNA.¹⁶³ Moreover, the complete data sets of excavations and all related reports are archived and accessible in the repository. Another important source of information is ARCHIS, the national database for Archaeology. The earliest version of a digital national database was constructed by the Cultural Heritage agency of the Netherlands (RCE), which digitised the original national paper databases¹⁶⁴

that were present at the RCE and at some other institutions, notably the National Museum of Antiquities in Leiden. This huge undertaking was funded by the Netherlands Organization for Scientific Research (NWO) through an investment grant applied for by R.W. Brandt.¹⁶⁵ The ARCHIS database was set up as an interactive tool, but the input of free text was avoided, because this would impede the retrieval of information. For that purpose the Archaeological Lexicon (ABR) was designed.¹⁶⁶ The ABR is in essence a list of codes for every field in the database. A second goal of the ABR was to make data entry ‘fool proof’; it prescribes codes and date ranges. In practice, the ABR soon suffered from ambiguity, because over the years it has become too detailed. We come back to this in section 4.2.2.

These sources form the basis for our enquiry into the data that development-led archaeology has generated. In the remainder of this chapter we discuss the contents, possibilities and problems of these databases.

4.2.1 Critical analysis and data selection

ARCHIS is a valuable tool for Dutch archaeology, but it has its peculiarities that make it difficult to use as a tool for scientific analyses. One of the largest problems is the way ARCHIS deals with new observations. In essence, there is no control whether newly entered data relate to known sites or not. In the system all entries are new observations, which are linked only by co-ordinates to observations about other or possibly even the same site. There is no interpretive evaluation of the observations; even corrective observations about the content or co-ordinates are stored as new data and do not replace the old ones. The philosophy behind this *modus operandi* is that opinions may change and that new data should be added to, rather than replace old data in order to have a portfolio on site history. This is the main reason that most university-based archaeologists are sceptical about the quality of ARCHIS data. Therefore they download the database as a stand-alone version and only use it after critical cleaning and checking of the data. Uploading corrections is considered pointless, because it only adds to the contamination of the database.

¹⁶¹ Cf. Chapter 5.

¹⁶² Cf. Chapter 7.

¹⁶³ http://www.dans.knaw.nl/en/about/services/archiving-and-reusing-data/easy/edna?set_language=en.

¹⁶⁴ CAA: Centraal Archeologisch Archief.

¹⁶⁵ In 1988 a grant of 2.066.000 guilders (c. € 900.000) was obtained from the Netherlands Research Foundation (ZWO) on behalf of the Cultural Heritage Agency of the Netherlands and the Universities of Leiden, Amsterdam and Groningen.

¹⁶⁶ Brandt et al. 1992.

As problems with ARCHIS are well known but generally not discussed on paper, we think it is useful to explore a number of the problems that we encountered during the analytical process. The Microsoft ACCESS database that was provided by the Cultural Heritage Agency of the Netherlands¹⁶⁷ combines four different databases that can be related to each other on the basis of unique identifiers. The most important database for our analysis is the database with site observations (wng.mdb). This database has five tables that are related on the basis of a unique observation number. In October 2015 they contained information on 89,190 unique find locations. One locality may contain burials, houses, flint tools, pottery, arable land from different periods and cultures. In ideal cases, these finds are entered as separate find-group observations under the same unique site observation number.¹⁶⁸

One of the first problems we ran into when trying to select data for the period after 2001, is that the field in which the datum of the find is recorded is a text field. Therefore a query by find dates was impossible. Furthermore, observations for which no precise date was known are often coded as 9999. Furthermore, there are clearly wrong entries: typing errors (like a burial discovered in 1049). Given that we needed these dates to differentiate between sites discovered prior to and during the pre-Malta period, we improved the manageability of the datum field. It was converted manually into a date-format. For our purposes, the date of finds with the value 9999 was converted into 1-1-1900 if it was clear that these finds were old observations (as was the case with a proverbial 99% of all finds). Subsequently, a simple query enabled a comparison between pre-2001 data and after for the observations relevant for the period that we study (Table 4.1). The table illustrates the overall increase in finds over the years especially in the last 15 years. We have to realise that after 1987, when ARCHIS became active as an interactive tool, many existing finds were entered. In actual practice, the increase of finds after 2001 is therefore even larger than shown. Table 4.1 also demonstrates that the increase in Late Neolithic, Early Bronze Age and Middle Bronze Age A sites was far less than the overall increase. The high number in the 1976-2000 period is the result of the Betuweroute excavations that started just before 2001.

Table 4.1 The numbers of finds discovered before and after the coming into force of the Valletta Convention.

| Date of find | Finds of all periods | Finds LNA-MBAA |
|--------------|----------------------|----------------|
| Unknown | 37634 | 1497 |
| <1901 | 39221 | 30 |
| 1901-1925 | 1485 | 155 |
| 1926-1950 | 8956 | 497 |
| 1951-1975 | 39618 | 1603 |
| 1976-2000 | 109157 | 2062 |
| 2001-2015 | 176349 | 1086 |
| Total | 374786 | 6930 |

The right column only relates to finds from the Late Neolithic A (LNA) to the Middle Bronze Age A (MBAA). In the field <1901 the typos and 9999 classifications are not counted. These are included in the field unknown.

In order to select the relevant data for our study, we had to query on the period indicated in the ARCHIS database. In the database there are two relevant fields for this query: begin date and end date. The problem is that not all finds are easy to date, so some will have been registered as Middle Neolithic B for the begin date and Early Bronze Age for the end date (not diagnostic flint artefacts for instance). We selected all finds that were listed as Late Neolithic (code NEOL, NEOLA, NEOLB), Early Bronze Age (code BRONSV) or Middle Bronze Age A (code BRON SMA) from the above-mentioned revised dataset. Adjustments had to be made, because not all finds are assigned to one phase only. For instance, a query that selects all finds from the Late Neolithic to the Middle Bronze Age A misses all Vlaardingen Culture (VLC) sites, because these sites are assigned a date from the Middle Neolithic or the Late Neolithic A. This way, 619 finds remained, 112 (18%) of which were found after 2001 (Table 4.2). In order to exclude insecurely dated finds, entries that were dated to more than two periods were deselected. In all 1084 finds were relevant for the period that we discuss here, i.e. the period after 2001. These finds were collected in 549 unique locations. That is the dataset we started to work with for the period under discussion.

¹⁶⁷ We did not use the online database because at the time of our study ARCHIS 3.0 was not functional.

¹⁶⁸ The table of find groups contained 374,786 observations in October 2015. For comparison: over 75,000 localities were registered in 2008, containing c. 260,000 find groups to come to a grand total of 72 million finds (De Wit & Sloos 2008, 9).

Table 4.2 Numbers of observations generated by different beginning and end-date combinations.

| Begin date | End date | <2001 | <2001 % | >2001 | >2001 % | Total |
|--------------|----------|-------------|---------|-------------|---------|-------------|
| MN B | LN A | 507 | 0,09 | 112 | 0,1 | 619 |
| LN A | LN A | 1161 | 0,2 | 129 | 0,12 | 1290 |
| LN A | LN B | 111 | 0,02 | 18 | 0,02 | 129 |
| LN | LN | 1019 | 0,17 | 303 | 0,28 | 1322 |
| LN B | LN B | 1455 | 0,25 | 95 | 0,09 | 1550 |
| LN B | EBA | 397 | 0,07 | 71 | 0,07 | 468 |
| EBA | EBA | 726 | 0,12 | 142 | 0,13 | 868 |
| EBA | MBA A | 54 | 0,01 | 25 | 0,02 | 79 |
| MBA A | MBA A | 280 | 0,05 | 69 | 0,06 | 349 |
| MBA A | MBA B | 126 | 0,02 | 120 | 0,11 | 246 |
| Total | | 5836 | | 1084 | | 6920 |

MN = Middle Neolithic, LN = Late Neolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age.

4.2.2 The Archeologisch Basisregister (ABR) and its problems

Many of the problems with ARCHIS are caused by the tool that was designed to avoid errors due to misspellings or free text entries in ARCHIS: the ABR. This tool was devised in the late 1970s and early 1980s,¹⁶⁹ and was extended in the early 1990s. The last revision was in 2008. The ABR has grown out of control since the 1980s. The problems are twofold. Firstly, the ABR provide only codes, not the definitions of the classifications or types indicated. To illustrate this: when is a pot double conic, when is it barrel shaped (Table 4.3). Secondly, the vocabulary in the ABR has split types into subtypes to such detail that for some classes of finds almost every new find is a different type. The result is that only specialists know what code to use for some find categories. We have listed a few possible entries in the field CODE_ALG (first level) and the field CODE_SPEC (second level) for some of the pottery categories relevant for our period of research to give an example of the above-mentioned problems (Table 4.3.) Apart from the fact that few people could use these classifications, new insights have caused many of these classes to lose their relevance as types or have led to changes in their dating range. The original idea behind it was

that types have relevance for dating. However, for many periods and especially for those under discussion here the relevance of typology for dating purposes has been shown to be limited.¹⁷⁰ Finally also the goal of these classifications has changed over the years. In the 1980's we were still interested in maps with double conic pots on them, but the interpretative focus of archaeology has changed to more social interpretations instead of type distributions. Even if the ABR is regularly updated, the ARCHIS data that have already been entered before an update are not. This adds a further complication to the retrieval of specific categories of material culture or material culture with specific date ranges from ARCHIS.

The fact that dating was the main goal of the classification implies that there are set date ranges for each object category: spindle whorls, for instance, date from the Late Neolithic (start) through to the modern period (end) according to the ABR. If, for example, we wanted to find out whether weaving may have been practiced during the Late Neolithic, ARCHIS produces no less than eight sites that yielded Late Neolithic spindle whorls (Table 4.4).¹⁷¹ Curiously, all these finds were also attributed to the Linear Bandceramic Culture (LBK), which implies that they would date to the Early Neolithic. Moreover, the field ACQUISITION shows that they were found during the excavation (AOP) of settlements. These were all entries made

¹⁶⁹ Cf. Zoetbrood *et al.* 1997.

¹⁷⁰ Cf. Chapter 8; Beckerman 2015.

¹⁷¹ Linear Bandceramic Culture; see table 4.5.

Table 4.3 ABR codes for a selection of data.

| Description | Gen code | Spec code | Start date | End date |
|---|----------|-----------|------------|----------|
| Hilversum pottery | HVS | | MBA A | MBA |
| Hilversum pottery: double conic | HVSDUBCO | | MBA A | MBA A |
| Hilversum pottery: barrel shaped | HVSTON | | MBA A | MBA A |
| Hilversum-Drakenstein-Laren pottery | HDL | | MBA A | MBA B |
| Vlaardingen pot: truncated pear form | VLPERV | | MN B | LN A |
| Vlaardingen pot: round belly, cilinder neck | VLPROFC | | MN B | LN A |
| Vlaardingen: S profile | VLPROFS | | MN B | LN A |
| short neck | VLPROFS | KORTHALS | MN B | LN A |
| long neck | VLPROFS | LANGHALS | MN B | LN A |
| rim perforation, knobbed handle | VLPROFS | RANDKNOB | MN B | MN B |
| rim perforation, short neck | VLPROFS | RANDKORT | MN B | MN B |
| Vlaardingen pottery | VL | | MN B | LN A |
| knobbed handle | VL | KNOBBEL | MN B | MN B |
| rim perforations | VL | RANDPERF | MN B | MN B |
| Vlaardingen pottery: bucket shape | VLEMMER | | MN B | LN A |

The first level relates to the field 'general code', the second level to a more 'specific code' in a different field.
 MN = Middle Neolithic, LN = Late Neolithic, MBA = Middle Bronze Age.

Table 4.4 Eight spindle whorls attributed to the Late Neolithic A, but also listed as having been excavated from LBK contexts.

| Place | Acquisition (code) | Culture | Begin date |
|----------|--------------------|----------------------|-------------------|
| Elsloo | inspection (AIN) | Linear Bandkeramik | Late Neolithic A |
| Elsloo | excavation (AOP) | Linear Bandkeramik | Late Neolithic B |
| Elsloo | excavation (AOP) | Linear Bandkeramik | Late Neolithic A |
| Elsloo | excavation (AOP) | Linear Bandkeramik | Late Neolithic A |
| Elsloo | excavation (AOP) | Linear Bandkeramik | Late Neolithic A |
| Stein | excavation (AOP) | Linear Bandkeramik | Late Neolithic A |
| Ottoland | excavation (AOP) | Bell Beaker Culture | Late Neolithic B |
| Baarn | excavation (AOP) | Single Grave Culture | Late Neolithic A |
| Warmond | excavation (AOP) | Single Grave Culture | Late Neolithic |
| Stein | digging (NGR) | Linear Bandkeramik | Late Neolithic A |
| Geleen | digging (NGR) | Linear Bandkeramik | Early Neolithic A |
| Soest | unknown (XXX) | Single Grave Culture | Late Neolithic |

by different persons, so what is the problem here? Are these Late or Early Neolithic spindle whorls?

The cause of this strange situation lies in the ABR. According to the ABR, spindle whorls only occur from the Late Neolithic A (NEOLA) onward. However, recent excavations yielded

eight spindle whorls from clear LBK contexts, some even found in pits alongside unmistakable LBK houses. Table 4.4 shows that seven persons followed the ABR, probably in confusion or with no other alternative, but one person overruled the system somehow and entered a different date. In the end, none of these spindle

Table 4.5 Example of a wrong indication of culture: the finds clearly belong to a Neolithic burial, but are listed under CULTURE as Roman finds.

| Place | Acquisition (ABR code) | Context (ABR code) | Culture | Gen code | Begin date | End date |
|-------------|------------------------|--------------------|---------|-----------|----------------|----------------|
| Kampershoek | metal detecting (NDE) | settlement (NX) | Roman | arrowhead | Late Neolithic | Late Neolithic |
| Kampershoek | metal detecting (NDE) | settlement (NX) | Roman | arrowhead | Neolithic | Neolithic |
| Kampershoek | metal detecting (NDE) | settlement (NX) | Roman | scraper | Neolithic | Neolithic |

whorls dates to the Late Neolithic. ARCHIS lists 1279 spindle whorls, of which only 14 can be attributed to the period from the Late Neolithic to the Middle Bronze Age A. Another interesting example of a mistake is the following entry of a Late Neolithic burial which is listed as a grave from the Roman Period (Table 4.5). This looks like a mistake, but from the context it is clear that this flat grave was found during the excavation of a Roman Period villa complex. It is an example of so-called bycatch. Of course the person responsible for this entry made a wrong choice, but one can understand how the mistake was made. These examples illustrate how difficult, sometimes even frustrating, use of the ARCHIS database can be if one wants to access it for scientific queries.

4.3 DANS-EDNA

The repository for Dutch Archaeology (DANS-EDNA) is a totally different kind of database than ARCHIS. It is an archive for reports and data that aims to make this data accessible for present and future use. DANS makes reports available in a digital and well-accessible form, often including the original data. Its importance is also evident from surveys recently made by Bradley *et al.*¹⁷² Nowadays, books and dissertations are also uploaded. Consequently, this data repository forms a rich and well accessible tool for archaeologists, even if not all companies keep to the obligation to file reports within two years, or if they for some reason refuse to upload their reports.¹⁷³ DANS-EDNA has a free text search module. This makes searching for reports with data about specific periods relatively easy, but also time-consuming. For instance, if one wants to search for reports with 'Late Neolithic' in the

list of keywords, different ways of typing result in different numbers of hits. Moreover, these queries only produce results if these terms have been used in titles and report summaries. One has to think of many key words that are specific for the period in discussion, not only periodisation, also artefacts like for instance battle axes.

Most reports were found using period indications like *Laat-Neolithicum* or *Vroege-Bronstijd*.¹⁷⁴ Pre-Valletta Convention reports are part of the results, desk-based studies that only address finds that are already listed in ARCHIS as well. Therefore a 'manual' selection needed to be made, resulting c. 150 reports that could contain relevant information. Reading through these reports, we skipped all the ones that only had a reference to the periods under question, or yielded finds or features of which the date was more or less an educated guess (43 sites). We also skipped sites with relevant finds, but in small numbers or little information value and from a general context (47 sites). Reducing the list this way, this left us with 44 sites (Table 4.6): sites that were really excavated with the explicit aim to study Late Neolithic, Early Bronze Age or Middle Bronze Age A remains (15 sites), sites that had yielded a few finds and features as bycatch during excavations that targeted other periods, prospections, or watching briefs (28 sites).¹⁷⁵

These 44 sites will be assessed in Chapter 7. The criteria for the ultimate selection were not strictly defined: our aim was their added value for the gain of knowledge about the period. Therefore we sometimes chose sites that represented only one find in an otherwise 'empty' region. The general selection criteria for a site to be included in Chapter 7 were: All sites that were targeted in excavation for the period under discussion;

- sites with clear features and find complexes that demonstrate a special (but more often

¹⁷² Bradley *et al.* 2016.

¹⁷³ In general because these are published as books and publication in open access would diminish the returns.

¹⁷⁴ The hyphens in *Laat-Neolithic* or *Vroege-Bronstijd* are essential. Otherwise all entries of *Laat and Neolithicum* or *Vroege and Bronstijd* are produced.

¹⁷⁵ Cf. Section 5.4.

Table 4.6 List of sites with relevant data selected for presentation in Chapter 7.

| Place | Toponym | Type | Method |
|----------------------|--------------------------------|----------|----------------|
| Zwaagdijk | Noorderboekert Rijweg | targeted | excavation |
| Emmeloord | Rijksweg A6; Kavel Jg7 | targeted | excavation |
| Leek | Hoge Traan/ Blinksloot | by-catch | watching brief |
| Hattermerbroek | Bedrijventerrein-Zuid | targeted | excavation |
| Deventer | De Skibaan | by-catch | excavation |
| Twello | De Schaker | by-catch | excavation |
| Buren | De Haar | by-catch | excavation |
| Vasse | Steenbrei | by-catch | excavation |
| Hasselo | 't Oosterveld | targeted | excavation |
| Zutphen | Loërenk | by-catch | excavation |
| Hengelo | Ekkerinkweg | by-catch | excavation |
| Groenlo | Woerdseweg | by-catch | test trench |
| Kilder | Kilder, nieuwbouw Sportterrein | by-catch | excavation |
| Didam | Kerkwijk en Randweg-Zuid | by-catch | excavation |
| Warmond | Park Klinkenberg | by-catch | excavation |
| Den Haag | Bronovo Ziekenhuis | targeted | excavation |
| Den Haag | Wateringseveld | targeted | excavation |
| Den Haag | Wateringse Binnentuinen | targeted | excavation |
| Hazerswoude-Rijndijk | Windturbinepark N11 | by-catch | excavation |
| Houten | Hofstad-VleuGel 20 | targeted | excavation |
| Amerongen | Bedrijventerrein Leersum | by-catch | test trench |
| Rhenen | Remmerden | by-catch | excavation |
| Rhenen | Fietspad N225 | by-catch | watching brief |
| Wageningen | Nudepark | by-catch | test trench |
| Heteren | Uilenburg | by-catch | excavation |
| Culemborg | Lanxmeer | by-catch | excavation |
| Meteren | BOOG D-ZUID | targeted | excavation |
| Geldermalsen | Eigenblok | targeted | excavation |
| Geldermalsen | Industrieweg | by-catch | excavation |
| Beuningen | Hogewald II | by-catch | excavation |
| Wijchen | Bijsterhuizen | by-catch | excavation |
| Cuijk | Groot-Heiligenberg | targeted | excavation |
| Afferden | Spitsbrug | by-catch | test trench |
| Rosmalen | Groote Wielen | by-catch | excavation |
| Vorstenbosch | De Helling | by-catch | test trench |
| Nistelrode | Zwarte Molen | by-catch | excavation |
| Boekel | Parkweg | by-catch | excavation |
| Son en Breugel | Ekkersrijt | targeted | excavation |
| Veldhoven | Habraken | targeted | excavation |
| Tilburg | Surfplas-Zuid | by-catch | excavation |
| Tilburg | Tradepark-Noord | by-catch | test trench |

Table 4.6 List of sites with relevant data selected for presentation in Chapter 7.

| Place | Toponym | Type | Method |
|---------|----------------------------|----------|----------------|
| Tilburg | Berkel Enschoot | by-catch | watching brief |
| Geleen | Hof van Limburg | targeted | excavation |
| Heerlen | Bedrijventerrein Trilandis | by-catch | test trench |

recurring) activity, such as pits with burnt stones inside;

- sites with graves or burials;
- sites with house plans or claims to that end.

In general, loose finds of potsherds or other types of material, or finds done outside the

context of features were not selected for a description unless they represented rare or complete examples of an object, or served to support an argument. The ultimate list of selected sites adhering to these selection criteria is represented (in a concise version) in Table 4.6.

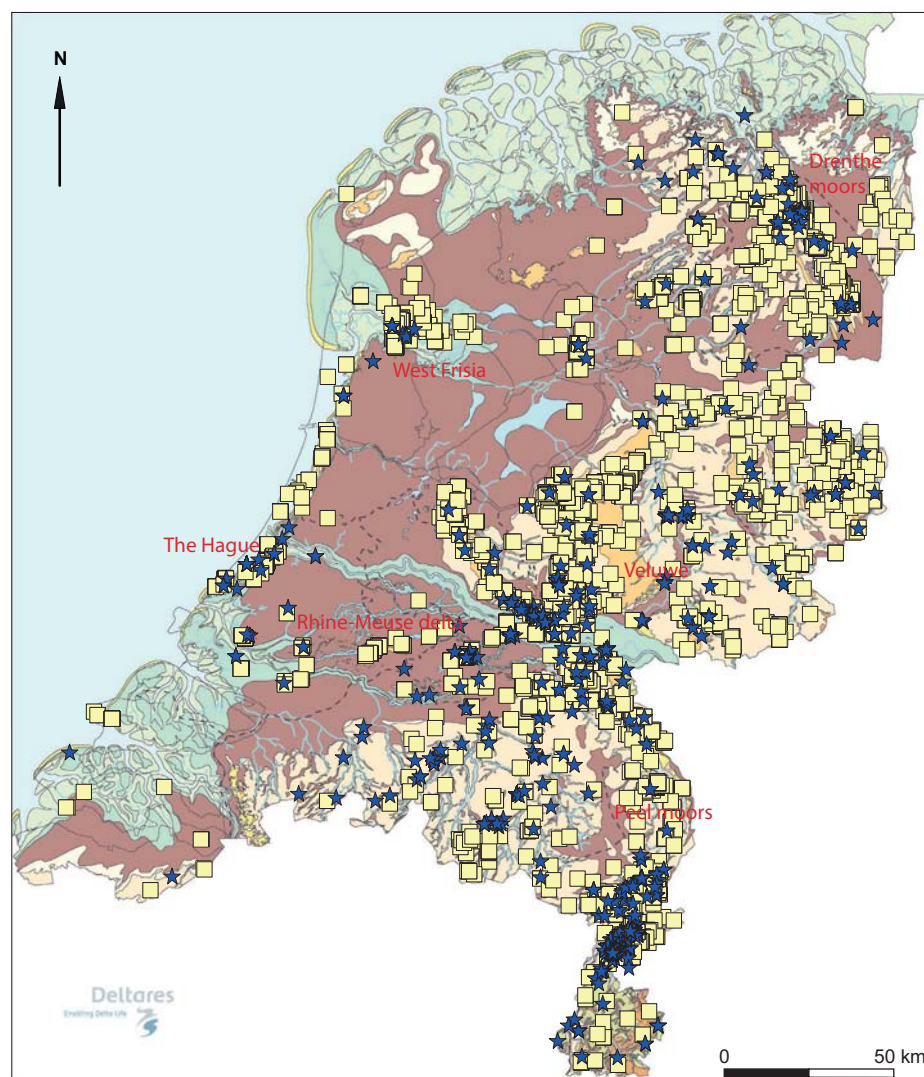


Figure 5.1 Distribution of all 5836 observations done before 2001 (yellow squares) and 1084 for the period after 2001 (blue stars) for the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A (source: ARCHIS; back ground map: Vos & De Vries 2013).

5.1 Introduction

In the previous chapter, we discussed the peculiarities of the different databases that are used as sources for the present work, in this chapter we present a number analyses on the data from these databases, and in specific ARCHIS. The research questions that we answer in this analysis is how the archeological record for the Late Neolithic and the Early Bronze Age in the last 15 years has come into being. What methods were used in the last 15 years? What kind of data was generated? Has archaeology been more efficient under the Valletta Convention than during the previous period? Did we find different kinds of sites? Did development-led research have equal effects on the generation of data in the whole country? Furthermore, we answer the question whether targeted archaeological research that was guided by a Research Agenda Archaeology under the Valletta Convention produced the results that were anticipated in the National Research Agenda Archaeology 1.0: the generation of new knowledge about the past.

For most of this research we used queries of the ARCHIS databases that we discussed in Chapter 4. For the period under consideration the downloaded database that we used contained 1084 find groups/finds discovered between 2001 and October 2015 and 5836 from the pre-Malta period (Fig. 5.1). These numbers change with every query due to the inconsistencies in the structure of the database,¹⁷⁶ so the numbers that we present are an average of the results. We also have to acknowledge that, due to the fact that observations are registered and not sites, the analysis shows numbers of finds or find-groups rather than sites. It is virtually impossible to subdivide the ARCHIS data into discrete sites.¹⁷⁷ Figure 5.1 shows that the distribution of archaeological projects across the Netherlands (for all periods and site types) is fairly even, but restricted to Pleistocene areas, to the marshes of West Frisia, the coastal dunes and the river dunes in the Rhine-Meuse delta.¹⁷⁸ Natural reserves like the Veluwe in the central Netherlands, and less densely settled areas like Friesland and the eastern Netherlands are underrepresented. Also the former Peel moors in Brabant and the Drenthe moors stand

out as areas not intensively studied. Many archaeological projects are commissioned in the western Netherlands around the large cities, especially The Hague. Furthermore, the river area and the Meuse valley exhibit dense clusters of archaeological projects due to the archaeological projects surrounding the construction of the Betuweroute and the operationalisation of the *Ruimte voor de Rivier* project respectively.

5.2 Origin of the data

The first issue that we discuss is with what kind of methods the data have been gathered. Theoretically, a count of the entries in the field acquisition suffices for this purpose. (Table 5.1)¹⁷⁹ Table 5.1 shows that most finds are discovered during archaeological surveys, excavations and the digging of trial trenches. This is true for both the period before and after 2001. There is however a significant increase in sites discovered during surveys (13%-25%) and during the digging of trial trenches (2%-11%) between both periods. These two tendencies can be explained by the fact that archaeological prospection, either through auguring and field walking, or through the digging of trial trenches became an obligatory practice under the new Valletta Convention; watching briefs only became an instrument after 2001.

On what kind of material numbers presented in Table 5.1 are based for the most important types of archaeological activities, is shown in Figure 5.2. Auguring, inspection, watching briefs and unknown actions have been left out of the analysis, because together these represent only 8% yield of the finds. Interestingly, if we look at the non-archaeological activities, a sharp increase in Early Bronze Age metal finds is visible (Fig. 5.2).¹⁸⁰ Kroon has analysed patterns for metal finds and draws a number of interesting conclusions.¹⁸¹ The following two paragraphs are adapted from his report.¹⁸²

‘Firstly, there is no significant difference between the two periods¹⁸³ in terms of the percentage of finds that is yielded by archaeological activities. By contrast, the relative amount of finds that results from literary studies plummets from nearly 11% to none. Moreover, the percentage of finds that has an unknown provenance

¹⁷⁶ Cf. Section 4.2.

¹⁷⁷ Cf. Chapter 4.

¹⁷⁸ This map indicates the location of officially registered archaeological activities (*onderzoeksmeldingen*, lit. research notifications) and not of actual archaeological finds.

¹⁷⁹ Verwerv = acquisition.

¹⁸⁰ Kroon 2016a.

¹⁸¹ Kroon 2016a.

¹⁸² Kroon 2016a, 17-18.

¹⁸³ Pre 2001 versus post 2001,

Table 5.1 Survey of the numbers of find groups discovered before and after 2001, divided by method of acquisition according to the the ABR.

| Acquisition (ABR code) | <2001 | <2001 % | >2001 | >2001 % |
|-----------------------------|-------------|---------------|-------------|---------------|
| Watching brief (ABE) | 0 | 0,0% | 34 | 3,1% |
| Coring (ABO) | 43 | 0,7% | 39 | 3,6% |
| Inspection (AIN) | 90 | 1,5% | 14 | 1,3% |
| Survey (AKA) | 738 | 12,6% | 266 | 24,5% |
| Excavation (AOP) | 2293 | 39,3% | 434 | 40,0% |
| Trial trenches (APP) | 145 | 2,5% | 122 | 11,3% |
| Unknown (AXX) | 82 | 1,4% | 16 | 1,5% |
| Archive (AIR) | 75 | 1,3% | 2 | 0,2% |
| Collection (ICO) | 120 | 2,1% | 2 | 0,2% |
| Literature (ILI) | 91 | 1,6% | 3 | 0,3% |
| Dredging (NBA) | 40 | 0,7% | 1 | 0,1% |
| Coring (NBO) | 5 | 0,1% | 8 | 0,7% |
| Metal detecting (NDE) | 10 | 0,2% | 27 | 2,5% |
| Digging (NGR) | 596 | 10,2% | 24 | 2,2% |
| Prospection (NKA) | 33 | 0,6% | 30 | 2,8% |
| Unknown archaeological(NXX) | 1137 | 19,5% | 43 | 4,0% |
| Unknown (XXX) | 328 | 5,6% | 19 | 1,8% |
| Other | 10 | 0,2% | 0 | 0,0% |
| Total | 5836 | 100,0% | 1084 | 100,0% |

decreases sharply. The major relative increases are situated in the sub-categories of the non-archaeological activities. Within this category, there are decreases in the relative amount of finds resulting from dredging, and digging activities, as well as unknown methods. The major increases are the percentages of finds known from surveys, and most notably metal detection. Whereas 13,5% of the finds is attributed to metal detection activities in the period prior to 2000, this number rises to 70% of the total amount of finds after 2000.'

'Two conclusions emanate from the above discussion. Firstly, the decrease in finds with an unknown context and finds discovered through secondary studies are likely to reflect more strict regulations regarding the reporting of archaeological finds (www.archeologieinnederland.nl). Given that the Monuments Act obliges finders to report their finds within two years to state authorities, there is less chance that the context of a find is lost or that the find remains unreported until it is discovered by a secondary study. This is a

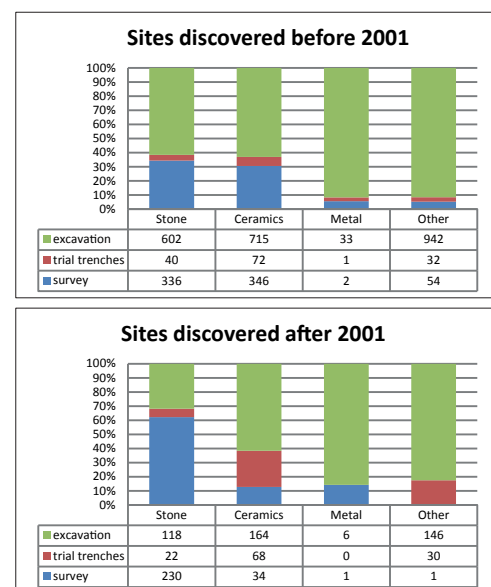


Figure 5.2 Comparison of the find categories recovered by the most frequent archaeological activities before 2001 (top) and after 2001 (bottom).

positive trend that hopefully leads to a better pedigree for these more recent finds.’ A handful of Early Bronze Age metal objects has been found in settlement contexts.¹⁸⁴ The artefacts without clear context to a large extent have been found in wet areas: in bogs, rivers, river valleys, as was the case in the period before 2001 (Fig. 5.3). With respect to other artefact categories, there is an increase visible due to a shift to more targeted surveys with a better methodology. These surveys yield many more stone (including flint) artefacts. The application of trial trenches was clearly less frequent before 2001 than after and therefore this acquisition method yields a roughly equal amount of finds during both periods. The period before 2001 also includes the years of heath reclamation in the 1930s and many collections of amateur archaeologists, which probably is one of the reasons that for that period ceramics were the dominant category.

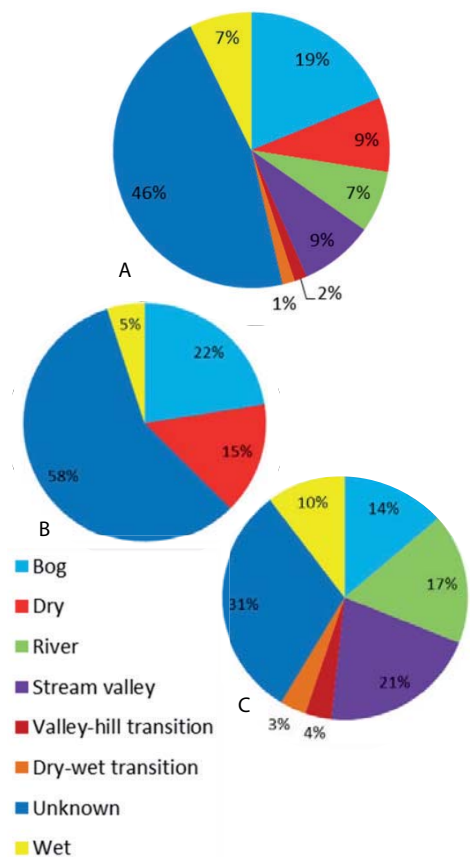


Figure 5.3 Overview of the percentage of finds in different categories of places in the landscape; A: all finds after 2001, B: northern Netherlands, C: southern Netherlands (after Kroon 2016a, 33).

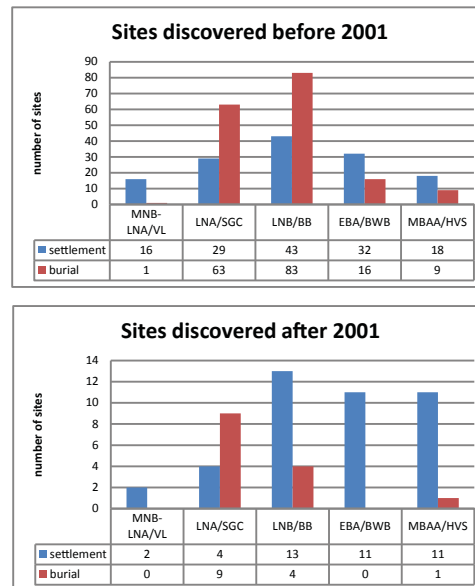


Figure 5.4 The number of known settlements and burials listed per archaeological period before 2001 (top) and after 2001 (bottom) (source: ARCHIS).

5.3 Site distributions and research intensity

If we compare the data of different types of sites and contexts before and after 2001 a number of descriptive observations can be made. It appears that the number of settlements discovered for the Late Neolithic and the Early Bronze Age, and the Middle Bronze Age A in the last 15 years is high compared to the period before 2001 (Fig. 5.4). The absolute number of contexts from both categories is not high, but quite a few sites of the period prior to 2001 consist of nothing more than a handful of potsherds. We have counted here only find complexes that have been found in excavations (AOP) and trial trenches (APP), because the inclusion of sites known from surveys, would lead to a large bias towards stone and flint artefacts (Fig. 5.5). For burials there is certainly no increase visible.¹⁸⁵ The remainder consists of chance finds in sites from a later period. We chose to exclude these finds because since these have in general little dating resolution that would blur the analysis. Interestingly, Figure 5.5 also demonstrates that a large number of flint artefacts was found in Northern Limburg. This pattern results from the entry of the collection from a single, highly

¹⁸⁴ Kroon 2016a, 31.

¹⁸⁵ The estimated number of burials for the period before 2001 should be considered a minimal number. The estimate derives from a query that selected all finds with the codes VLA, EGK, KB, WKD and HVS in the field CULTUUR and the code N codes (for settlement) or G (for graves) in the field COMPLEX. This procedure leaves out several observations that have an ambiguous entry in the field CULTUUR, but the resulting number is consistent and reproducible. Only sites with the codes AOP and APP in the field WERWERV were selected because other types of acquisition generally produce unsecure determinations and very large date ranges.

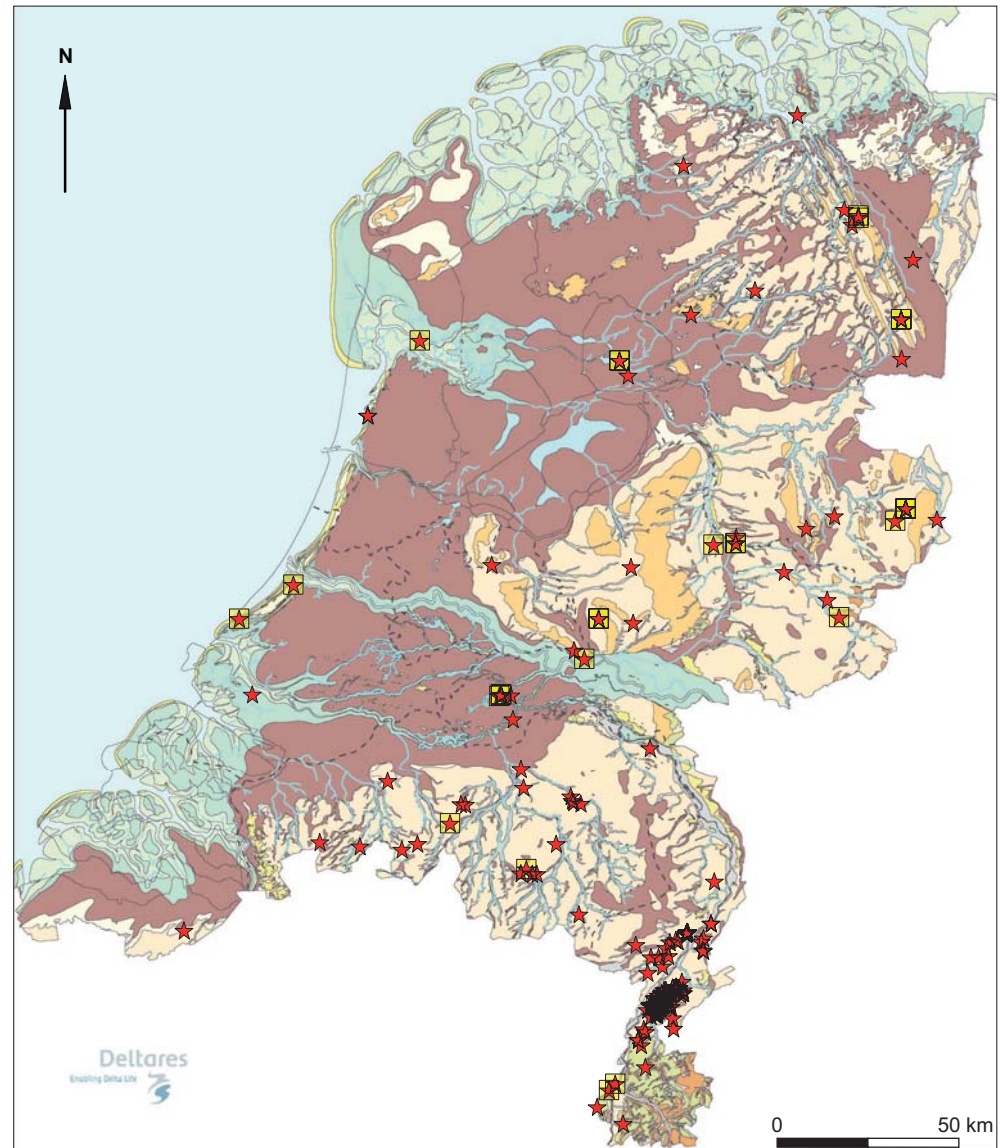


Figure 5.5 Distribution of flint artefacts from the Late Neolithic to the Early Bronze Age. The red stars represent flint artefacts from surveys, whereas the red stars in yellow squares indicate the location of flint artefacts that were discovered in excavations and trial trenches (projected on the palaeogeographical map of 2750 cal BC from Vos & De Vries 2013).

active amateur archaeologist in the region.¹⁸⁶ The distribution of sites excavated in the last 15 years does not appear to be even over the entire country. That is important to know, as that may also indicate gaps in research intensity or building activities. We therefore have plotted the number of sites found during excavations or test trenches against the background of all other archaeological activities. This gives an impression of the representativity of the data. The total number of VLC sites is low.¹⁸⁷

Furthermore, these sites are exclusively settlements and are only present in the southern and western Netherlands (Fig. 5.6). Graves are virtually absent for the Vlaardingien Culture, there is one cremation burial listed in ARCHIS from the period before 2001, at the site Vlaardingien. One of the major discoveries of the last decade is a remarkable site that was found on the 'uplands' in the province of Noord-Brabant, at Veldhoven-Habraken. This site is not only exceptional because of its location, but it

¹⁸⁶ Pers. comm. E. Rensink.

¹⁸⁷ It was impossible to make a distinction between Early and Late VLC sites, so the actual Late Neolithic Vlaardingien sites is even lower than indicated in Figure 5.6.

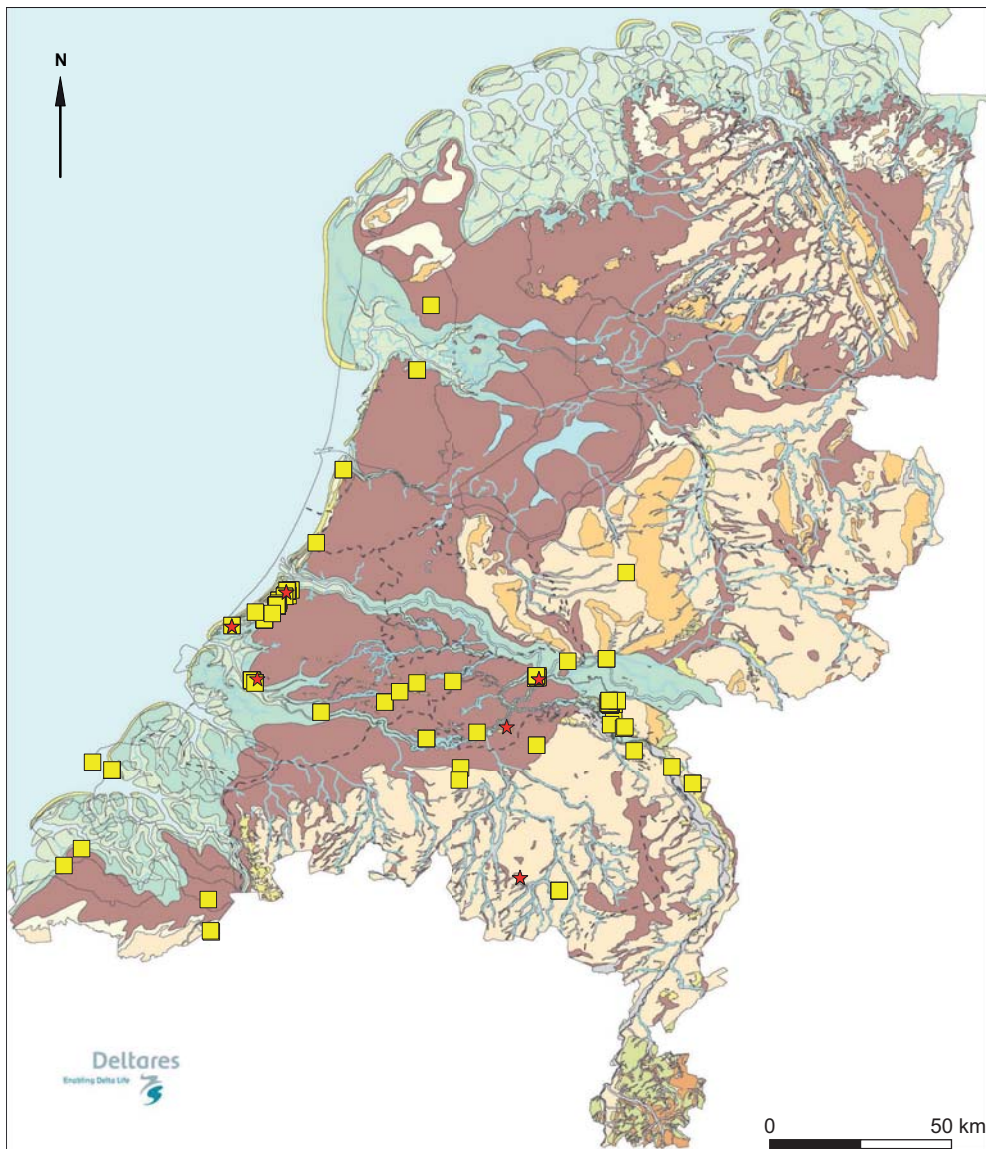


Figure 5.6 The distribution of Vlaardingens settlements discovered through excavations or test trenches before 2001 (yellow squares) and after 2001 (red stars) (projected on the palaeogeographical map of 2750 cal BC from Vos & De Vries 2013).

also has well-developed houses.¹⁸⁸

We have made a separate map of Vlaardingens Culture sites, but in fact some of these sites should be combined with the SGC sites shown in Figure 5.7, because a recent study by Beckerman demonstrates that the later Vlaardingens sites are part of the same horizon.¹⁸⁹ From Figure 5.7 we can deduce that most SGC sites have been excavated in the central and eastern Netherlands. In the eastern Netherlands, the finds are the result of building activities

around the larger cities, but also of an active community of both professional and amateur archaeologists. Apart from that, excavations in the region of the city The Hague, have been discovered unearthed several SGC sites on prehistoric coastal barriers. In the Northern Netherlands, a few SGC sites were excavated on the eastern side of the Drenthe boulder clay plateau, but none in the province of Friesland, and very few in Drenthe proper. Bell Beaker Culture and Early Bronze Age sites

¹⁸⁸ See Chapter 7.23.

¹⁸⁹ Beckerman 2015.

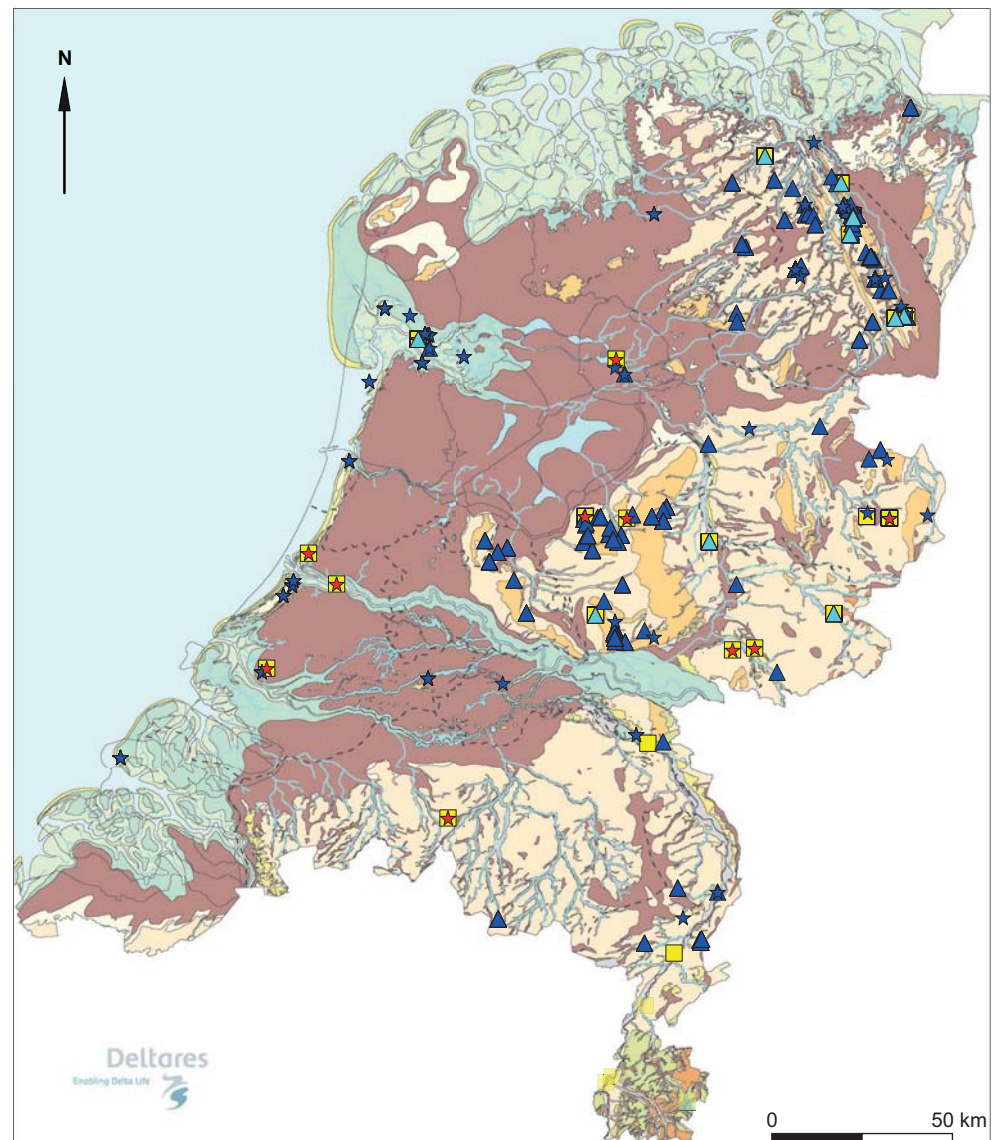


Figure 5.7 The distribution of SGC settlements discovered in excavations or test trenches before 2001 (blue stars) and after 2001 (red stars), and SGC graves discovered before 2001 (dark blue triangles) and after 2001 (light blue triangles; yellow squares indicate all excavations and test trenches with LNA sites discovered after 2001 (projected on the palaeogeographical map of 2750 cal BC from Vos & De Vries 2013)

show almost identical patterns of distribution (Figs. 5.8 & 5.9). Bell Beaker Culture sites have been discovered especially in the river area of the Central Netherlands. This image enhances a pattern that already existed before 2001, even though the number of settlement sites in the river area is considerably higher now. It is clear that the former focus areas of barrow research were left alone in the last decades. One of the reasons is that most of these features are protected monuments, another that they are

situated in nature reserves and parks without any building activities.

5.4 Bycatch or target?

One of the assignments for this book was to find out how many sites in the period after 2001 have been found by targeted research relative to the number of sites resulting from

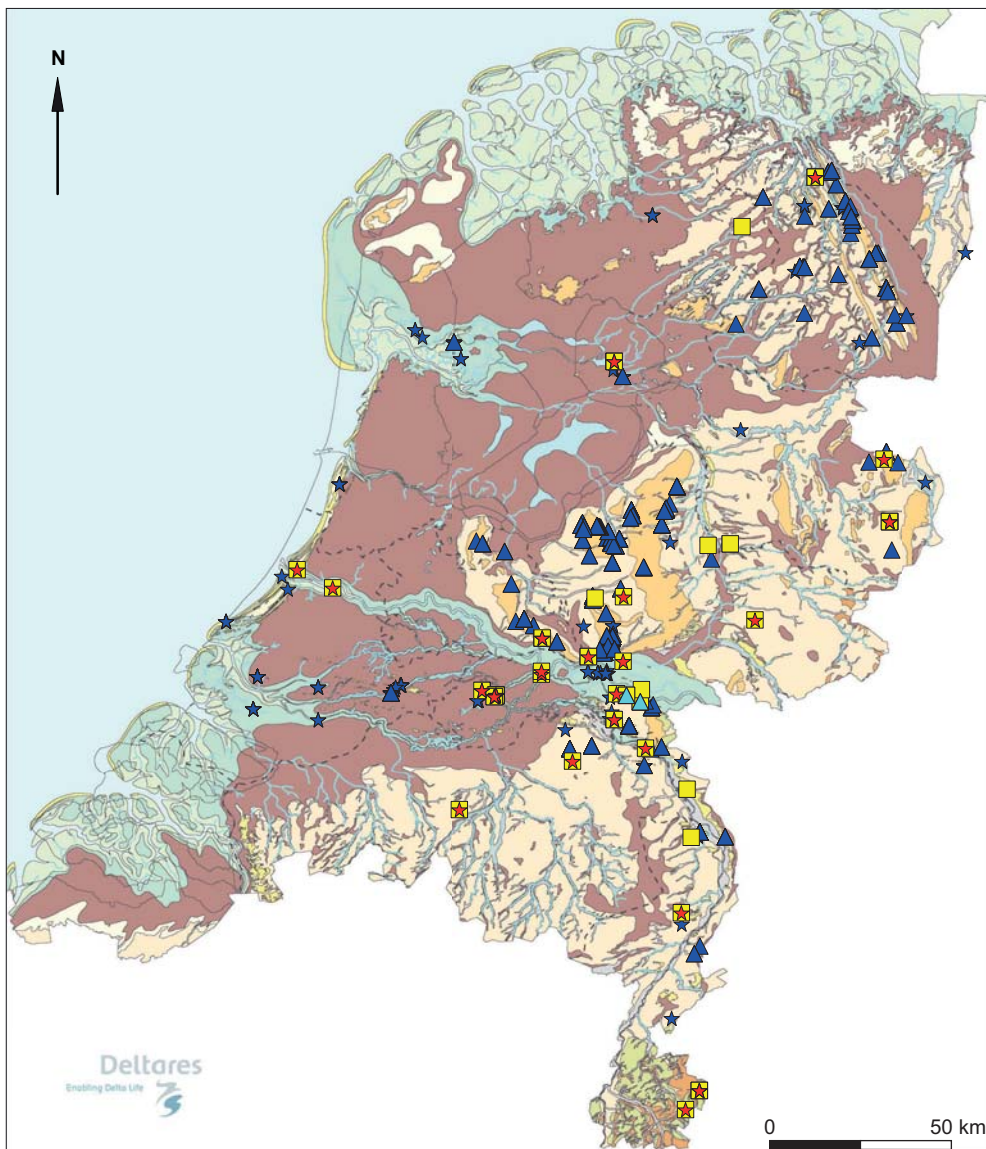


Figure 5.8 The distribution of BBC settlements discovered in excavations or test trenches before 2001 (blue stars) and after 2001 (red stars), and BBC graves discovered before 2001 (dark blue triangles) and after 2001 (light blue triangles); yellow squares indicate all excavations and test trenches with LNB sites discovered after 2001 (projected on the palaeogeographical map of 2750 cal BC from Vos & De Vries 2013)

chance discoveries and bycatch. A good example of a bycatch site is Bell Beaker Culture grave discovered during the excavation of a Roman villa that was mentioned in Chapter 4 (Table 4.5). In order to answer this question, we have analysed the field 'acquisition' (VERWERV) in ARCHIS, because this field indicates how finds were discovered. In Figure 5.10 the types of research that generated most of the finds (84%) are evaluated. In Chapter 4 we explained that ARCHIS lists all observations, and that different

finds can be entered per observation. In this case we have combined these into sites by counting the unique observation numbers, rather than finds. The total number acquired this way is 249 sites. However, since field surveys and auguring in general only yielded sites that were *suspected* to belong to a certain period these were digarded in our survey of sites in Chapter 7. Only of the sites discovered in watching briefs, during the excavation of trial trenches or through excavation (141) the reports were scanned for

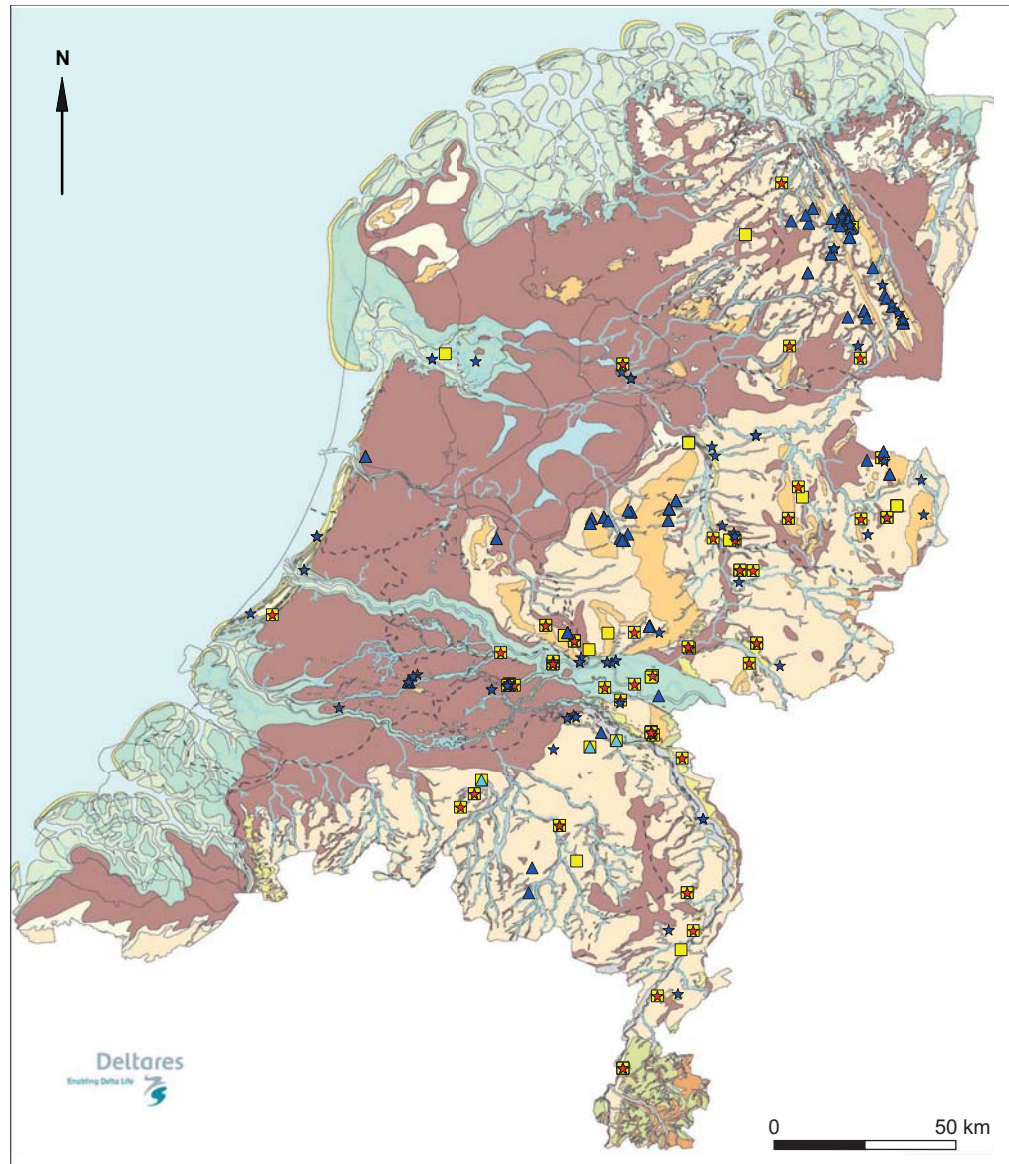


Figure 5.9 The distribution of Middle Bronze Age A settlements discovered in excavations or test trenches before 2001 (blue stars) and after 2001 (red stars in yellow squares), and graves discovered before 2001 (dark blue triangles) and after 2001 (light blue triangles); yellow squares indicate all excavations and test trenches with MBA A sites discovered after 2001 (projected on the palaeogeographical map of 2750 cal BC from Vos & De Vries 2013)

information. This number co-incides reasonably well with the number of reports with relevant information that our queries of DANS-EDNA had generated.¹⁹⁰

It is clear that most of the sites are discovered through the use of various prospection methods, which is in itself not surprising. However, we should realise that in most cases (auguring, survey) the identification of 'site' is actually based on a single artefact. Strange

enough, 27% of the sites were discovered as a result of excavation. One would expect these to have been found by prospective activities instead. But that appears not to be the case. According to ARCHIS, only one site that was discovered by prospection (in this case auguring) has been excavated later on (Vasse-Steenbrei). Whether or not this unexpected pattern is real, is impossible to check on the basis of the ARCHIS database.

¹⁹⁰ Cf. Section 4.4.

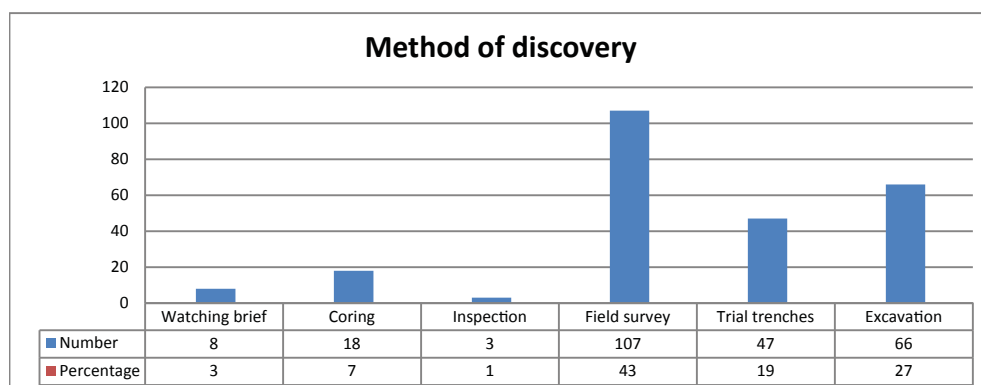


Figure 5.10 The most important categories of find acquisition in the period after 2001.

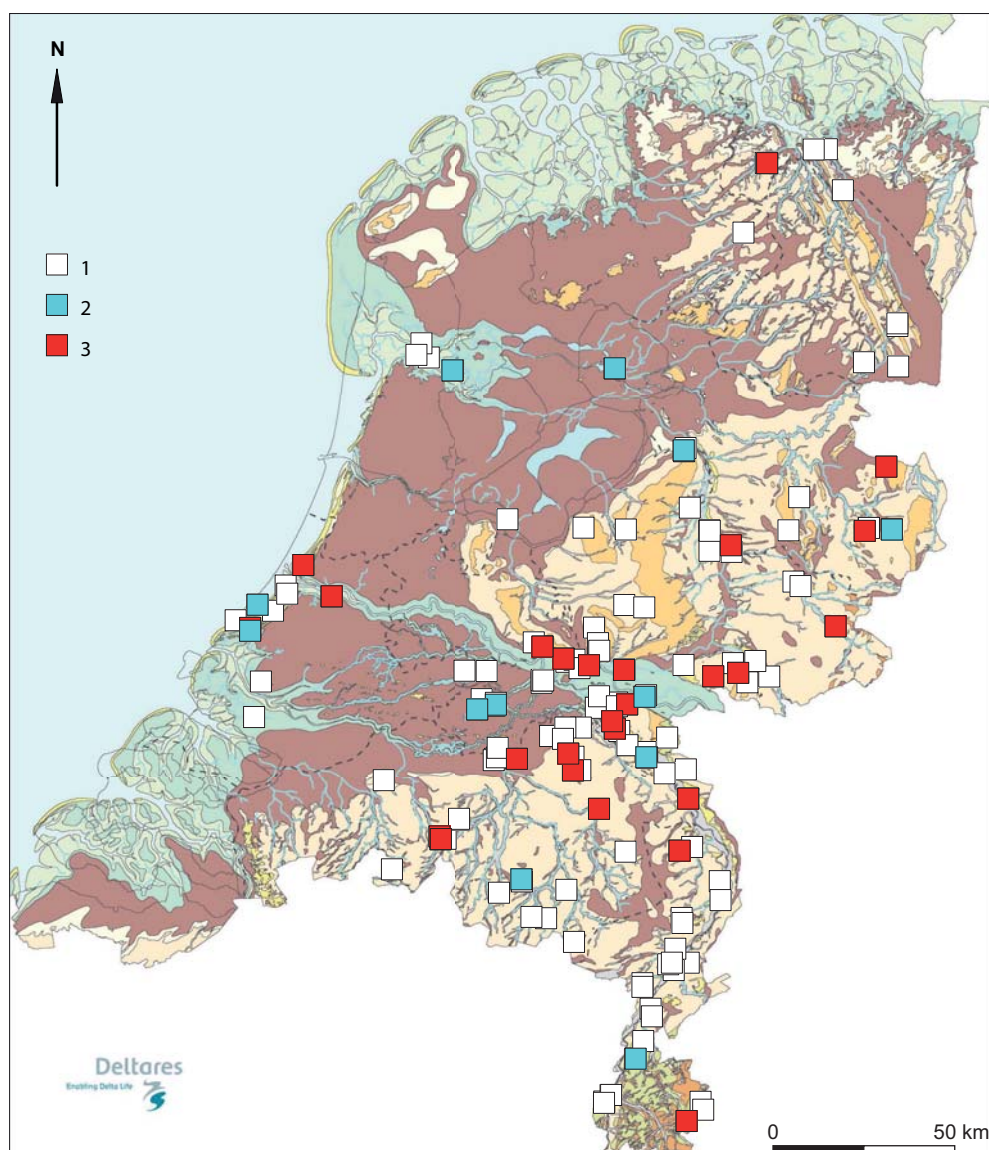


Figure 5.11 Survey of sites with relevant data with respect to the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A generated after 2001, projected on the palaeogeographic map of 2750 cal BC. Legend: 1 sites that were relevant but have been discarded because of insufficient dating evidence, or too small a complex; 2. sites with bycatch finds; 3. targeted excavation on Late Neolithic, Early Bronze Age or Middle Bronze Age A sites (map: Vos & De Vries 2013).

Table 5.2 List of sites that were both targeted in test trenches and later excavations.

| Location | Prospection method |
|--|--------------------|
| Doetinchem-Veemarkterrein | trial trench |
| Emmeloord-Rijksweg A6 | trial trench |
| Hasselo-Het Oosterveld | trial trench |
| Heerlen-Bedrijventerrein Trilandis | trial trench |
| Heteren-Uilenburg | trial trench |
| Amerongen-Leersum Middelweggebied | trial trench |
| Leek-De Traan | trial trench |
| Tiel-Lingewei | trial trench |
| Ressen-De Boel | trial trench |
| Vasse-De Steenbrei | auguring |
| Hazerswoude-Rijndijk Windturbinepark N11 | trial trench |
| Veldhoven-Habraken | trial trench |

The same pattern emerges for other means of acquisition. There are very few sites in the database that have a match between prospection method (auguring, prospection, inspection, trial trenches) and excavation.¹⁹¹ Only twelve sites seem to have had a follow-up from trial trenches to excavation, but then not in the exact same spot (Table 5.2).

The conclusion is that 47 of the 66 sites that were discovered by excavation are examples of what we call bycatch. Of these 47 sites, several consist only of one or a few finds. If we only list the ones that were registered as a settlement or as burial site, about one third remains (Fig. 5.11). The distribution map demonstrates the lack of targeted research in the north and the east. Most sites with excavations targeted on the period under discussion are located in the The Hague area on the beach barriers in that region. This certainly is to a large extent the result of the (pro-) active position of the archaeological teams of the municipalities of The Hague, and Rotterdam as well.

The IJssel valley, the Meuse valley and the river area are regions that have many bycatch finds. It is beyond the scope of this study, but we expect that in these areas the number of sites will increase because the river and stream valleys are now being exploited for housing and industrial estates, for increasing water safety involving the commercial extraction of gravels

and sands, and for nature development. Also, large infrastructural projects like The Hanze and Betuwe rail roads have yielded many new data. In the north, the east estate, and to some extent also the south, estate development is restricted to the cover sand plateaus. There, many cemeteries and settlements from the Middle Bronze Age and the Iron Age are found, but Late Neolithic, Early Bronze Age and Middle Bronze Age A settlements are much rarer. These are probably situated in lower lying areas instead.¹⁹²

¹⁹¹ This is an estimate, because it is impossible to query ARCHIS for this kind of information. Therefore, the text departs from site reports and not from ARCHIS.

¹⁹² Cf. Chapter 8.

6.1 Introduction

In Chapters 2 and 3 it became clear that until 2001 we knew very few house plans from the Late Neolithic, and even fewer from the Early Bronze Age and first part of the Middle Bronze Age. One of the research questions is whether this image has changed through development-led archaeology over the last fifteen years. ARCHIS, DANS and a few still unpublished reports yielded information about 71 house plans from the above-mentioned period. This is almost ten times more than had been discovered in the 20th century. If these house plans stand a critical analysis, development-led archaeology would indeed be successful in generating new knowledge for this specific field. The reason we write a separate chapter on houses, is not that we think that this is the most important new aspect of the last 15 years. The problem that we have recognised in reading reports, is that virtual all reflection on what actually constitutes a house plan, and which structural elements became visible in the archaeological record is lacking. Yet, even from a short survey it is evident that many of these Late Neolithic and Early Bronze Age house plans do not exhibit the same structural consistency as known houses from the Middle Bronze Age and later periods.¹⁹³ We are not the first to recognise this. For instance, Arnoldussen has discussed the three Late Neolithic, eight EBA and eight MBA-A plans published by Hielkema, Brokke and Meijlink for Geldermalsen-De Bogen.¹⁹⁴ He convincingly argues that none of these claimed houses are likely to constitute actual prehistoric houses.¹⁹⁵ He states: 'In conclusion, it is remarkable that almost none of the structures (mostly houses) claimed to date to the Late Neolithic, the Early Bronze Age or the Middle Bronze Age-A at the various De Bogen excavations have been accepted in this study. The high feature density for the areas under discussion, lack of consistent dimensions, depth and placements of posts for houses of a given phase and lack of direct and indirect dates used to criticise their interpretation are, nonetheless, fair criteria (...).'¹⁹⁶ 'Without such critical evaluation, to propose a series of 'possible' structures is more likely to obscure than to increase our knowledge on the prehistoric

structures of the periods involved.'¹⁹⁷

These remarks summarise the problems at hand. In his carefully argued analysis, of which we only repeated the conclusion, Arnoldussen has reduced the total number of 71 claimed houses to 52. What will happen if we apply a critical analysis of the remaining number? That will be discussed in Chapter 7 and 8, in this Chapter we discuss only the criteria used to be able to conduct such a critical analysis.

6.2 Where do all house plans come from?

The reason that so many new houses have been 'recognised', is twofold in our view. The first is related to the archaeological fieldwork proper, the second to a lack of knowledge of what constitutes a house.

The first problem has already been discussed by Fokkens and Jansen.¹⁹⁸ They state that many houses are not recognised in the field, but on the drawing table; and very often not on the basis of the field drawings proper but on computer-drawn plans at a lower magnification. Therefore they propose a reliability index that is based on the way in which a house plan was discovered (Table 6.1). In their scheme, the most reliable house plans are those that are discovered, and documented during the excavation of the house plan proper (class A1). In contrast, the most unreliable identifications of house plans are the ones that are made on the drawing table during post-excavation analysis. Generally speaking, such discoveries rely on plans on a reduced scale of combined field drawings and in dense clusters of features; the more features are present, the easier it is to pick a few that seem to form straight lines. According to the classification by Fokkens and Jansen, all of the Geldermalsen-De Bogen houses would have been class C identifications.¹⁹⁹ Moreover, the person who 'discovered' them was not a period specialist. This is a dangerous combination, because almost anything goes in such a situation. However, recognition in the field is not the only criterion for a 'good' house plan. Its structural elements also have to fit into an image of what constitutes a house. This is where knowledge comes in: knowledge about what to expect, and knowledge about how houses are constructed.

¹⁹³ Cf. Arnoldussen 2008.

¹⁹⁴ Hielkema, Brokke & Meijlink 2002.

¹⁹⁵ Arnoldussen 2008, 122-125.

¹⁹⁶ Arnoldussen 2008, 125.

¹⁹⁷ Arnoldussen 2008, 126.

¹⁹⁸ Fokkens & Jansen 2002, 10.

¹⁹⁹ Cf. the analysis of these houses by Arnoldussen, summarised in Chapter 7.

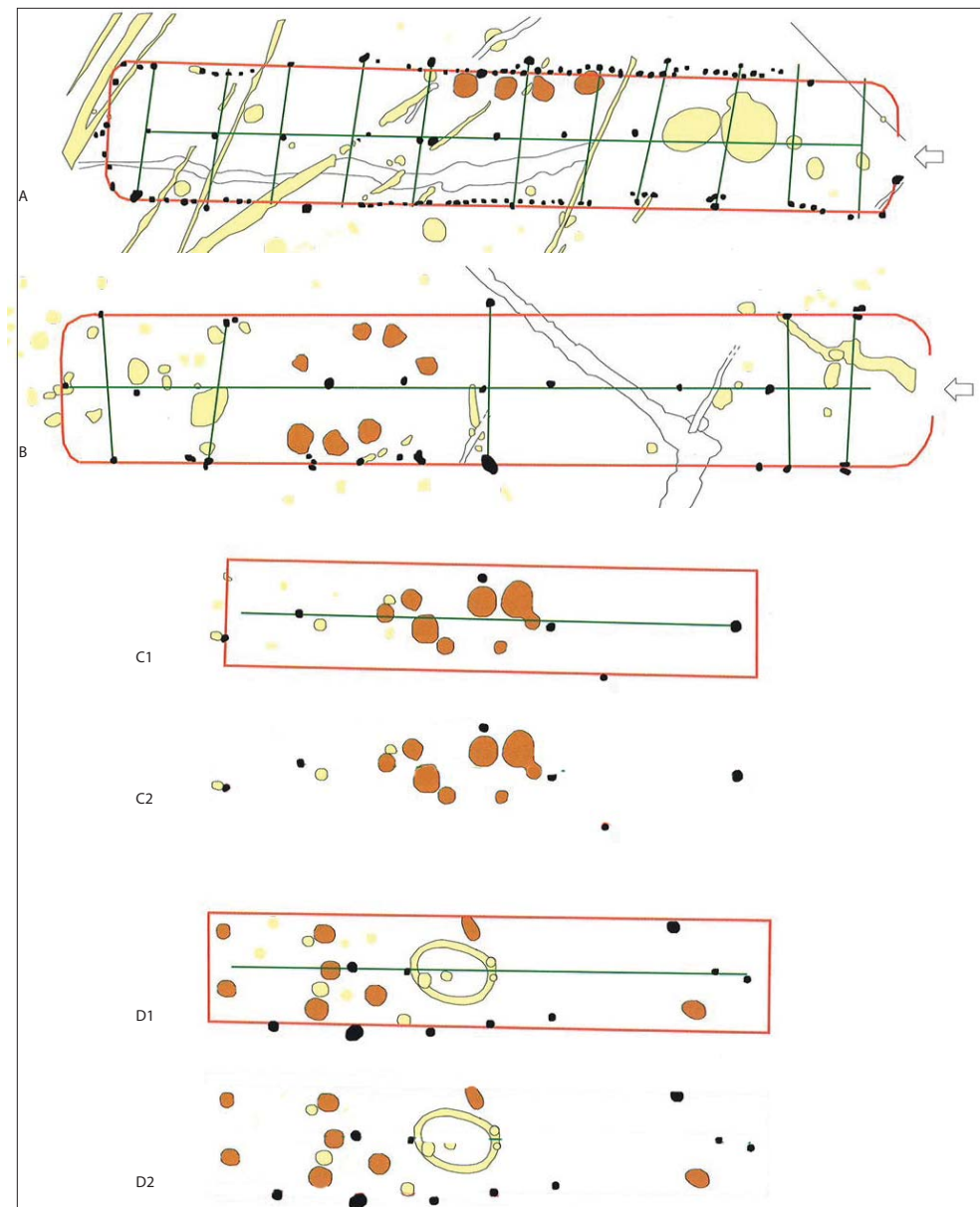


Figure 6.1 Type Hesel A: A: Hesel 6, B: Hesel 7, C1, C2: Anloo-Strubben1, D1, D2, Anloo-Strubben 2, (source: Waterbolk 2009, 44; C2 and D2 are added by us on the basis of C1 and D1).

Arnoldussen discusses structural properties in his dissertation for Middle Bronze Age houses, but a similar discussion for the Late Neolithic and the Early Bronze is lacking, despite several publications about structures from that period. The general feeling exists that these were ephemeral, structure-less structures, because the Late Neolithic and Early Bronze Age structures that we knew before 2001 were not very structured. This idea has been enhanced by Waterbolk's identification of Anloo-

Strubben house 1 and 2 and various houses at Zwolle-Ittersummerbroek that he presented as examples of Hesel type A and B houses (Fig 6.1).²⁰⁰ Also the Middle Neolithic Hunte structures have added to this idea.²⁰¹

The excavations at Hesel²⁰² have yielded several house plans with clear walls, but a less clear inner structure. Characteristic for this type is the presence of silos (German: *Vorratsgruben*) in one part of the structure. Sometimes these silos are clustered (house 7) or aligned alongside

²⁰⁰ Waterbolk 2009, 43-45.

²⁰¹ Cf. Drenth *et al.* 2014.

²⁰² Schwartz 1996.

Table 6.1 Reliability classes for house plans (after Fokkens & Jansen 2002, 10).

| Reliability class | Description |
|-------------------|---|
| A1 | Clear plan, recognised and described in the field (amongst others in field diaries). Post holes have been sectioned and checked for comparability in fill (colour, composition), and were documented as part of the structure. |
| A2 | Less clear plan, recognised and described in the field (among others in the notes of the excavators). Post holes have been sectioned and checked for comparability in fill (colour, composition) and documented as part of the structure. The structure is less clear because of missing elements, an irregular nature, or significant variation of the fill of the post holes. The excavator has his/her doubts, but leaves the possibility of a structure open. |
| B | Plan that has been recognised on the drawing table during post-excavation analysis. It has the qualities comparable to category A1. The structure is regular and post holes are of comparable dimensions and depth. The sections of the post holes exhibit comparable fill and colour. |
| C | Plan that has been recognised on the drawing table during post-excavation analysis. Form and structure are not as clear as a class B house plan. Individual post holes differ in terms of fill of post holes, post holes are missing and of different sizes. There are severe as to the validity of these structure. |

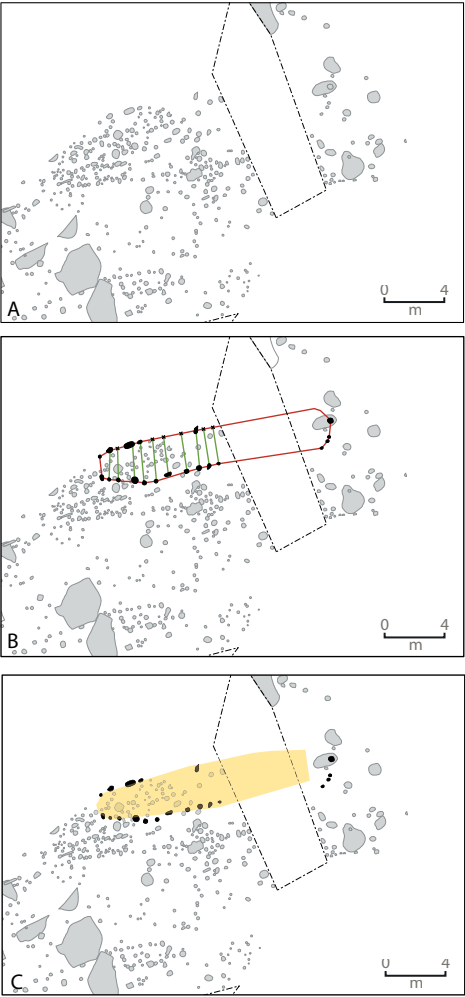


Figure 6.2 Three versions of house 2 at Den Haag-Wateringse-Binnentuinen. A: plan of all features, B: house 2 as proposed by the excavators, C: interpretation of the same structure by the present authors (A and B after Drenth *et al.* 2014, 72).

the wall (house 6). House 6 from Hesel is clear-cut, but Hesel 7 is less convincing at least in the form in which Waterbolk presents it. In contrast, the houses that Waterbolk identifies at Anloo-Strubben are the product of the structure lines rather than any internal characteristic if one leaves out the structure lines (Fig. 6.1: C2 & D2). One of the problems in the ‘recognition’ of plans, is generated by Waterbolk’s way of inserting hypothetical horizontal structural elements in these plans. The nature of the red lines (outer structure) and green lines (inner structure) he presents is not explained, but this style for indicating structures has become a standard. Moreover, in some of his examples these structure lines connect large areas with no upright posts. As a result, the hypothetical structure cannot be supported by any of the uprights that they connect. Good examples of this problem are Waterbolk’s reconstructions of Hesel 7, Anloo-Strubben 1 and 2 (Fig. 6.1). Anloo-Strubben 1 is no more than a cluster of features without any uprights, but with the structure lines drawn in and around them it looks quite ‘something’. Note that this ‘something’ is only 3 m wide!

These reconstructions have given many archaeologists with less experience the opportunity to translate almost any cluster of posts and features into houses, especially if pits are present as in Hesel A and B houses. Since Waterbolk is an authority on house plans, reference to his 2009 work²⁰³ more or less legitimises the identification of inconsistent structures as houses. It relieves the excavators of the burden of proof for their identification on the basis of physical evidence. It allows

²⁰³ Waterbolk 2009

them—generally in the post-excavation phase—to ‘recognise’ all kinds of houses, especially for periods that had no houses before. The Den Haag type houses of Den Haag-Wateringse Binnentuinen are good examples (Fig. 6.2). With reference to house type Hesel A, and following Waterbolk, the excavators connect clusters of posts and features with lines and propose that these constructs are house plans.²⁰⁴ In our view, a better way to approach these structures is to leave the structure lines left out and only apply a raster to indicate the possible or probable location of a house or structure (Fig. 6.2). In the example of Wateringse Binnentuinen house 2, the application of a raster the excavators can make clear that they expect a structure to have been there without having to be more specific than the data allow.

6.3 The structure of house plans

Another important reason to discuss the structure of houses in a separate chapter, is that we signal a lack of understanding of the function of architectural elements that are archaeologically visible. The structural elements that are archaeologically visible are vertical (upright) roof-supports. The horizontal elements are virtually always added by archaeologists during the process of interpretation: they have seldom been preserved. For the Late Prehistory (Bronze Age and later), Huijts discusses all possible kinds of variation in the Netherlands in terms of structural elements.²⁰⁵ We briefly summarise his ideas in order to stimulate critical thinking about house plans or other structures that archaeological literature presents. The most important architectural elements of houses to us archaeologists are the vertical elements, dug in and placed in post pits or hammered in. In our view these are the elements that in actual practice had to support the roof. They may have constituted also walls, but that is a matter we have to decide on the basis of the evidence left to us.

How is a roof constructed? It consists from top to bottom of a roof cover. Generally that is visualised as a thatch cover. The thatch is fastened to battens. These battens are closely spaced to prevent the sagging of the thatch. In turn, the battens are attached to rafters (Fig. 6.3,

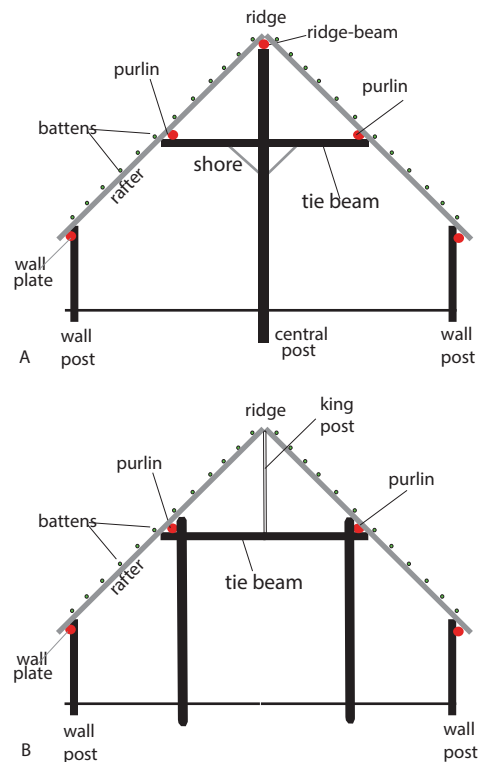


Figure 6.3 Structural elements of a house and their names A: a two-aisled construction; B: a three-aisled construction (drawing: H. Fokkens).

6.4). Rafters are the long beams that run from the eaves near the ground or from the upper part of the walls to the top of the roof. They are essential elements of the roof, because they form the actual structure. In order to support the battens they are spaced regularly, usually at an interval of c. 1.5 m.

The rafters are supported on the walls and often half way up by horizontal beams or plates. On top of the walls a horizontal beam called the wall plate supports the rafters. Halfway up the roof a purlin generally also supports the rafters (Fig. 6.3, 6.4). Together the rafters, the plates and the beams provide the structure for the roof. None of these elements is in actuality visible in the archaeological record. The Must Farm roundhouse that was recently discovered near Peterborough is in fact one of the first archaeologically known houses with preserved rafters and purlins.²⁰⁶

Generally the roof is not resting on the ground but on posts set in the wall and on vertical elements inside the house (Fig. 6.3). Since these supports have to carry the entire roof, therefore

²⁰⁴ Bulten & Boonstra 2013; Siemons & Bulten 2014.

²⁰⁵ Huijts 1992.

²⁰⁶ Based Fokkens' observation in March 2016, and a discussion with the site director, M. Knight.



Figure 6.4 Reconstruction of an Iron Age farm at Orvelte (Netherlands) which shows the structure of the farm, including the roof cover, the battens and the rafters resting on purlins and on the wall plate (on top of the walls) (photo: H. Fokkens).

structural consistency is important. They need to stand in a line because they need to support horizontal beams and plates. A horizontal beam may be slightly crooked, causing its supports to stand a bit off the ideal line here and there, but they cannot be off the line 5 cm on one end and 100 cm on the next, or with 1 m distance between them on one end and five on the other. Such a roof support construction would not last very long, making the structure almost per definition short-lived.

Archaeologists generally think that the function of a central line of posts is to support the ridge-beam of the house. However, a ridge-beam support is theoretically unnecessary, because the rafters can bound together at the top and onto a ridge-beam. According to Huijts central (rows of) posts seldom supported the ridge-beam directly.²⁰⁷ In Middle Bronze Age houses, for instance, a central line of posts is generally lacking, indicating that the ridge-beam is connected to the rafters only, or possibly supported by king posts standing in the facades (Fig. 6.3B).

In archaeological reports one often reads that the central row or sets of posts are deeply founded, because they need to carry a lot of weight. The idea is that the deeper the posts

are dug in, the heavier the load they could carry. In our view, this is assumption is incorrect. A ridge support post, for instance, does not carry much weight at all if it only supports the ridge-beam. By far the largest weight of the roof is transferred onto the wall plates at the lower end of the roof, and to the purlins. When the soil itself is stable enough, as can be argued for sandy soils, posts do not need to be dug in just because they need to carry a load.

A far more important reason to *anchor* a post in the ground is structural rigidity and stability. If vertical elements are connected with horizontal elements without diagonal cross-frames, the structure can move in all directions. In a hipped roof, the rafters are placed all around the house and give the overall roof stability.²⁰⁸ Consequently, it cannot keel over.

A prehistoric house with gable ends therefore largely has to derive its rigidity and stability from the depth to which central posts are embedded in the soil. As already became clear from the way the walls were structured²⁰⁹, Late Neolithic houses in the Netherlands had indeed gable roofs, not hipped roofs. Therefore, we may expect their central posts or pairs of inner posts to be deeply anchored in the ground. A clear example of this is the house at Zeewijk-

²⁰⁷ Huijts 1992, 33. In Section 6.2.2 we will explain why, if they are not necessary to carry ridge beams, central posts still can be essential elements to a construction.

²⁰⁸ Janse 1989, 18.

²⁰⁹ Cf. Chapter 3.



Figure 6.5 Building of a barn or house in Letea (Donau delta, Romania) (photo: H. Fokkens, summer 2013).

Oost, which had a gable roof and deeply dug in oak posts to support to upper structure of the house.²¹⁰ Therefore, we recommend the following rule of thumb: if posts were dug in, they needed stability and were an essential part of the structure.

Figure 6.5 present a modern example of this principle. The people building this barn in Letea (Romania) dug in the uprights for the house to create a stable inner structure. The stability of the structure depends on the depth at which these posts are anchored in the ground. In this case, the walls are very high and the structure is relatively narrow, so the rafters are short and need no halfway support by purlins. On the image, we see the wall plates lying below the wall posts, and the ridge-beam in the center. Some of the rafters are visible on the left side. In the background and on the right-hand side the thatch lies ready as well. The Letea houses have clay-covered wattle work (loam) walls in between the uprights. This construction also provides structural rigidity in addition to posts being dug into or hammered into the soil. With respect to the walls, a lot of variation is possible. Sometimes substantial posts are placed in the walls, but sometimes they are only visible as bedding trenches or as rows of stakes. In Late Neolithic and Early Bronze Age houses as they are presented in reports, outer posts are

sometimes very irregular or even completely lacking. This is also the case for the West Frisian Bronze Age houses.²¹¹ In those houses only sets of two inner posts are present. When roof supports near the walls are absent, this can only mean two things: either the roof must have rested on a horizontal beam (wall plate) lying on a wall built of sods,²¹² or the rafters rested directly on the ground.

When more substantial posts are present in a wall, these are thought to have supported the wall plate, which in turn supports the lower end of the roof. In general, we reconstruct the rafters to stand out from the roof, creating eaves. If the eaves are short, the lower part of the walls is not protected against rain dripping from the eaves. Rainwater will splash up against the walls and cause erosion of the wattle and daub construction (Fig. 6.6). If the roof was supported outside the walls by outer posts, like in Iron Age houses, this scenario is prevented.

6.3.1 Internal divisions of houses: aisles, living quarters and stalls

Dutch archaeologists use the number of post rows inside a house to indicate the number of aisles. But if we read Huijts closely, the number

²¹⁰ Cf. Section 7.3.

²¹¹ Roessingh *in prep.*

²¹² IJzereef & Van Regteren Altena 1991, fig. 10; Huijts 1992, 49.



Figure 6.6 The function of eaves is to protect the walls against rain. The photo is taken in the village of Orvelte (source: H. Fokkens).

of aisles does not matter much in the prehistoric times.²¹³ This only becomes an issue in the Late Medieval halls. However, during the Late Neolithic and the Early Bronze Age, we witness a major change in roof construction, causing the plans to shift from two to three aisles. This is not only a Dutch phenomenon, the same development can be observed in Denmark and Norway.²¹⁴

The three-aisled construction probably makes a roof more stable, because the sets of inner posts can be connected with tie beams like trusses. The difference with real trusses is that the prehistoric ones probably were not constructed as one coherent whole with purlins. In terms of space within the house, a two- or a three-aisled construction makes little difference as Fig. 6.3 shows. In theory, there would be a possibility to support storage above the central aisle. In a two-aisled house, this possibility exists as well, but a set of posts definitely supports an attic or loft better than a T-shaped construction connected to the central posts.

6.3.2 Entrances to houses

Very often site publications discuss in detail where entrances to houses have been. These are then indicated by arrows. However, generally that discussion is not based on knowledge of why an entrance becomes visible. The reason entrances become visible is that at the place of an entrance, especially the wider ones, extra roof support is necessary. The reason is that, especially if the roof has eaves (parts that stick out beyond the walls), the height is too low to enter the house. This implies that at the place of an entrance the wall plate has to be raised in order to support the rafters, and this raised wall plate requires additional vertical support (Fig. 6.7). At the place of a doorway, we therefore



Figure 6.7 The reason that a doorway becomes visible in the structure of a house is that the wall plate needs to be raised in order to allow people to pass through. Reconstructed Iron Age house at Orvelte (source: H. Fokkens).

²¹³ Huijts 1992, 33.

²¹⁴ Bech & Haack Olsen 2013.

see extra support posts. If houses have a gable roof, the entrance generally will have been placed in one or both of the short (gable) ends. Structurally it may then be invisible because none of the vertical elements is necessary for rigidity and stability of the roof structure.

6.4 Concluding remarks on house structure

In Chapter 7 we discuss a number of sites that were excavated during the past 15 years. Many of these sites would have houses or structures. We use the observations from this chapter to critically analyse these structures. Based on the houses that we already know from before

2001, we expect that most of the houses are two-aisled and have a well-recognisable series of central posts. These posts were dug in for additional stability. The houses are expected to have had gable roofs, as in the Haamstede, Vlaardingen and Zeewijk examples. The Early Bronze Age houses we would expect to have been two-aisled as well, like at Molenaarsgraaf and Noordwijk, but these may have had saddle roofs. Therefore the central posts may have been less deeply founded. We have no idea how Bell Beaker houses were structured: we simply have not yet found one. However, given the existing tradition of Vlaardingen Single Grave houses and the later Early Bronze Age tradition, we would expect two-aisled structures, probably with a well visible line of central posts and perhaps also wall posts for the Bell Beaker period.

7 Site reports

7.1 Introduction

In this chapter we summarise a number of sites that have yielded new information on the Late Neolithic, Early Bronze Age or Middle Bronze Age A. Some of these sites yield substantial information, others very fragmented. We have chosen to summarise the data from the latter sites as well, because fragmented data is all we have in most cases.²¹⁵ The database analyses in Chapters 4 and 5 yielded 46 sites in all that we will discuss in Chapter 7, but decided to include also a few older sites that were excavated before development-led archaeology started, but were published after 2001. The reason for this decision is that some of these sites, like Schokland-P14 and Barendrecht-Carnisselande, are essential for our understanding of the settlements and economy of the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A. We have also added the data of two as yet unpublished sites, Steenendam and Oldeboorn, for which publications were in preparation by the first author and Leiden University students. We have followed the original publications as much as possible in the summaries, but where necessary also incorporated comments of these sources, for example on the interpretation of structures. Our account is in that respect an annotated summary. Furthermore, we have used images from the original reports to illustrate our summaries as much as possible. Many of these images have been adjusted to comply with our standards and that of the publisher. Legends and map texts were translated into English.

We have added palaeogeographic maps of every site to explain site locations. For these maps we have used the palaeogeographic reconstructions made by Vos and De Vries, which are available online.²¹⁶ We consistently used the map of the palaeogeographic situation around 2750 cal BC. The reason for choosing this specific map is that the 2750 cal BC reconstruction for the coastal situation is probably to a large extent relevant for the Early Bronze Age and the Middle Bronze Age A as well. The next map in the series of Vos and De Vries represents the situation around 1500 cal BC, but in that map, for instance, entire West Frisia is covered in peat. This definitely was not the case during most of the Bronze Age.²¹⁷ Therefore we have decided to not complicate

matters too much, and use only one map, even more so since many yielded remains from the Late Neolithic to the Bronze Age. The sites we have chosen to summarise in this chapter are indicated in Figure 7.1.

The order in which we discuss the sites is guided by their location in different more or less coherent regions with respect to ecological zones and developments. Some of the presentations will be very short because we discuss only chance finds, but still finds that are important because they are unique, or because they represent an example of a pattern that emerges. Other presentations, especially of key-sites, will be considerably longer. We chose for the inclusion of many images and plans because this book also aims to open up the data for an international public that will not be able to read the Dutch language site reports.

We have structured all presentations according to the following lines. Every site presentation starts with a brief description of the situation in the past landscape, accompanied by a map of that location. Next the research history is briefly described in order to be able to assess how decisions on the research strategy were made, and what was expected when the excavation started. In the case of by-catch finds, these paragraphs will be very short. Next we discuss features and finds, where possible presenting ¹⁴C data and ecological data. In the reports on which we had to depend, these data were not always presented in the same way, so necessarily we had to adapt our tables to the data we had available. Finally we generally add a few comments on the general character and the importance of the site in question.

7.1.1 Note on crevasse splays

In the description of the paleogeography we refer to concepts that are ‘common knowledge’ in Dutch archaeology, but may need more explanation in a wider international context. A general background to the landscape and its development through time was already presented in Section 3.4.1, but at least one concept needs more explanation: crevasse and crevasse splays.

The theory behind crevasses has already been known since the nineteen fifties and sixties²¹⁸,

²¹⁵ In Chapter 4 and 5 we have discussed the criteria for our selection.

²¹⁶ Vos & De Vries 2013; <http://archeologieinnederland.nl/bronnen-en-kaarten/paleogeografische-kaarten>.

²¹⁷ Van Zijverden 2017.

²¹⁸ Edelman 1950; Havinga 1969.

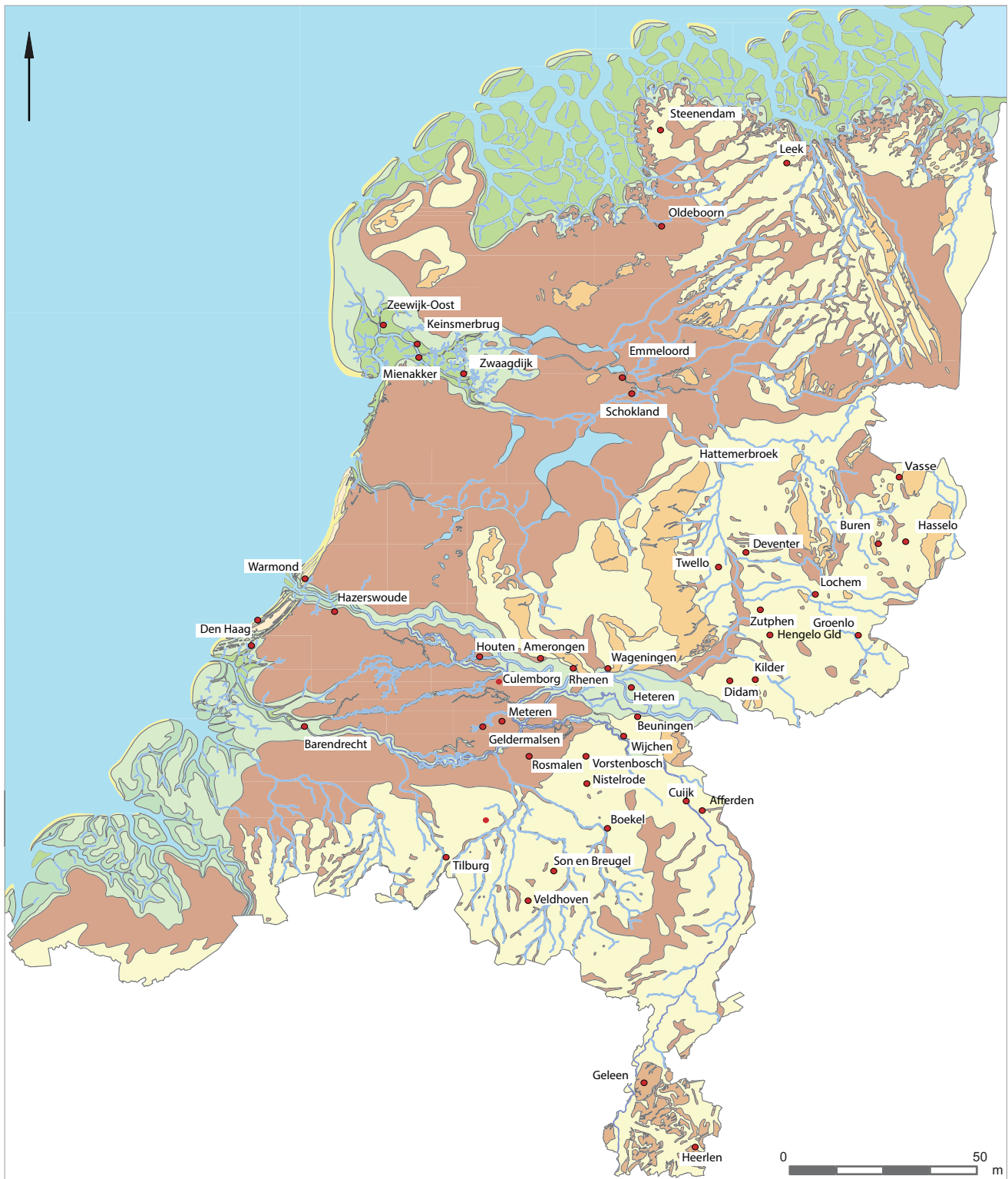


Figure 7.1 Palaeogeographic map 2750 cal BC with the sites discussed in this chapter (after Vos & De Vries 2013).

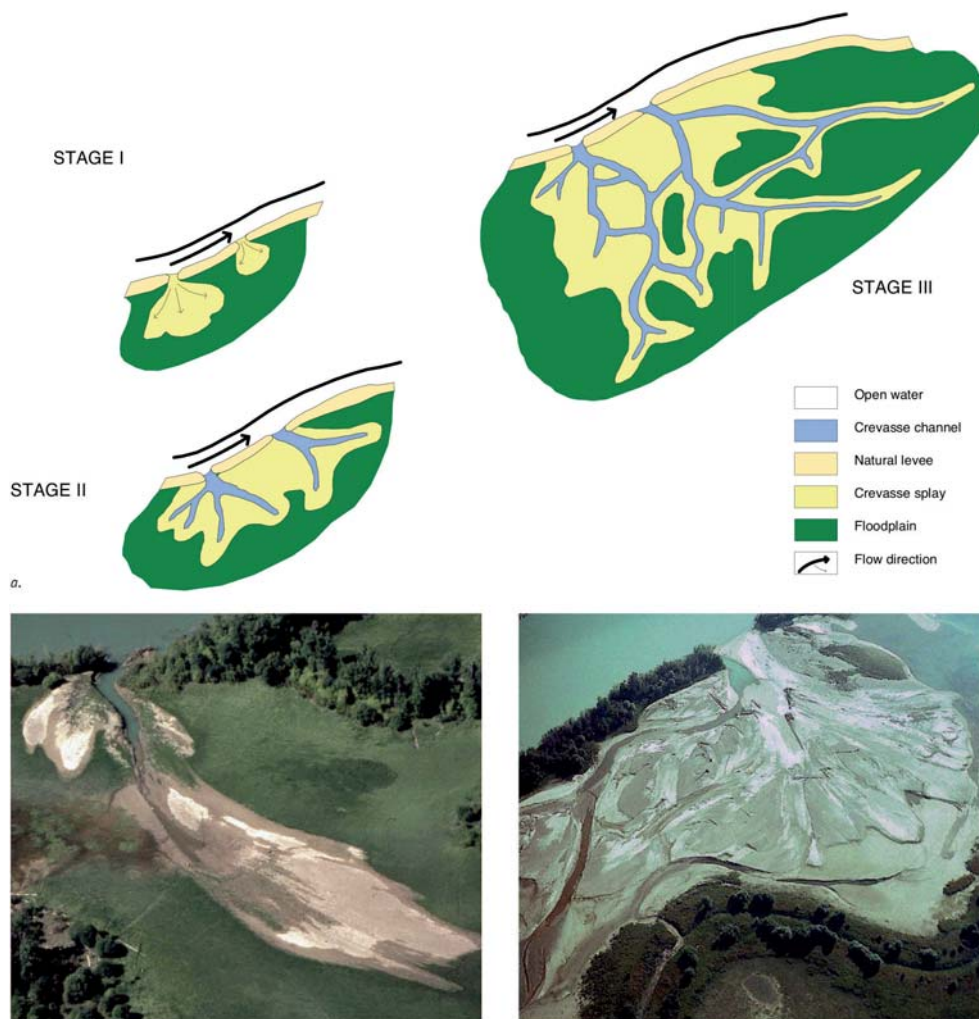


Figure 7.2 Formation of a crevasse splay complex (from Van Dinter & Van Zijverden 2010, 22); Active crevasse splay systems in the Upper Colombia River, Canada (photo B. Makaske; from Van Dinter & Van Zijverden 2010, 22).

but in Dutch archaeology the concept was virtually unused until the Betuweroute project had started.²¹⁹ When the Betuweroute project started, most people thought that settlements in that area were located on natural levees of river channels. However, the work of a.o. Van Zijverden and Van Dinter demonstrated that many of the soils previously indicated as levees, were in fact crevasse deposits.²²⁰ A crevasse develops when a levee breaks through and sediments are deposited on the flood plain (Fig. 7.2). As a result the expectation of where sites would be located proved to be entirely wrong for the Betuweroute project. They were predicted to be situated on relatively narrow levees, but actually most of them covered a much larger area of the crevasse splays.²²¹

Soon it became clear that crevasse systems were far more important for former habitation than levees (Fig. 7.2), not just for the Betuweroute sites, but everywhere in the Rhine-Meuse and the IJssel-Vecht basin.²²² This even is true for the West-Frisian sites, which always have been thought to be located on dry marshland, but it has become clear that several were possibly located on levees and on crevasse splays as well.²²³

²¹⁹ Cf. Chapter 1.

²²⁰ Cf. Van Dinter & Van Zijverden 2010.

²²¹ Van Dinter & Van Zijverden 2010, 29.

²²² Van Dinter & Van Zijverden 2010, 20.

²²³ Baetman 1999; Van Zijverden 2017.

7.2 Mienakker

7.2.1 West Frisian sites: an introduction

During the 1970's and 1980's, large areas in West Frisia were selected for re-allotment, which included the levelling of parcels and lowering of the ground water table. This re-allotment did not only threaten many by now iconic Middle Bronze Age sites such as Bovenkarspel and Hoogkarspel in the east of West Frisia, but also the Late Neolithic sites of Kolhorn, Mienakker, Zeewijk and Keinsmerbrug located more towards the coast. These West Frisian Neolithic sites were discovered during the 1980's. Since two famous Corded Ware sites were already known in the area, a large scale survey and auguring campaign was carried out by RAAP BV prior to the re-allotment.²²⁴ This resulted in the discovery of 13 new sites. The extent of these sites could easily be demarcated, because the sites were visible in auguring as thick black occupation layers that often contained shell fragments. Moreover, some of these layers they became visible as dark spots in the arable land after ploughing. The Late Neolithic settlement of Kolhorn had been discovered in that way during the 1970's.²²⁵ The RAAP survey of the area had yielded a number of new sites that became the subject of a large scale research and protection scheme of the Cultural Heritage Agency under supervision of P.J. Woltering and W.J.H. Hogestijn. Later on, the excavations were supervised by W.J.H. Hogestijn and E.E.B. Bulten under the project 'the Neolithic of Noord-Holland'.²²⁶ Several sites were excavated during this project, but these sites were never published. For this reason, these sites became the subject of the Odyssey project by a consortium of the Cultural Heritage Agency, Groningen University and Leiden University. The Odyssey programme was an initiative of the Dutch Ministry of Education, Culture and Science and the Netherlands Organization for Scientific Research (NWO). The programme aimed at high quality post-excavation analysis of sites that had been excavated in the pre-Malta period, but had not yet been published. Odyssey funding was secured for several Late Neolithic sites located in

West Frisia in a single project called 'Unlocking Noord-Holland's Late Neolithic Treasure Chest: Single Grave Culture behavioural variability in a tidal environment'. This Odyssey project has resulted in several books and dissertations, with a few still to be published. In this section, we briefly summarise the results and results of these excavations, but for details we refer to the books that have been published as a part of the above-mentioned Odyssey project.²²⁷ Since the Kolhorn site was not part of the above-mentioned Odyssey project, we discuss only the sites of Mienakker, Keinsmerbrug and Zeewijk with specific attention for the location and economy of these sites. The physical landscape of these sites is interesting because we know now that these sites had extensively ploughed arable plots in the direct vicinity, despite the fact that we consider these landscapes as unattractive for farmers. The physical landscape was not part of the investigations by the 'treasure chest' team, because there was no budget for it within the project. Moreover, when the project started there was a general understanding that the landscape development was adequately known. However, recent research in the framework of the now project 'Farmers of the coast' has changed our views on many fundamental aspects of the West Frisian landscape both during the Late Neolithic and during the Bronze Age.²²⁸ In this project,²²⁹ four PhD students have been working on the extensively excavated Middle Bronze Age sites of West Frisia that were equally well preserved as the Late Neolithic sites and that had also remained unpublished. It is in the framework of this project that Van Zijverden, who also did much of the work on the Betuweroute sites, undertook a renewed analysis of the genesis of the West Frisian landscape. Especially the excavation of a Late Neolithic arable field at Zwaagdijk-Noorderboekert²³⁰ and the associated deep sections, helped him in finalising his landscape model. This model is radically different from the traditional model of the genesis of Noord-Holland and of the position the West Frisian Late Neolithic sites. The previous model was partly based on the work of the soil scientist P. Ente, who produced the soil maps of Noord-Holland in the late 1960's and 1970's. His work formed one of the backgrounds to the work of De Mulder and Bosch,²³¹ who produced a number of paleogeographic

²²⁴ Van Heeringen & Theunissen 2001, 38.

²²⁵ Van Heeringen & Theunissen 2001, 36.

²²⁶ Van Heeringen & Theunissen 2001, 43.

²²⁷ Smit *et al.* 2012; Kleijne *et al.* 2013; Theunissen *et al.* 2014; Beckerman 2015.

²²⁸ Van Zijverden 2016.

²²⁹ NWO 360-60-100.

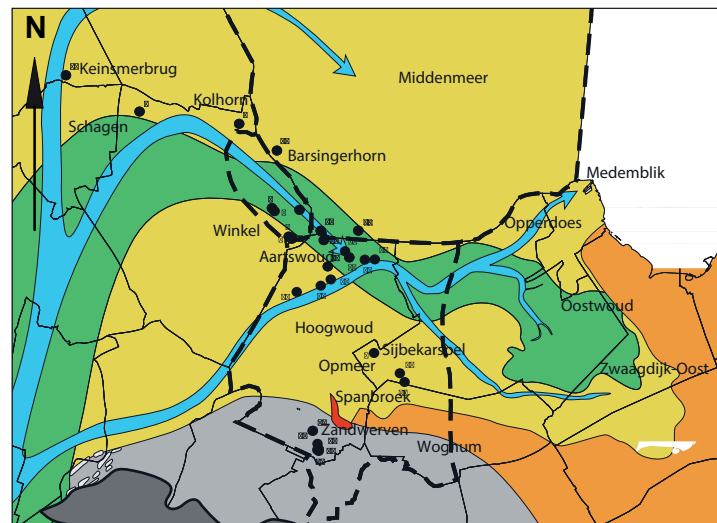
²³⁰ Cf. Section 7.5.

²³¹ De Mulder & Bosch 1982.

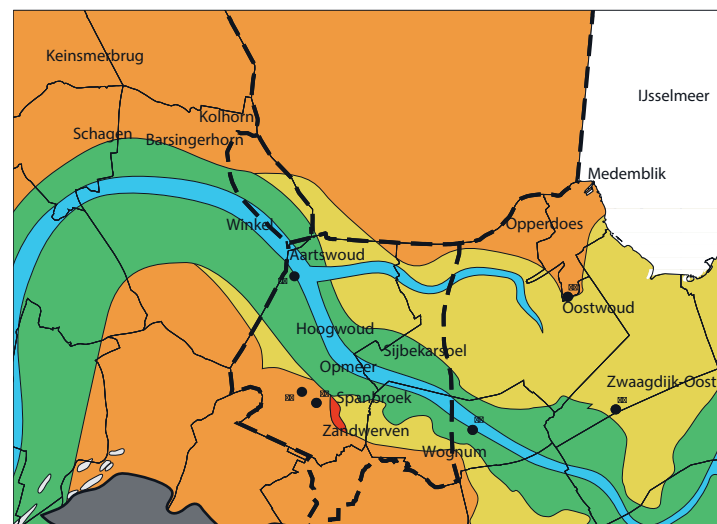
development models that have been used to model the genesis of the area (Fig. 7.3). According to this model the landscape consisted of a tidal marsh area behind an opening in the barrier beaches along the coast, known as 'the Bergen inlet' for the period after 3000 cal BC. Therefore, the soil was suitable for arable farming, even if it should be considered a high-risk environment with respect to inundation risk. In the palaeogeographic reconstructions of published by De Mulder and Bos (Fig. 7.3) we see that most of the sites are situated on levees alongside a gully, but in an area that is still indicated as prone to marine sedimentation (Blue and green colours, code 1). The southernmost gully is thought to have been active only until c. 3000 cal BC.²³² A marsh is thought to have developed west of the sand formation near Zandverven.

In the Early Bronze Age, the area prone to marine influence has shifted to the south, but is still present in the form of a tidal gully. The well-known site of Aartswoud is located near this gully, but according to this model the site Oostwoud lies on the border of the peat bog and the area with marine influences (Fig. 7.3B). In the same model the Bergen inlet closed after 1800 cal BC, the gullies silted up, and due to selective subsidence the gullies filled with coarse grained material and would eventually become relatively high areas as the surrounding sediments dried out and compacted. These gully 'ridges' subsequently became the places where Bronze Age farmers could settle and practice farming. This model was the state of mind when the Farmers of the Coast project started in 2011, although it had already been challenged somewhat by observations from earlier excavations. For instance, research at Enkhuizen-Kadijken had demonstrated that people also settled in the lower lying areas in West Frisia²³³ and did not keep solely to the ridges. Explaining this divergence from the proposed model became Van Zijverden's task in the Farmers of the Coast project.

For the situation described above, the recent excavation and resulting deep sections near Zwaagdijk-Noorderboekert²³⁴ were crucial for Van Zijverden. He concluded that the local environment at this site was in fact not that different from the many salt marshes in the area during the Late Neolithic. People were living on levees bordering the main tidal



A: 4300 - 3800 BP / 2900 - 2250 BCE



B: 3800 - 3500 BP / 2250 - 1800 BCE



Figure 7.3 Palaeogeographic development according to De Mulder & Bosch 1982 with the West Frisian sites projected on it. 1: marine influence: gullies and levees; 2: occasional vegetation, start of peat growth; 3: peat growth; 4: sand dune (compiled after Van Heeringen & Theunissen 2005, 51, 52)

channel or smaller creeks instead of on the marsh. Consequently, the light green areas (2) in the maps of De Mulder & Bosch (Fig. 7.3) should be visualised as back-swamps, rather than as marshes. People would not be able to live in these backswamps, but they were rich

²³² Van Heeringen & Theunissen 2001, 51.

²³³ Roessing & Lohof 2011.

²³⁴ Cf. Section 7.5.

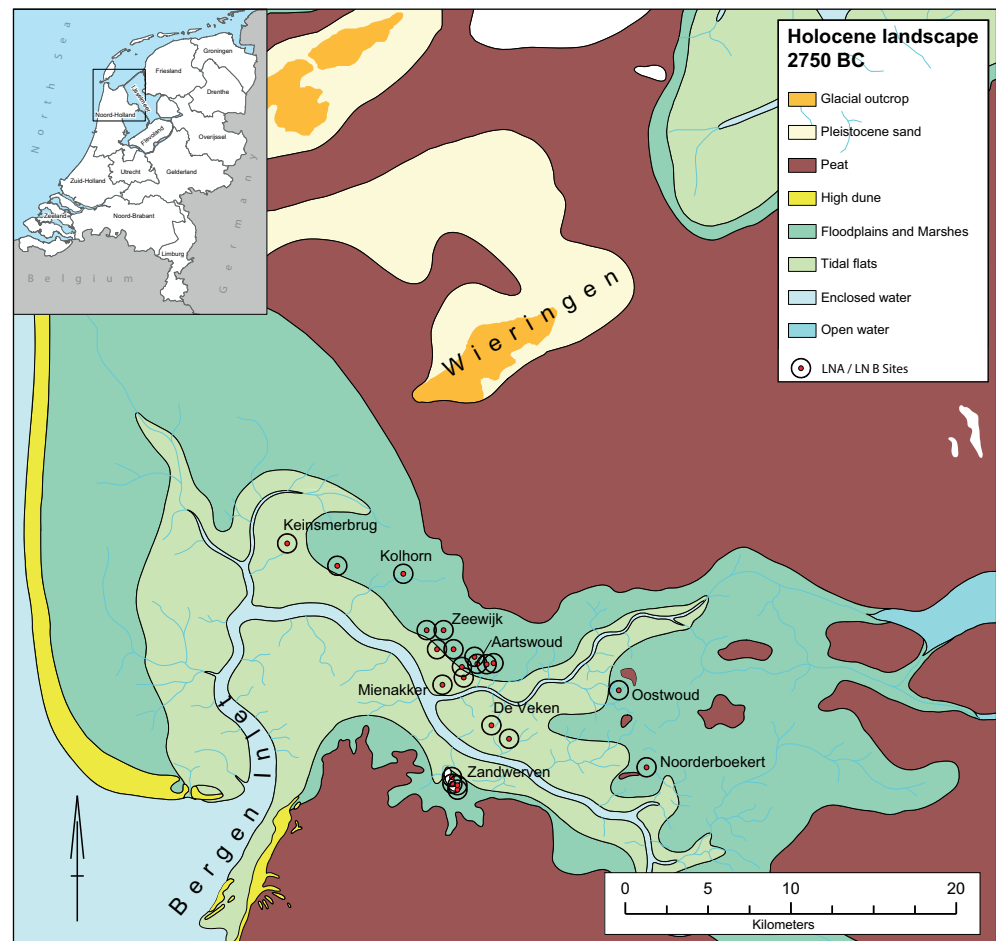


Figure 7.4 The West Frisian sites mentioned in the text on the palaeogeographic map of 2750 cal BC (palaeogeography from Vos & De Vries 2013, after Beckerman 2015, 33).

in flora and fauna, and therefore a valuable source of potential food. Furthermore, Van Zijverden's analysis of the situation around Oostwoud also deviates from previous ideas. In the De Mulder and Bosch version of the landscape genesis, the tidal influence diminishes land-inwards and ends around Oostwoud, but according to Van Zijverden the large channel near Oostwoud was a full tidal channel until c. 1800 cal BC and formed the mouth of the river Vecht. Oostwoud was probably located on a tidal crevasse, rather than on a marsh or a levee.²³⁵

Baeteman, Beets & Van Strydonck²³⁶ explain how this works. In their view, crevasse splays can also develop along tidal channels that have developed levees in the mid-tidal range. The events leading to a crevasse splay in this situation occur when a western storm occurs

simultaneously with spring tide. A mass of water is then pumped into the channels and can cause a breakthrough of the levees causing the deposition of coarse marine sediments creating crevasse splay. When the storm resides and the water levels become normal again, the crevasse splay becomes a higher zone well suited for occupation. Moreover, as channels silt up fast, fresh water lakes can develop behind these crevasses. These processes can take place in a relatively short period of time.²³⁷ Therefore, in terms of suitability for settlement, we do not need to search for brackish to salt or fresh water transitions in this kind of environment. Fresh water was probably around everywhere. No wonder that so many ducks and fish were caught at several of the excavated sites in West Frisia: these animals must have been abundant in these environments. The landscape was

²³⁵ Personal comment W.K. van Zijverden, March 2016.

²³⁶ Baeteman, Beets & Van Strydonck 1999, 3.

²³⁷ Baeteman, Beets & Van Strydonck 1999, 11.

probably quite open, but it is clear that the area was not devoid of forests. There must have been patches of forest because the presence of large mammals in the bone spectra. It is difficult to determine the exact location of these forests, but Late Neolithic and Bronze Age inhabitants of Zeewijk managed to obtain large oaks and judging the wood species, there was much firewood around as well. The analyses of Van Amerongen also show that the area was much more wooded in the Bronze Age than has been assumed until now, even though that situation this not directly comparable to the Late Neolithic landscape.²³⁸

The West Frisian landscape changes drastically after 1800 cal BC in Van Zijverden's model. It appears that the channel that continued inland to connect the river Vecht to the North sea was permanently blocked around this time, possibly due to a storm event. Following this change, the Vecht diverted its course to the south, towards the IJ-estuary, and West Frisia became a dry area apart from some large residual channels and was subsequently settled by Bronze Age farmers.²³⁹

In the interpretation of the palaeogeography of the region by Vos (Fig. 7.4), the model proposed by Van Zijverden has not yet been incorporated, so the floodplains and marshes should be seen as a complex system of crevasses with reed swamps and small bodies of water in all kinds of stages between fresh and brackish water.²⁴⁰ It is in this type of environment that we have to position the West Frisian Late Neolithic sites, and also the Bell Beaker sites indicated in Figure 7.4.

7.2.2 Mienakker: research history

The site Mienakker was discovered in 1986 and excavated in 1990.²⁴¹ The first survey campaign was conducted in 1986, indicating a well preserved prehistoric site. A more intensive auguring campaign, complemented with several test pits at the same location was used to map the extent of the site. Since its integrity was threatened by the impending re-allotment of the West Frisian landscape, excavations soon followed. These excavations yielded several important findings, such as a house plan and a burial, but not enough funding could be

acquired at the time to complete and publish the post-excavation analysis of the site.

7.2.3 Excavation results

With a size of only 840 m², the 1990 excavation cannot be considered as large by Dutch standards. However, the presence of a 30 cm thick intact anthropogenic deposit meant that the entire site had to be excavated in 50 × 50 × 2 cm squares,²⁴² which added to the laboriousness of the work. Despite the small size of the excavation, the finds were quite spectacular. Two structures and a grave were brought to light during the work, along with a series of hearths and pits (Fig. 7.5). Initially, both of the structures were interpreted as small huts, but this interpretation was changed on the basis of spatial analysis by the Treasure Chest team.²⁴³ Cereals from the cultural layer found at the site Mienakker date to 2580–2394 cal BC (2 sigma range), implying that at least part of the habitation fell in a different stage of the Late Neolithic. A date obtained from the inhumation present at the site also dates to this younger stage: 2676–2433 cal BC (2 sigma range).

Features

The work under the Odyssey project led to a re-interpretation of the above-mentioned structures at the site. Rather than underlining the extant argument for the presence of two small huts, Nobles uses various methods of spatial analysis to argue for an older domicile on which a younger funerary structure containing a burial was placed on an axis perpendicular to the house (Fig. 7.5; Fig. 7.6).²⁴⁴ The phasing of the two structures was established using the occurrence of a small creek to the southwest of the house, which would have been active during the habitation of the first structure, but had gone out of use when the second structure was built over it.

The first structure from Mienakker (MKII) is the oldest structure according to Nobles. His interpretation is based to a large extent on the spatial analysis of finds. This shows activity areas in the form of animal bones processed for meat and also a high quantity of charred grain.²⁴⁵ Since all material found in this area has a domestic nature, the structure is interpreted as a house

²³⁸ Van Amerongen 2016.

²³⁹ Van Zijverden 2016.

²⁴⁰ Personal comment W.K. van Zijverden, March 2016.

²⁴¹ Theunissen & Kleijne 2013, 15.

²⁴² Nobles 2013a, 29.

²⁴³ Nobles 2013b, 185.

²⁴⁴ Nobles 2013b, 186–240.

²⁴⁵ Nobles 2013b, 235.

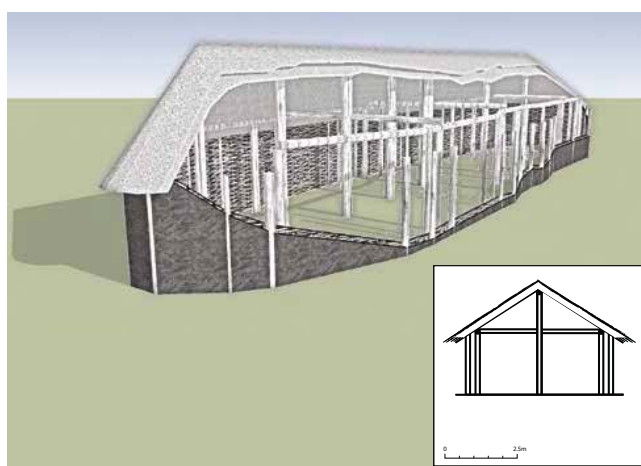
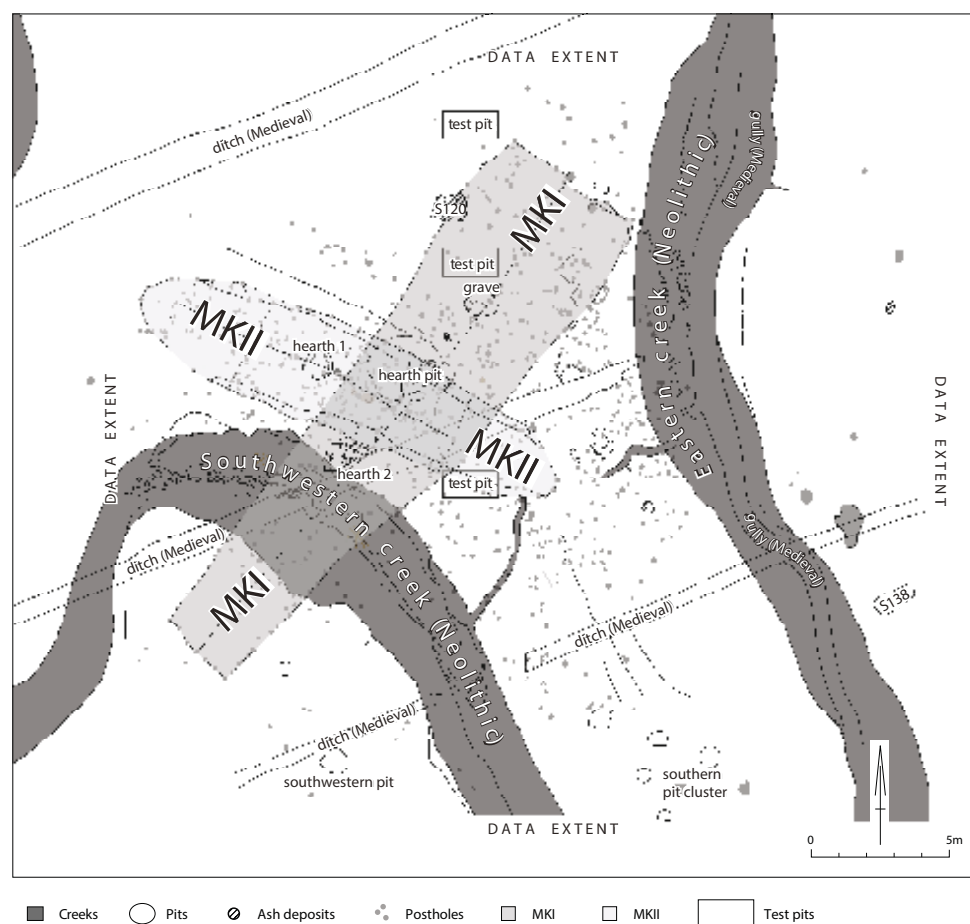


Figure 7.5 Map of the excavations at the site Mienakker and the reconstructed house MKII (after Nobles 2013b, 188, 235).

of 4 x 16,5 m.²⁴⁶ As a comment we add that a clear image is not given, but that on the scale on which it is presented, the structure looks rather ephemeral and irregular. The reconstruction looks nice, but has a very strange concept of roof support (Fig. 7.5). Wall plates seem to be missing

and the tie beams connecting the walls appear to have no function in roof support at all. The walls are very high for such small posts, as far as we can tell from the published image. Moreover, the association between the structural elements and the 'activity area' is not at all clear.

²⁴⁶ Nobles 2013b, 236.

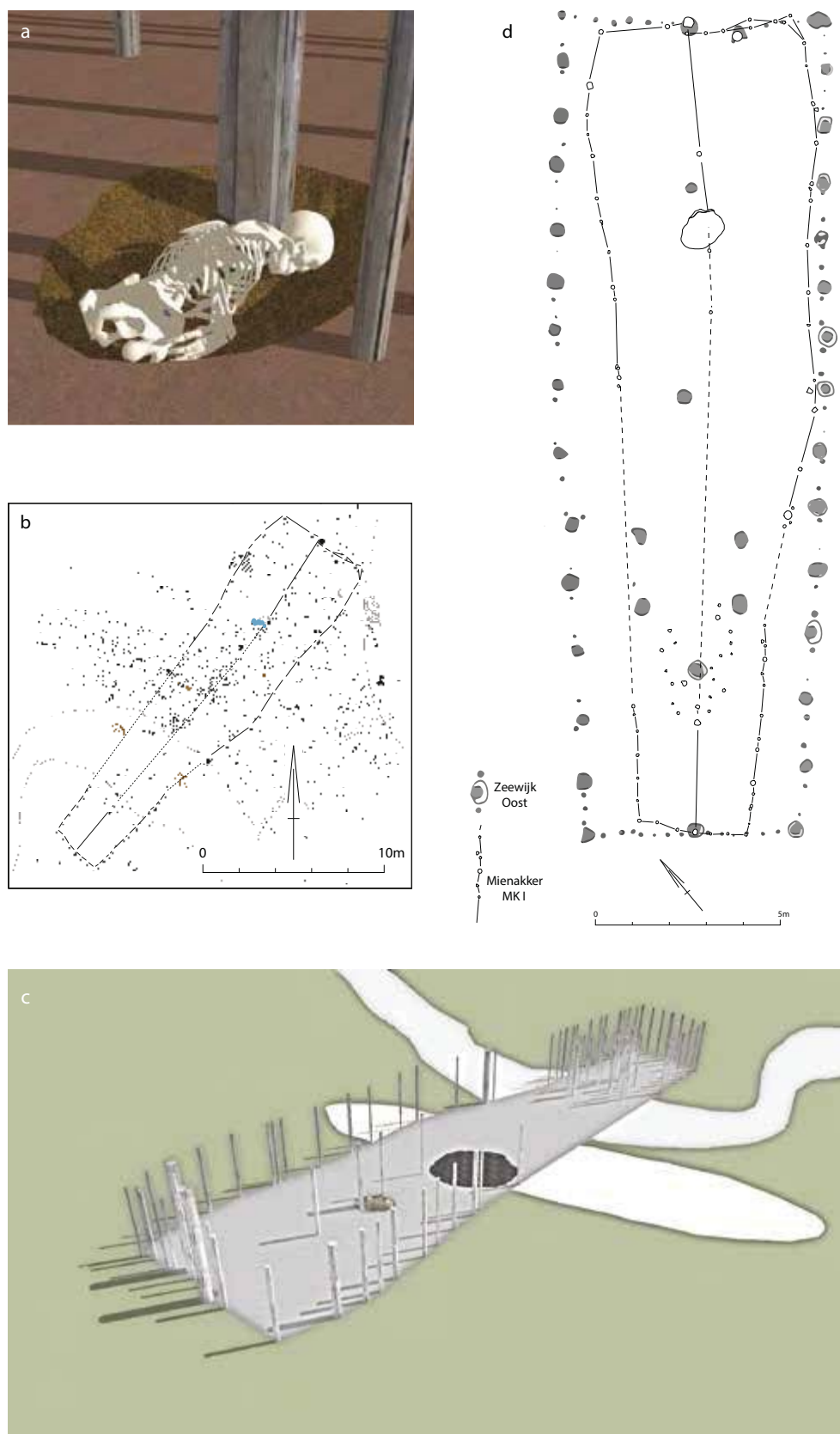


Figure 7.6 The proposed funerary structure (MKI) at Mienakker. a, c: artist impression of the grave; b: the cluster of features around it; d: the structure compared to the Zeewijk-Oost house (after Nobles 2013b, 238).

The occupation layer was formed in a long time span, and the ‘processing of animal carcasses’²⁴⁷ is not an activity that is logically performed inside a house.

The second structure at Mienakker (MKI) is interpreted as a funerary structure built over a silted-up creek. The interpretation of this structure as a funerary structure is based on three arguments.²⁴⁸ Firstly, the structure seems to be placed around a grave. Secondly, the structure is not associated with large quantities of animal remains. The absence of these remains is interpreted as the absence of domestic activities in the structure. The third argument casts doubt on the structural integrity of the post configuration as a roof-bearing structure. It is argued that because of the trapezoidal nature of the structure and the narrow posts that made up the structure, it is not likely that the structure bore a roof.²⁴⁹ As a comment on this interpretation of the structure we would add that the arguments for neither this interpretation, nor the structure are really very convincing. The enormous number of small post pits makes any kind of structure thinkable. In our view the structural elements of MKI do not resemble the nearby Zeewijk-Oost house in any way, as is suggested by the authors (Fig. 7.6d), for instance, as is suggested in Figure.

The grave found at Mienakker was that of a young adult male placed in a pit.²⁵⁰ A ¹⁴C date of the skeletal material dated to 2676–2433 cal BC (2 sigma). Detailed investigation of the skeletal material pointed out that the deceased had most likely been placed in the pit without his right arm, half of his scapula, several ribs, lower limbs and feet. Gnaw marks on a femur bone create the possibility that the arm had also been severed by animals, although no gnaw marks on the scapula are reported.²⁵¹ The pit had been filled in after deposition, which makes it unlikely but not impossible that manipulation occurred after the burial.

Interesting is the interpretation of a set of curved branches that was found at Mienakker as the possible remains of a skin-lined canoe (Fig. 7.7).²⁵² These branches were found in the narrow creek between the two parts of the site. The careful discussion of these finds by Nobles tries to argue that we are dealing with a type of canoe that resembles the Inuit *umiak*. Given that the remains are only 1 m long, previous interpretations argue that the remains resemble

a *coracle* (Fig. 7.7.C): a different type of skin-lined boat that functions more as a one person floating device. In contrast, an *umiak* type canoe has a different construction than a coracle and can be manned by multiple individuals. Even though this parallel may be correct, the frame of these *umiaks* is stronger built than that of the Mienakker canoe and the *umiaks* are substantially larger (Fig. 7.7 B). Therefore, the interpretation of the remains as a *coracle* type canoe in our view is a better option.

Given the environmental conditions in which the people lived in West Frisia, and that they have caught sea-fish, sea-going vessels of some kind must have been common in these parts, probably even the main means of transport. In that respect the lack of boats in the archaeological record is remarkable, as thousands of canoes must have been utilised and discarded or lost in West Frisia alone.

Findings

Apart from the above-mentioned canoe and structures, find categories from Mienakker include ceramics, flint, stone, botanical and archaeo-zoological remains. The ceramic assemblage of Mienakker is characterised by a clearly distinguishable difference in production techniques between thin-walled decorated wares and thick-walled undecorated wares.²⁵³ Beckerman concludes that these ceramics, which traditionally would have been labelled ‘Vlaardingen’ (thick-walled) or Corded Ware (thin-walled) were part of the same contemporaneous assemblage (Fig. 7.8).²⁵⁴ The lithic assemblage from Mienakker shows the exploitation of a broad range of nearby sources for the procurement of amber, flint and other stone materials.²⁵⁵ The local lithic assemblage was supplemented with flints from the Southern Netherlands, which indicates the existence of larger scale exchange networks. The occurrence of Grand Pressigny flint at the site is remarkable, because we generally think in terms of Grand Pressigny daggers as exchanged finished products only. But apparently also raw material was exchanged. This versatility in the sources of raw material is also translated into a multiplicity of lithic reduction techniques. *Ad hoc* technological procedures were used for working lower quality local flints, but the better flints were worked in a more thorough and rigorously planned fashion.²⁵⁶

²⁴⁷ Nobles 2013b, 235.

²⁴⁸ Nobles 2013b, 236–240.

²⁴⁹ Nobles 2013b, 239–240.

²⁵⁰ Plomp 2013, 175–184.

²⁵¹ Plomp 2013, 175–184.

²⁵² Nobles 2013c, 241–247.

²⁵³ Beckerman 2013.

²⁵⁴ Beckerman 2013.

²⁵⁵ García-Díaz 2013, 59–98.

²⁵⁶ García-Díaz 2013, 61.

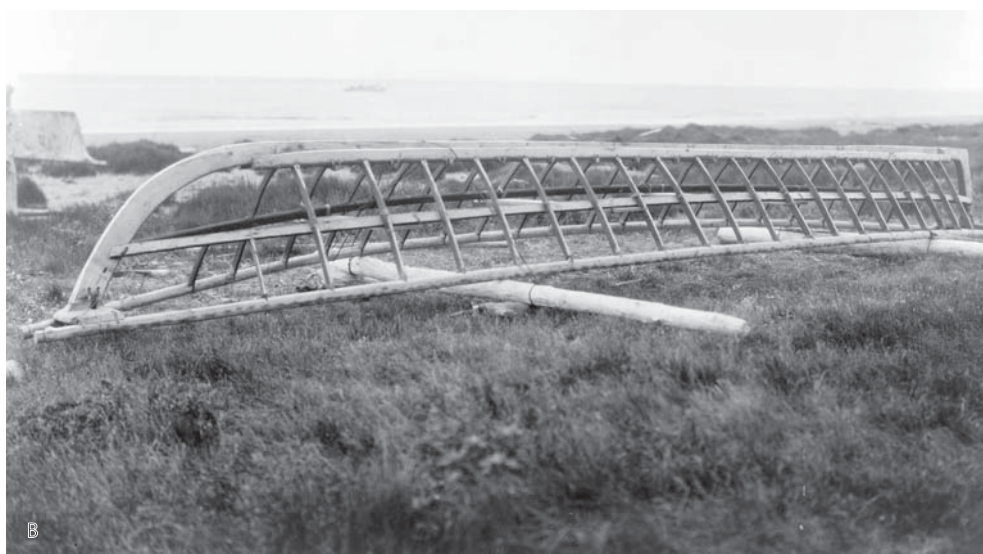


Figure 7.7 Remains of a skin-lined canoe (A) found in a small creek at Mienakker (from Nobles 2013b, 243). B shows the frame of an Umiak, photographed by Curtis in 1927 at Kotzebue (Alaska; Wikimedia Commons). C Coracles fishing on the River Teifi in 1972, Cardigan Wales (GB) (Wikimedia commons).

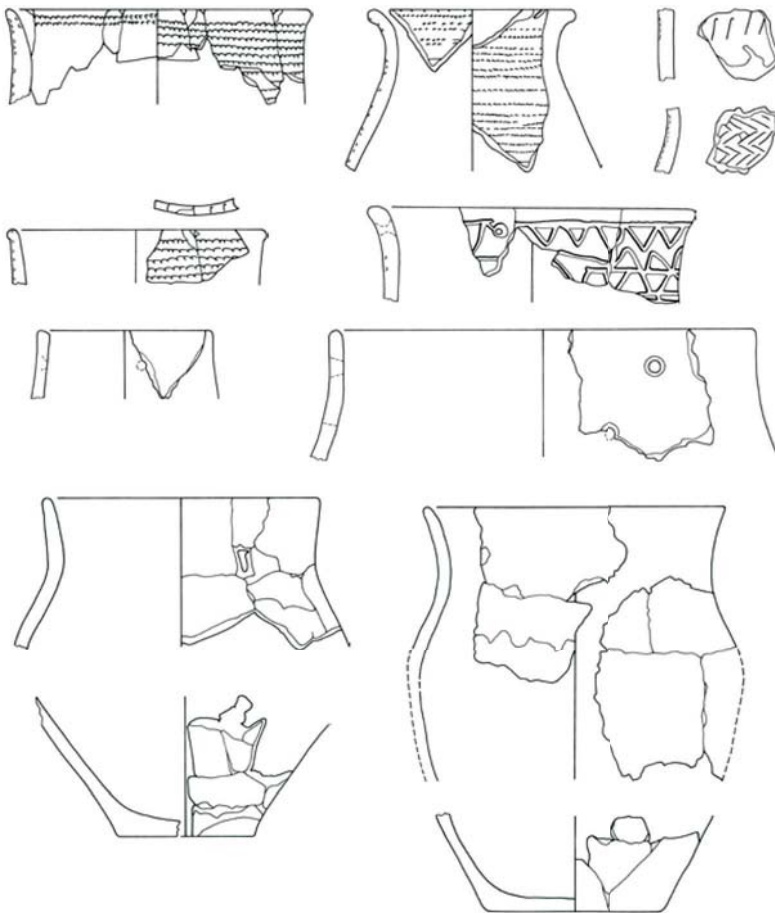


Figure 7.8 Pottery from Mienakker, scale 1:3 (compiled after Beckerman 2013, 51-53).

The botanical assemblage from Mienakker was extensive. Emmer and naked barley were processed at the site, and flax was also used.²⁵⁷ Evidence for the storing semi-clean ears and spikelets of these grains is used as an argument to suggest that these crops were grown locally. Staple crops were supplemented by crab apples, hazelnuts and acorns.²⁵⁸ This view of a mixed subsistence economy is corroborated by the archaeo-zoological analyses of the skeletal remains from the site.²⁵⁹ Based on the faunal remains, it is argued that stock breeding occurred alongside fowling and hunting, although hunting is said to have played a minor role.²⁶⁰ The most frequently identified species in the faunal assemblage were cattle, ducks and fish.²⁶¹ Seal, wild boar, marten, stoat and polecat were also hunted. The archaeo-zoological and archaeo-botanical remains point to an environment that is described as an open

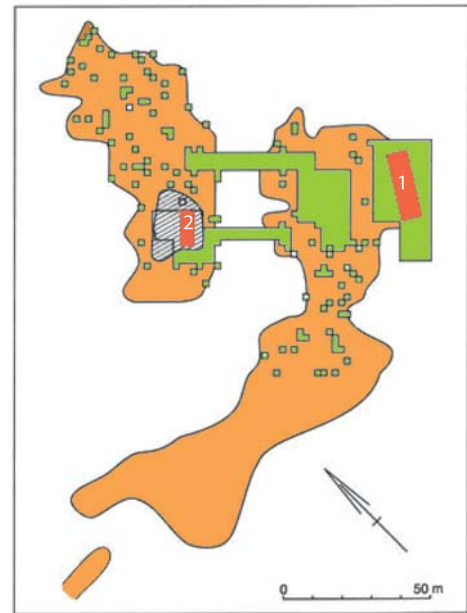


Figure 7.9 Extent of the occupation layers found at Zeewijk (orange on both sides of a residual creek (not indicated)), the excavation trenches and squares (green), the house plans 1 at Zeewijk-Oost and 2 at Zeewijk-West (red) (adapted from Theunissen 2014, 20).

landscape with salt, brackish and fresh waters. Activities at the site occurred year-round, which corroborates the interpretation of the site as a place of permanent habitation.

7.3 Zeewijk

7.3.1 Research history

During small-scale digging activities in 1983, the landowner of the plot on which the site Zeewijk is located, discovered cord-impressed pottery, flint and faunal material.²⁶² He consulted the Groningen archaeologists who were at the time excavating the nearby Kolhorn site. These archaeologists visited the site and confirmed the Late Neolithic date of the material. Prospection

²⁵⁷ Kubiak-Martens 2013, 102-103.

²⁵⁸ Kubiak-Martens 2013, 108-109.

²⁵⁹ Zeiler & Brinkhuizen 2013, 155-173.

²⁶⁰ Zeiler & Brinkhuizen 2013, 173.

²⁶¹ Zeiler & Brinkhuizen 2013, 172-173.

²⁶² Theunissen 2014, 16.

of the site then was conducted by archaeologists of the BAI in 1986 after an amateur archaeologist had already discovered what appeared to be an intact cultural layer.²⁶³ This prospective research included two auguring campaigns in a timespan of two years. These prospective research phases indicated the existence of two large areas in which an occupation layer was present, the first measuring 2,640 m² (Zeewijk-West) and the second measuring 3,100 m² (Zeewijk-Oost). In 1992, the Zeewijk site was selected for excavation by the Cultural Heritage Agency because the site was being threatened as the soils were slowly being disturbed and archaeological organic material was deteriorating as a result of this perturbation.

The various phases of prospective research and the eventual excavations gave a detailed image of the local situation. A large part of the site Zeewijk consisted of an occupation layer on natural levees on both sides of a residual channel of an older creek (Fig. 7.9). This creek would have been active during the occupation of the site and was part of the larger tidal basin landscape behind the Bergen inlet. Prehistoric activities did not restrict themselves to the natural levees, but also took place on the banks of the creek and the adjacent back swamp (Fig. 7.3). The occupation layer proper showed a stratigraphic sequence of anthropogenic deposits interchanged by bands of clay sedimentation that relate to flooding events.

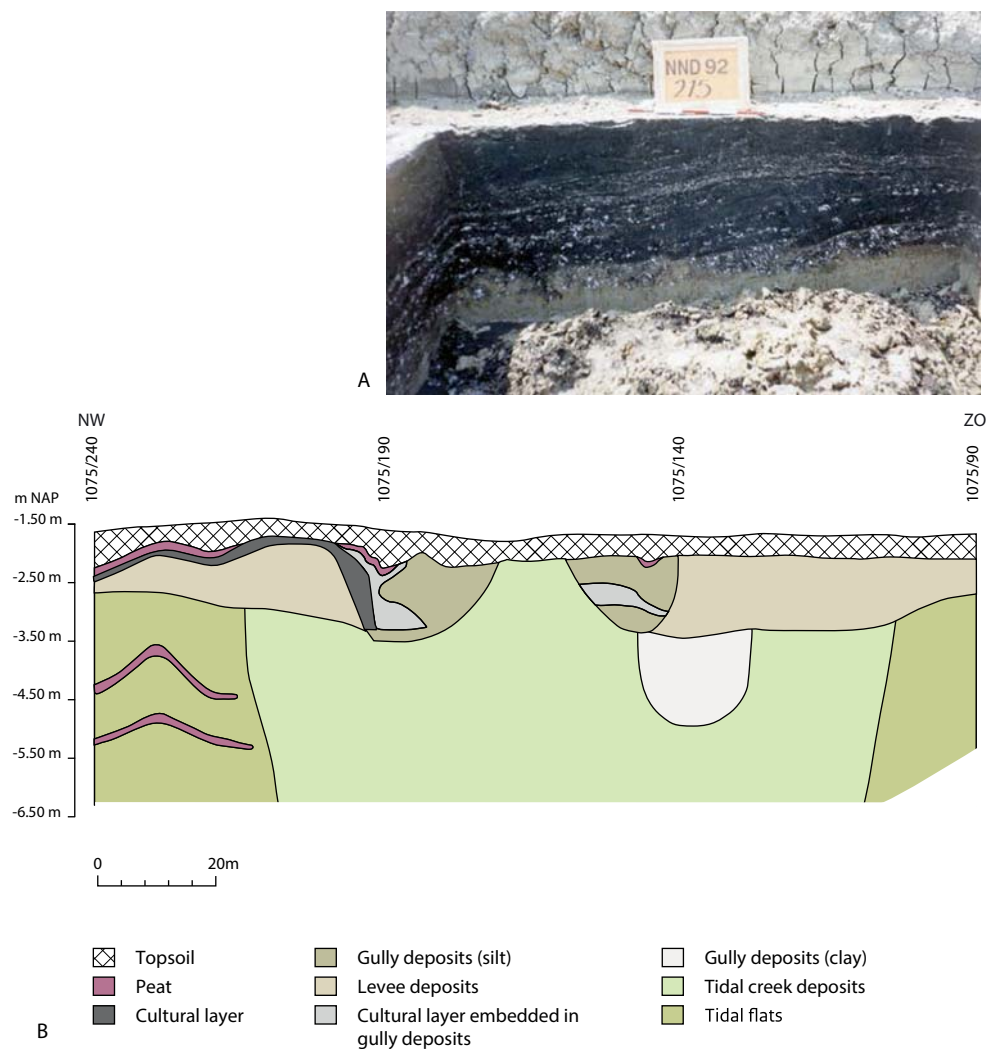


Figure 7.10 Impression of the black occupation layer with layers of shells (A) and a schematic geological section at Zeewijk (B) (from Smit 2014, 30).

²⁶³ Theunissen 2014, 18.

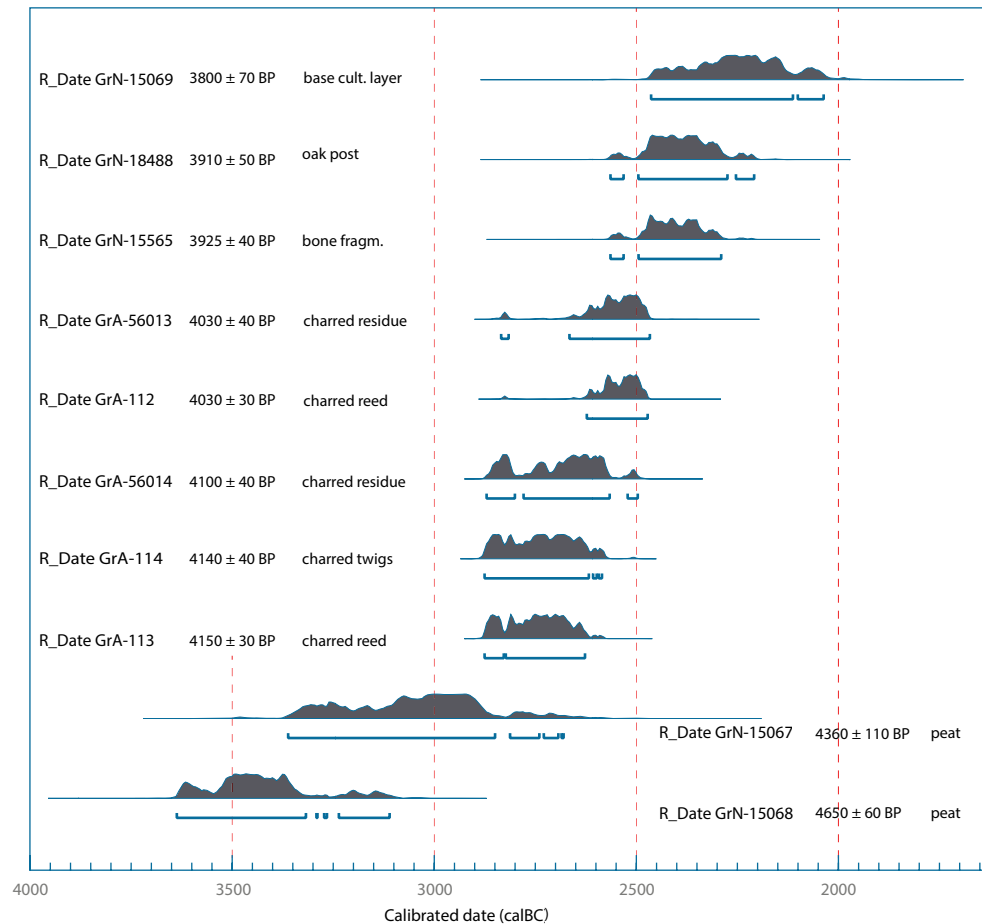


Figure 7.11 Plot of the calibrated ^{14}C dates for Zeewijk; the samples of the oldest two dates originate from the sediment below the occupation layer (from Smit 2014, 36).

7.3.2 Excavation results

The excavation trenches of the project at Zeewijk were located on both sides of the fossil creeks (Fig. 7.9; 7.10). The occupation layer was excavated in 1×1 m squares and in spits of 3 cm in the trenches. The soil that was recovered from these units was sieved. ^{14}C dates from the occupation layers show a subdivision of the occupation of the site in three phases. The first phase occurred during from 2900 to 2600 cal BC, the second phase from 2600 to 2450 cal BC, and finally the third phase from 2450 to 2100 cal BC (Fig. 7.11).²⁶⁴

Features

During the three consecutive years of excavation, a large number of features was

found at Zeewijk, including 13,650 cow hoof prints. Besides these features, a large ploughed field (ard-marks) was excavated (Fig. 7.13). Amidst of all these features, two house plans were recognised.²⁶⁵ At Zeewijk-West, the clustering of features was so dense that no single group could definitively be linked to a particular structure. However, the absence of clearly recognisable house plans does mean that these plans were absent. In his spatial analyses, Nobles took the distribution of various find categories, postholes and cow hoof impressions within a section of Zeewijk-West into account.²⁶⁶ However, there is no clear structure visible in terms of post pits at this location (Fig. 7.12). The structure found at Zeewijk-Oost (Fig. 7.13, 7.14) stands in sharp contrast to the hypothetical structure(s) at Zeewijk-West. The post setting of this structure at Zeewijk-Oost is clearly visible as the posts are quite large and

²⁶⁴ Smit 2014, 36, following Beckerman 2012.

²⁶⁵ Nobles 2014b, 205.

²⁶⁶ Nobles 2014b, 246.

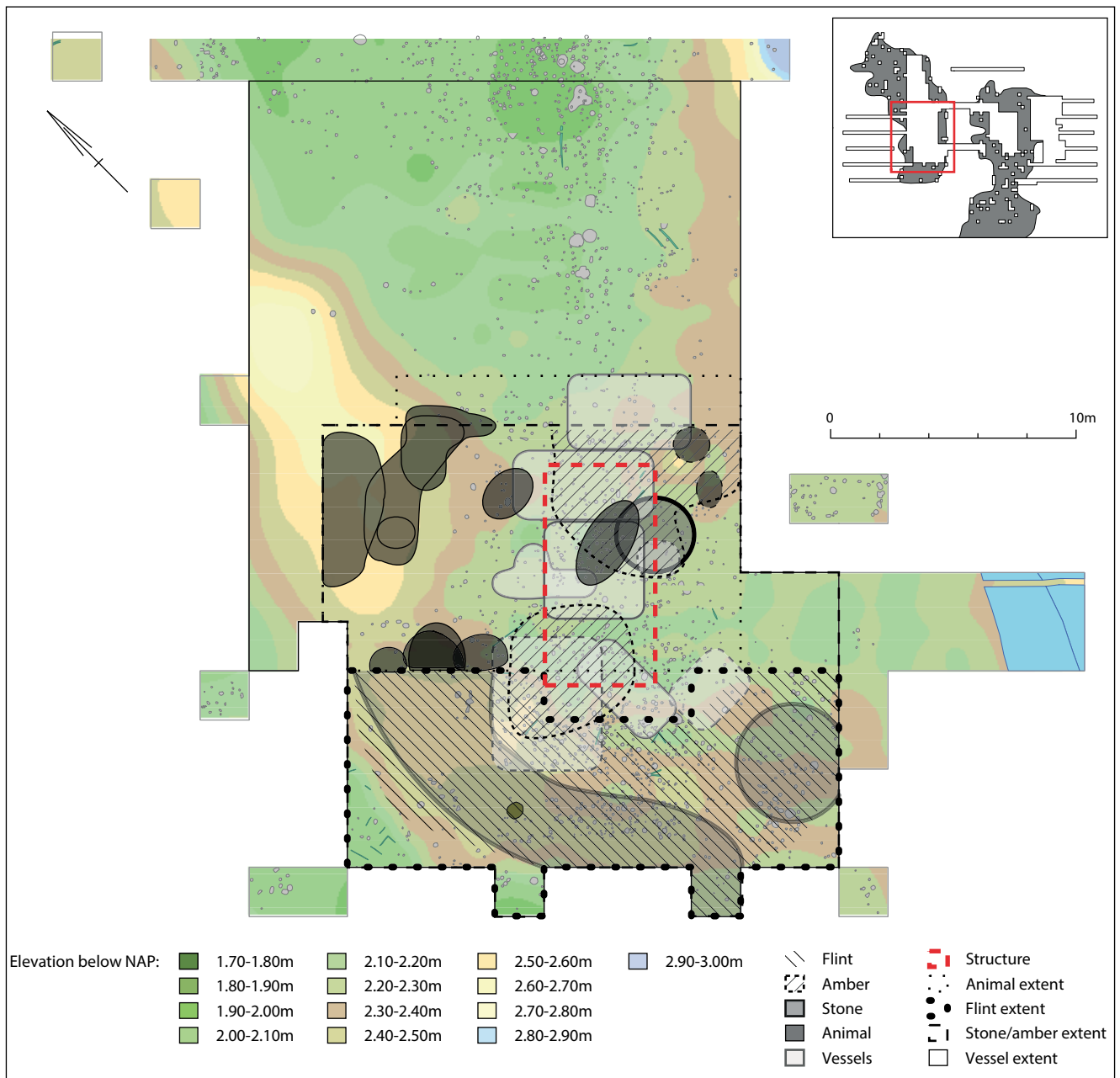


Figure 7.12 The results of the spatial analyses performed by Nobles. The extent of several find clusters are plotted around the supposed location of one or multiple house plans (from Nobles 2014b, 249).

the surrounding area has a lower feature density than other parts of the site. The regularity of the post setting and the size of the posts form a clear contrast with the otherwise difficult to define house plans from other Late Neolithic sites. This has led to the argument that the Zeewijk-Oost house is a ceremonial rather than a domestic structure.²⁶⁷ It is a pity that nothing can be said about the find distribution in and

around the house, because finds from this area appear not to have been collected, documented or stored properly.²⁶⁸ This also implies that there is no basis for discussions about the duration of the occupation at Zeewijk-Oost.

The structure of the Zeewijk-Oost house is very clear (Fig. 7.14). The walls are visible as stakes with heavier posts supporting the wall plates. A central row of posts was present to support the

²⁶⁷ Cf. Drenth, Brinkkemper & Lauwerier 2008, 158.

²⁶⁸ Nobles 2014b, 254.



Figure 7.13 The map of all features found at the site Zeewijk-Oost (from Nobles 2014a, 44).

purlins that at the southern end were supported by a portal constituted by a set of inner posts. This construction could also have supported an attic. Some of the central posts were still preserved at the time of the excavation. These posts were made of oak trees and the chop marks were still discernible.²⁶⁹ The posts were substantial in size: one of them had a diameter of 40 cm and was buried 1.15 m deep in the soil. These properties fit the observation that the

structure has a gable roof at both ends. As we have explained in Chapter 6, houses with gables need to derive their stability from digging in the central posts or the pairs of posts that support a purlin. In a house with a hip roof, the stability is provided by the rounded ends.

According to the excavators, the Zeewijk-Oost house represents the last phase of the habitation at the site and was placed on arable land. Since the central posts of the house were still present, it is possible that these were left standing when the site was abandoned.

Finds

The analysis of the ceramic assemblage from Zeewijk resulted in a subdivision of the material in two different groups that are possibly related to different use phases. They are comparable to the ceramic assemblages of nearby sites.²⁷⁰

The decorative techniques mostly consist of cord impressions and to a lesser extent spatula impressions (Fig. 7.15). Temper consists of grog and sand. The thick-walled pottery is mostly undecorated (Fig. 7.16).

The results of the analysis of the lithics and bone tools from Zeewijk are comparable to those of the Mienakker lithic assemblage.²⁷¹ Raw materials were mostly procured around the site, but supplemented with flints from the southern Netherlands. Both *ad hoc* and more precise methods of lithic reduction occurred.

The former type of method was used for most of the local material and the latter for more high quality material. Bone tools were produced and used in a way that is reminiscent of Mesolithic techniques.²⁷² Use-wear analyses on the flint and bone tools point out that craft and subsistence activities were performed at the site. These activities include hide processing, tool production and wood working, but also the processing of both hunted game and staple crops.²⁷³

The main staple crops were naked barley and emmer, but flax was also grown.²⁷⁴ Further away from the site, sea-club tubers, knotgrass rhizomes, orache seeds, crab apples, acorns and hazelnuts were collected.²⁷⁵ The faunal remains demonstrate that the subsistence economy was not only based on agriculture and stock raising.²⁷⁶ Large amounts of duck and flounder underline the importance of fowling and fishing at the site. Hunting activities mostly targeted wild boar, grey seal and beaver, although other

²⁶⁹ Nobles 2014a, 47.

²⁷⁰ Beckerman 2014, 55–83.

²⁷¹ García-Díaz 2014, 85–118.

²⁷² García-Díaz 2014, 104.

²⁷³ García-Díaz 2014, 104.

²⁷⁴ Kubiak-Martens 2014, 129–141.

²⁷⁵ Kubiak-Martens 2014, 141.

²⁷⁶ Zeiler & Brinkhuizen 2014, 177–196.

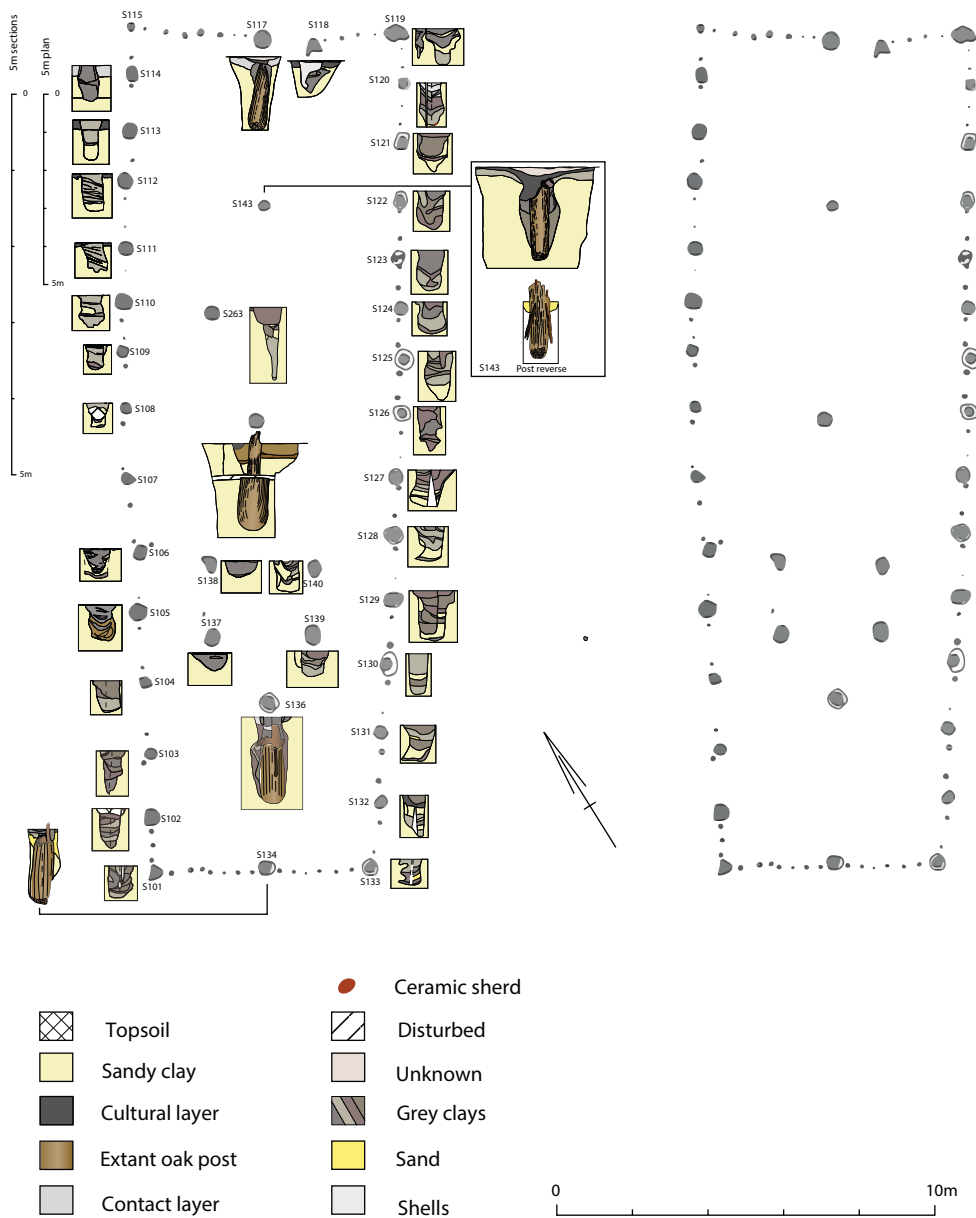


Figure 7.14 Plan of the Zeewijk-Oost house; the post pits in the central and wall lines still contain the oak posts (compiled after Nobles 2014a, 46, 48).

species are also present.²⁷⁷

As a comment, it is difficult to understand why the Keinsmerbrug site was interpreted in such a different way, considering the spectra at Zeewijk. There are many more duck bones at Keinsmerbrug,²⁷⁸ but otherwise the spectrum is comparable to Zeewijk, for instance, with some more emphasis on marine fish.

²⁷⁷ Zeiler & Brinkhuizen 2014, 196.

²⁷⁸ Cf. Section 7. 4.



Figure 7.15 Decorated pottery from Zeewijk, scale 1:3 (compiled after Beckerman 2014, 64-69).

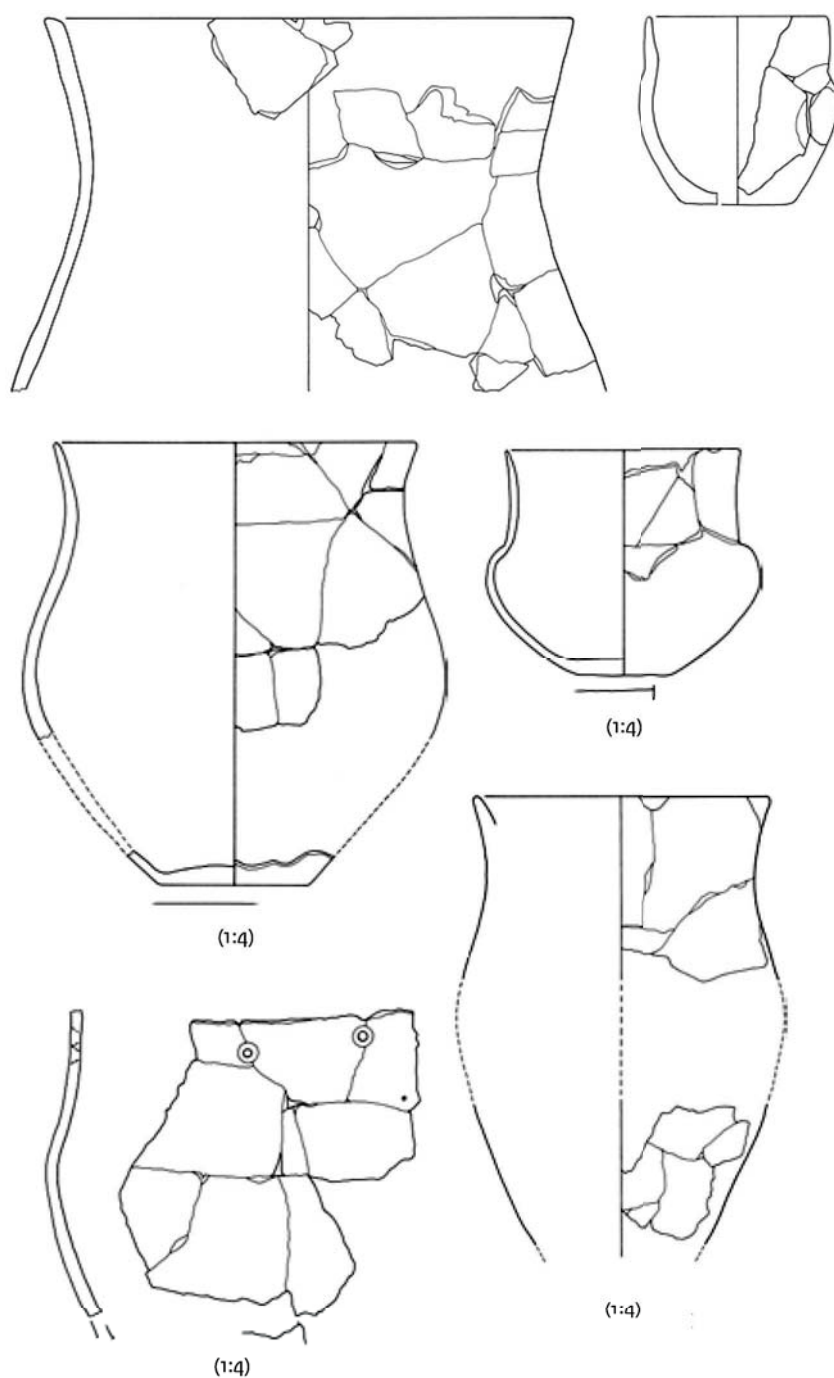


Figure 7.16 Undecorated pottery from Zeewijk, scale 1:3 unless indicated differently (compiled after Beckerman 2014, 64-69).

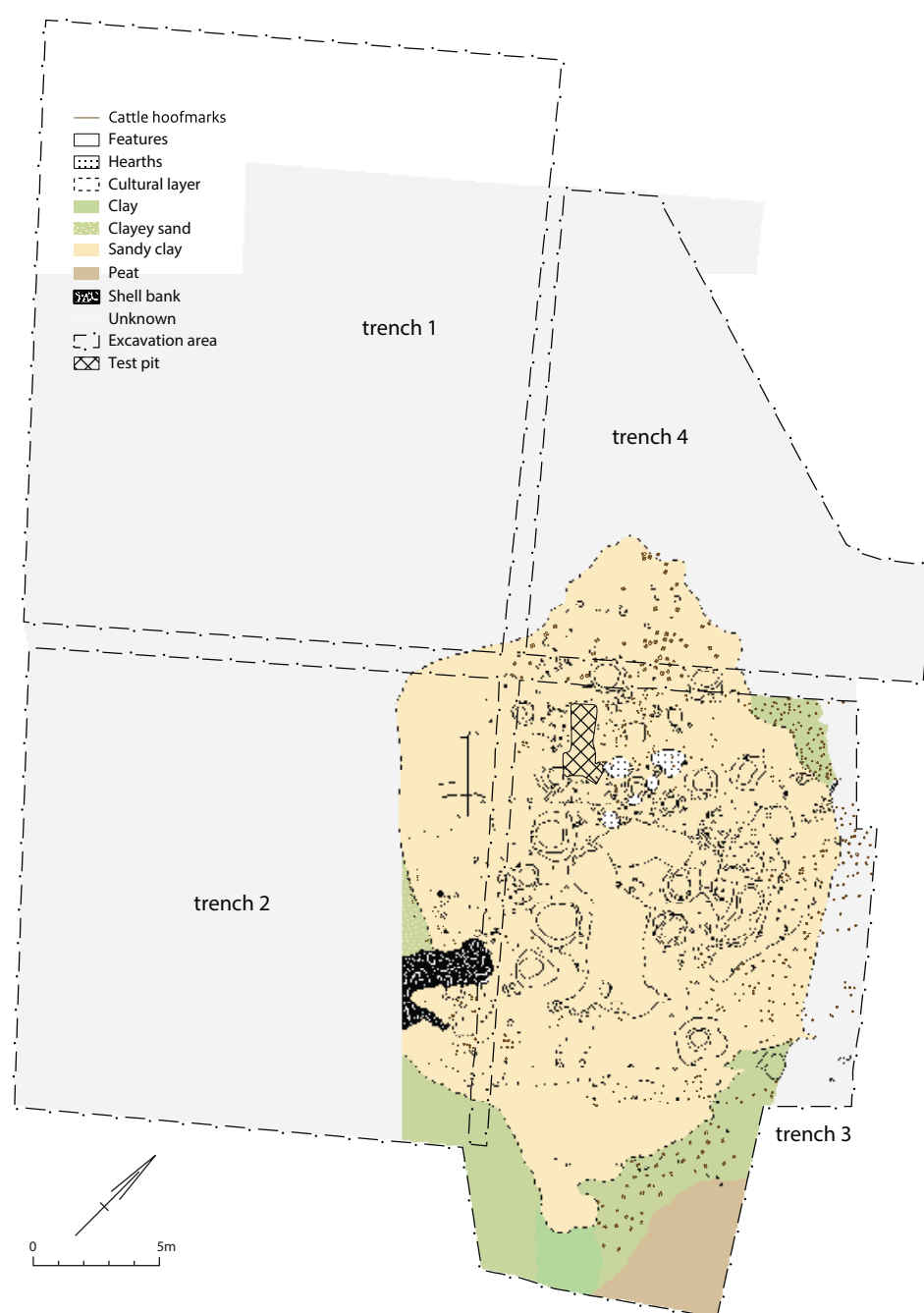


Figure 7.17 Map of the excavation at Keinsmerbrug (after Nobles 2012, 28).

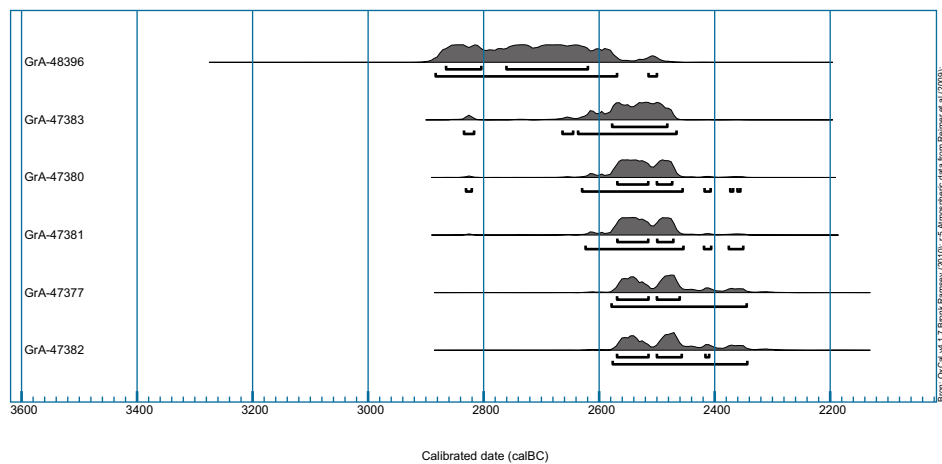
7.4 Keinsmerbrug

7.4.1 Research history

The Keinsmerbrug site was discovered by the AWN (Dutch Amateur Archaeology Association) in 1985. Test pits showed an almost intact occupation layer. Until it was singled out for flower bulb cultivation, the site had been protected by a thick layer of clay and a layer of peat on top of the occupation layer. The highly intrusive bulb cultivation process would destroy the site, warranting further research.²⁷⁹ Therefore, in 1986 it was decided to excavate the site without any further prospective research. The site is located on top of a small shell bank that formed a relatively high point in the landscape (Fig. 7.17).²⁸⁰

7.4.2 Excavation results

The site only measured 15 × 20 m (Fig. 7.17). The excavation consisted of four separate trenches, but most of the Neolithic remains were recovered from trench 3. The small site was most likely used at multiple, separate occasions, because several levels made up the occupation layer.²⁸¹ In and underneath this occupation layer, a total of 776 features was identified, including 80 cow hoof marks and 25 post pits and stake holes (Fig. 7.17). Five concentrations of charcoal were interpreted as hearths.²⁸² The location of the features in relation to the stratigraphy of the site already provides some general indications with regard to the phasing of the site. Pits were consistently found beneath the occupation layer of about 20 cm thick, and were cut into the underlying shell bank. The charcoal concentrations were found in the occupation layer and sometimes cover the afore-mentioned



| laboratory number | date (BP) | location of the sample | plant material sent for AMS |
|-------------------|-----------|------------------------|---|
| GrA-47377 | 3970 ± 40 | square 82 | Triticum dicoccon (emmer) – grain 1x, Atriplex patula/prostrata 5x (all charred) |
| GrA-47380 | 4000 ± 40 | square 127 | Hordeum vulgare var. nudum (naked barley) – grains 3x (all charred) |
| GrA-47381 | 3995 ± 40 | square 178 | Hordeum vulgare var. nudum – grain 1x (charred) |
| GrA-47382 | 3965 ± 40 | square 287 | Hordeum vulgare var. nudum – grain 2x+ 1frg (all charred) |
| GrA-47383 | 4025 ± 40 | square 416 | Hordeum vulgare var. nudum – grain 3x (all charred) |
| GrA-48396 | 4130 ± 60 | feature 1003 | Stellaria media 10x, Polygonum aviculare 1x, Urtica dioica 16x, Chenopodium ficifolium 10x, Apium graveolens 14x, Carex otrubae 2x, Carex riparia 1x, Chenopodium glaucum/rubrum 1x (all waterlogged) |

Figure 7.18 ¹⁴C data collected for the site Keinsmerbrug (after Theunissen *et al.* 2012, 21)

²⁷⁹ Van Heereningen & Theunissen 2001, 296.

²⁸⁰ Smit 2012, 19.

²⁸¹ Nobles 2012, 30.

²⁸² Nobles 2012, 30.

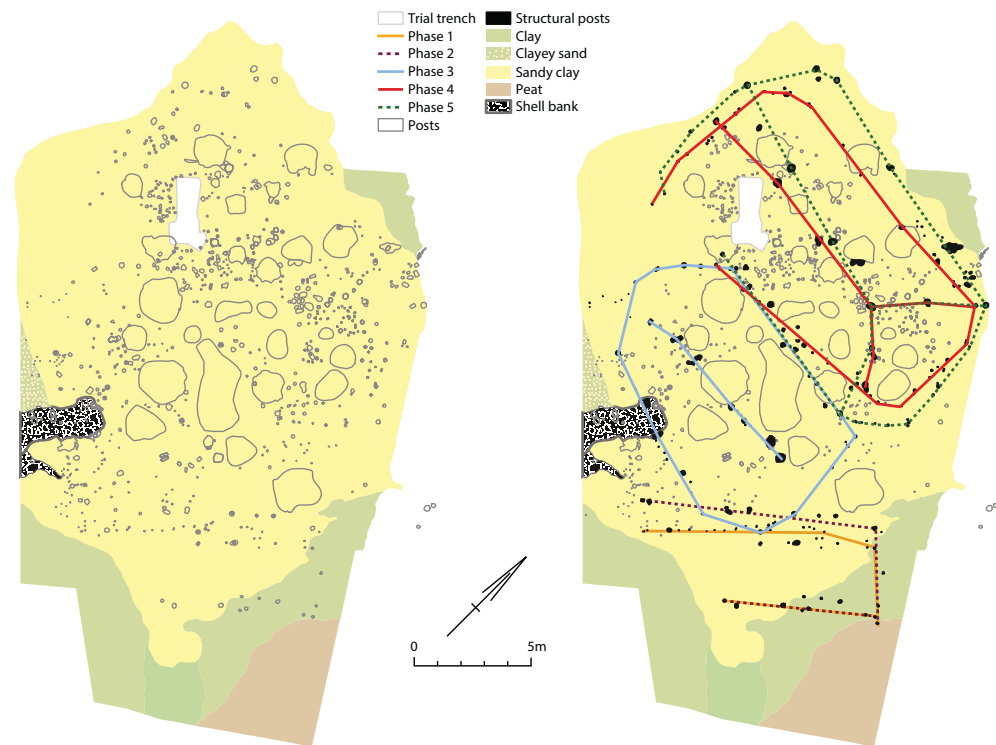


Figure 7.19 The proposed house plans for Keinsmerbrug (from Nobles 2012, 174).

pits. Which indicates that they post-date the use of the pits. Cow hoof marks and postholes overcut all of the features, but the pits.²⁸³ Although a variety of factors (platforms in the calibration curve, inadequate sampling strategy prohibited the investigators from linking these stratigraphic relations to absolute dates, the ¹⁴C dates do give a general idea regarding the period during which the site was used (Fig. 7.18). All the ¹⁴C dated samples fall at the end of the Late Neolithic A and the start of the Late Neolithic B.

Features

In total, no less than five possible house plans were 'recognised' within the small excavated area (Fig. 7.19, 7.20). These house plans were identified on the basis of spatial statistics of find distributions and correlation between artefact groups (Fig. 7.21).²⁸⁴ The exact configurations are unclear, even though many small stakes could indicate the presence of walls. Nobles rightly describes these configurations as 'interpretive outlines' of the possible limits and features' in his captions.²⁸⁵ Furthermore, the interpretation of these configurations is based on the spatial distribution of various find categories. According to Nobles 'all of the presumed structures have

the following attributes: central post line; external post lines (walls) bordering a broadly rectangular space, mostly constructed from stakes but also occasional larger posts. The central and external post lines are fairly parallel or perpendicular to the central post lines. There is more evidence for some structures than for others, however.'²⁸⁶ Nobles thinks these structures can only have been temporary (one year) structures, so they were more like temporary shelters or huts.²⁸⁷

Finds

At Keinsmerbrug only 512 pot-sherds were found, 291 of which were selected for study.²⁸⁸ Beckerman recognises three classes based on temper and wall thickness. Decoration types fall within those described for SGC pottery types 1d, 1e, 1a or 2IIb and ZZ. There is a component of undecorated material in the assemblage as well (Fig. 7.22). Typical SGC pots with short wave-moulding are absent, but there are pots decorated with fingertip impressions, be it not as plastic as the material from, for instance, the site of Steenendam.²⁸⁹ Lithic analysis indicates that raw materials at Keinsmerbrug were procured locally.²⁹⁰ The flint

²⁸³ Nobles 2012, 28-30.

²⁸⁴ However, in our view a discussion is lacking of why artefact should correlate and what kind of culture process is behind to those distributions.

²⁸⁵ Nobles 2012, 176-177.

²⁸⁶ Nobles 2012, 191.

²⁸⁷ Nobles 2012, 208-209. As a comment, we might add that we are not convinced that these configurations really represent structures, especially not Kmb C, Kmb S1 and Kmb S2.

²⁸⁸ Beckerman 2012, 35-55.

²⁸⁹ Cf. Section 7.9.

²⁹⁰ García-Díaz 2012, 57-80.

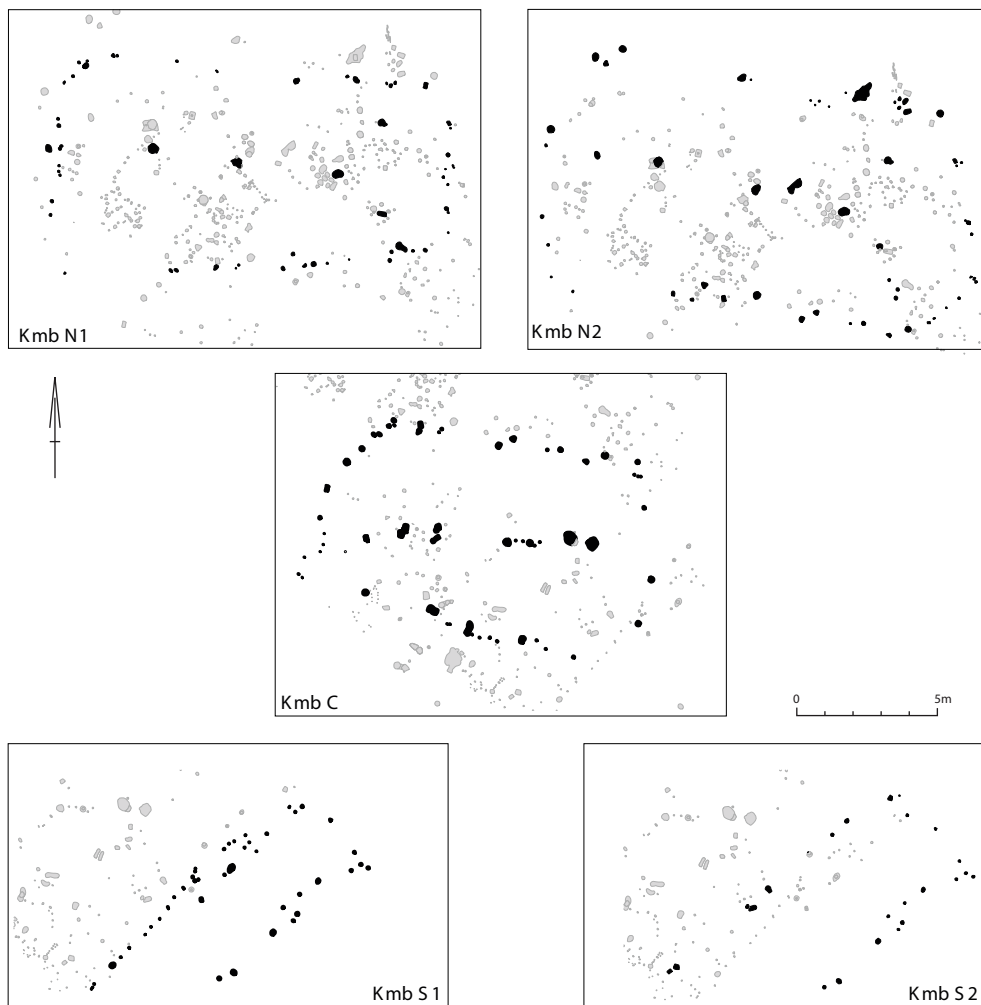


Figure 7.20 House plans of Keinsmerbrug (from Nobles 2012, 204).

tool production that took place at the site was described as opportunistic. The more refined flint working techniques present in the assemblage at Zeewijk and Mienakker do not seem to be present here. Use-wear analysis on a selection of the tools shows that two thirds of the tools was used for processing animal products.²⁹¹ This is consistent with the large amount of scrapers (hide) found at the site. Only four tools showed signs of activities that involved the processing of plants and woodworking.

Despite a lack of arrowheads, the site Keinsmerbrug is classified as a hunting station.²⁹² This is not strange given that the faunal assemblage was dominated by large amounts of duck (more than 26,000 bones; Table 7.1). Cattle also made up a considerable part this spectrum, as did fish.²⁹³ Most of the fish remains are attributed to anadromous fish,

but freshwater and marine species were also present. Weirs and traps are suggested as the most probable fishing methods employed at Keinsmerbrug.²⁹⁴ The predominance of duck remains indicates that the site was most likely used during the summer and possibly also during spring or autumn. Indicators for winter activities are lacking at the site. Lastly, both the faunal and botanical assemblage from Keinsmerbrug contains evidence for a reconstruction of the nature of the local landscape. According to the excavators, the faunal spectrum befits a landscape that was mostly open and under a strong marine influence with some sources of fresh water nearby.²⁹⁵ Botanical evidence supports this interpretation, but also indicates that trees might have grown on higher locations in the landscape somewhat further away.²⁹⁶ Kubiak-

²⁹¹ García-Díaz 2012, 79.

²⁹² García-Díaz 2012, 80.

²⁹³ Zeiler & Brinkhuizen 2012, 131-147.

²⁹⁴ Zeiler & Brinkhuizen 2012, 142.

²⁹⁵ Smit *et al.* 2012, 215.

²⁹⁶ Kubiak-Martens 2012, 88.

Table 7.1 Number (NR) and weight (BW, in gram) of skeletal remains from mammals, birds, fish, molluscs, amphibians and reptiles at Keinsmerbrug (from Zeiler & Brinkhuizen 2012, 132).

| | Material excl. samples | | Samples | | Total | |
|------------|------------------------|---------|---------|----|-------|---------|
| | NR | BW | NR | BW | NR | BW |
| Mammals | 591 | 3758.9 | 44 | - | 635 | 3758.9 |
| Birds | 26363 | 5465.7 | 1033 | - | 27396 | 5465.7 |
| Fish | 2478 | unknown | 447 | - | 2925 | unknown |
| Molluscs | 699 | 84.4 | - | - | 699 | 84.4 |
| Amphibians | 25 | 0.8 | - | - | 25 | 0.8 |
| Reptiles | 3 | 0.4 | - | - | 3 | 0.4 |
| Total | 30159 | 9310.2 | 1524 | - | 31683 | 9310.2 |

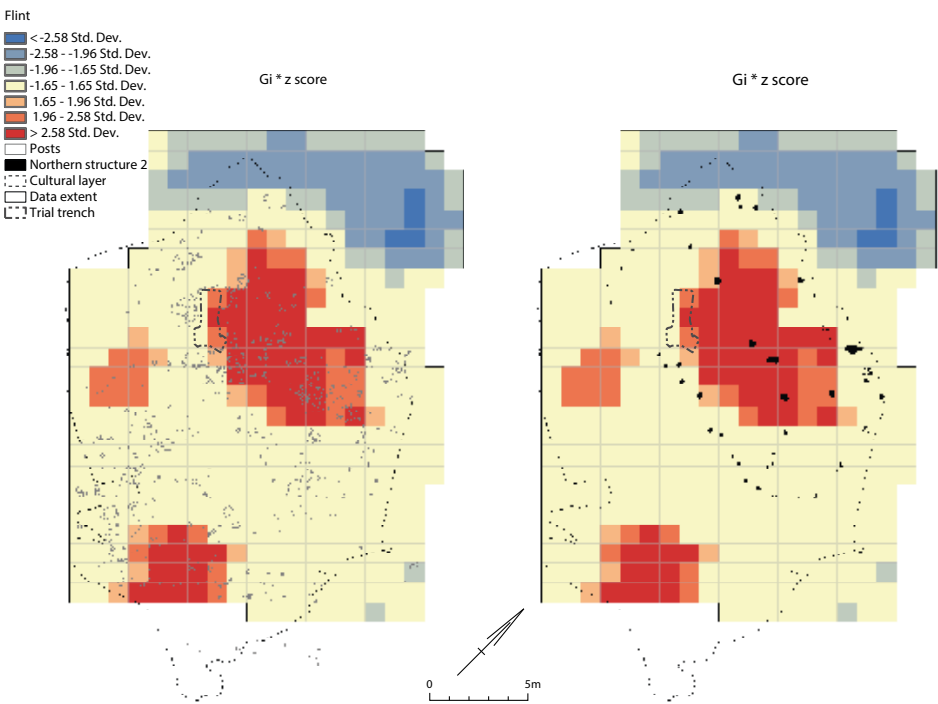


Figure 7.21 The identification of the Structure 2 from the flint cluster analysis and features.(from Nobles 2012, 173.

Martens discusses this woodland in detail, but her analysis is to a large extent based on the data from wells and settlement related samples and on an interpretation of the environment as salt to brackish.²⁹⁷ It has been demonstrated that samples from settlements and especially wells per definition show open landscapes because settlements indeed *were* open, but are bad indicators for the environment.²⁹⁸ The abundance of willow should be taken as an indication for fresh water nearby, rather than

suggesting the presence of drift wood.²⁹⁹ Staples such as naked barley and emmer were present at the site, but were-according to the analyst-not cultivated at the site or in the vicinity, because chaff was absent.³⁰⁰ The botanical data is thus used to support an interpretation of seasonal rather than permanent habitation.³⁰¹

²⁹⁷ According to Van Zijverden (2016) that situation was different; cf. Section 7. 31.
²⁹⁸ Van Amerongen 2016.
²⁹⁹ Kubiak-Martens 2012, 87.
³⁰⁰ Kubiak-Martens 2012, 89. Cf. Section 9.4.4 for comments on this kind of conclusion.
³⁰¹ Cf. comment below.

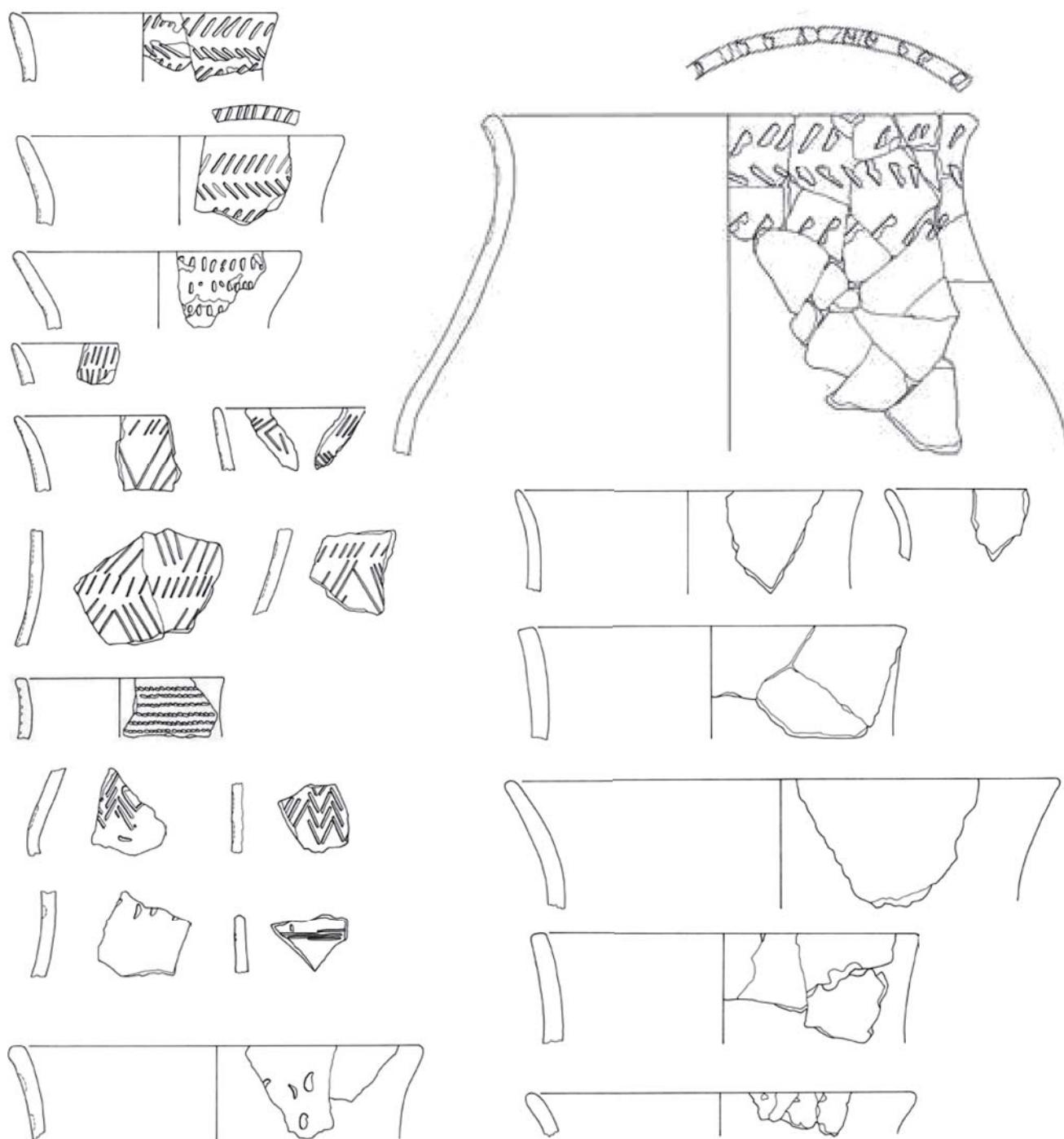


Figure 7.22 A selection of the pottery found at Keinsmerbrug, scale 1:3 (compiled after Beckerman 2012, 43-47).

7.4.3 Comments

Keinsmerbrug is interpreted as a small extraction camp that was used during multiple visits. All specialist analyses tend to confirm that interpretation, but simultaneously it appears to be based on a circular argument. The setting in the landscape is thought to have been on a salt or brackish marsh, which would have been inundated on a regular basis.³⁰² Therefore, the environment of the site would not be suitable for agriculture and as such arable farming cannot have been practiced at the site. Although that is not stated, this conclusion probably was to a large extent based on an estimation of the unsuitability of the environment, not only on the data proper.

In our view, the site could easily have been located near the brackish to fresh water sources, near uprisings of forest and with arable fields not far away. It is possible that the site is indeed a 'gathering settlement',³⁰³ even though arable products and live-stock were present, but it is equally likely that the site was not far away from a proper settlement and only a special activity area, for instance for catching ducks. Interestingly, the pots and especially the fine ware, were clearly used for cooking. They contained a porridge made of emmer, orache and water mixed with some fat from either animal or fish.³⁰⁴ This 'porridge' was found on several vessels of different form and make, which prompts the excavators to conclude that the users of the site may have had different origins in terms of kin relations or settlements of birth. Equally interesting are the details of the pottery analysis, especially of the temper, quality of the vessel, technical aspects of the production and decoration. These attributes show how much variation there is between sites, for instance between Mienakker and Keinsmerbrug.³⁰⁵ To cite Beckerman: 'The biggest differences between the two sites are observed in the characteristic tempering agents used. At Keinsmerbrug as many as seven materials, plus sand, were used in fourteen different combinations.³⁰⁶ At Mienakker five materials, plus sand, were used in eight combinations, yet a large majority of the ceramics (92%) are tempered with grog and sand. Differences exist not only in the tempering methods, but also in the type of ware the

different tempering materials were used for. At Keinsmerbrug plant material was exclusively used to temper thin-walled vessels, whereas at Mienakker this material was exclusively used to make thick-walled vessels.'³⁰⁷ These observations demonstrate how local these preferences are, and of how little use they are as generalising statements about typochronology.

7.5 Zwaagdijk-Noorderboekert

7.5.1 Research history

The site Zwaagdijk-Noorderboekert was one of many sites that was discovered prior to the construction of the West Frisia road.³⁰⁸ Zwaagdijk-Noorderboekert was already known for some decennia as a Late Neolithic site through a small scale excavation of W. de Vries-Metz in 1984.³⁰⁹ In 2000, an auguring campaign initiated by the Cultural Heritage Agency made clear that the site was situated on the levee of a narrow creek gully. Two habitation horizons were recognised which merged into one on the higher parts of the levee (Fig. 7.23).³¹⁰ It was clear that arable land was present because W. de Vries-Metz had already documented small areas of such plots in 1984. Furthermore, these excavations demonstrated that this arable land contained Late Neolithic (Bell beaker) and Early Bronze Age sherds, but also sub-fossil bone material.³¹¹

7.5.2 Excavation results

Since this is one of the few sites of which there was a clear idea of what it would yield in terms of data, one might expect that the research questions were focussed on the right issues. Therefore, we give an impression of the research questions that were formulated for Zwaagdijk-Noorderboekert. The following themes for knowledge gain were formulated, which we have cited almost literally:³¹²

-- Location 21 is the easternmost location in West Frisia with remains from the late Neolithic. A first comparison with the western sites, shows that the latter sites are quite different especially

³⁰² Smit *et al.* 2012, 215.

³⁰³ Smit *et al.* 2012, 221.

³⁰⁴ Smit *et al.* 2012, 221.

³⁰⁵ Beckerman 2013, 55.

³⁰⁶ Beckerman 2013, 85.

³⁰⁷ Beckerman 2013, 55.

³⁰⁸ For the location of the palaeogeographical map cf. Fig. 7.207.

³⁰⁹ Van Heeringen & Theunissen 2001, 246-247.

³¹⁰ Van Heeringen & Theunissen 2001, 248.

³¹¹ De Vries-Metz 1985.

³¹² Knippenberg 2014, 5, 6 citing the Written Scheme of investigation that was composed by the regional archaeologists C. Soonius (2013).



Figure 7.23 Section at location 21 showing two prehistoric soils divided by a thin 'cleaner' layer. The top layer dates to the Early Bronze Age, the Lowermost layer to the Late Neolithic. The Bronze Age palaeosol has developed in a sediment that was formed after and on top of the Neolithic soil (from Knippenberg 2014, 14).

with respect to food procurement. This might mean a different use of the landscape or a different subsistence base in the eastern part of West Frisia.

-- For the Late Neolithic and the Early Bronze Age there is still much discussion about the exact interpretation of sites: are they permanent or semi-permanent settlements or special activity sites. Research of Zwaagdijk-Noorderboekert can provide a significant contribution to that debate. It is important to know whether the plough marks are associated with a settlement. The pottery in the arable land seems to indicate that a settlement was nearby. Apart from that, this research might also add to the understanding of the size of arable plots.

-- Research into arable land of the Late Neolithic is very scarce. Therefore, more research is important.

These are indeed themes that could be targeted at Noorderboekert. A point of critique is that these opportunities were not translated into optimal research questions and sampling methods.

Especially with respect to the arable land, questions concerning plough marks and its

potential to answer questions about arable farming were minimal. In that respect, the potential of the site was not fully exploited. During excavation, a partly adapted sieving strategy was developed after discussion with the NWO Farmers of the Coast research team of Leiden University. In the written scheme of investigation, sieving was seen as an option, not as an obligation, so there was initially no sieving programme. After a consultation with the Farmers of the Coast team eleven squares of 2 x 2 m were sieved to collect material. These squares yielded many small potsherds and bone fragments from the Late Neolithic and the Early Bronze Age, including BBC and BWBC pottery. Therefore, the evaluation report concludes that the arable land should be the focus of the post-excavation analyses:³¹³

'In relation to arable farming on the excavated area, we want to know what has been grown, and how fertilisation played a role. Especially this last aspect has hardly been studied for the Late Neolithic. Can the small number and heavily fragmented artefacts be interpreted as the result of the use of household waste as fertiliser? To what extent have other means of fertilisation,

³¹³ Knippenberg 2014, 24. An evaluation report is an obligatory report that is written after the fieldwork campaigns have ended. It discusses the potential of the collected data and samples for answering the original research questions, and aims to direct and structure post-excavation analysis by all experts and specialist involved.



Figure 7.24 Arable land at location 21 (from Knippenberg 2014, 20).

Table 7.2 Overview of fragmented finds recovered from both features and layers at Zwaagdijk-Noorderboekert (compiled after Knippenberg 2014, table 6).

| Category | In features | | In layers | |
|---------------------|-------------|----------------|-------------|---------------|
| | number | gram | number | gram |
| Bronze Age pottery | 66 | 372.40 | 21 | 136.5 |
| Neolithic pottery | 4 | 9.10 | 95 | 300.5 |
| Prehistoric pottery | 79 | 117.30 | 204 | 439.5 |
| Flint | 15 | 28.80 | 86 | 226.1 |
| Stone | 8 | 47.10 | 43 | 970.3 |
| Fish bone | 1 | 0.30 | 11 | 2.5 |
| Animal bone | 55 | 228.50 | 653 | 2019.7 |
| Undetermined bone | 28 | 1140.80 | - | - |
| Antler | - | - | 1 | 478.1 |
| Totals | 256 | 1944.30 | 1114 | 4573.2 |

like organic mud from surrounding wet areas, been applied?’

Had this question been formulated before research, every square meter could have been sampled with a soil sample for analysis of the contents. Both the distribution of material and content might have provided a better indication than the procedure that had been followed. However, we have to await the results of the post-excavation analysis.

At one of the sites, site 21, an area of about 100 x 40 m was excavated (Fig. 7.24, 7.25). The excavation report was not yet finished at the time of writing this work, but we had access to the evaluation report and some of the site plans. From these documents, it is clear that an extensive plot of arable land was excavated

which covered the entire excavation area (Fig. 7.46). The limits of the ploughed land were not reached in the trenches, so we can safely assume that they connect to the area already documented by W. de Vries-Metz. This implies the arable land at this site was probably over a hectare in size. This is probably something no-one had thought probable, even though that arable lands at Bornwird³¹⁴ and Oostwoud³¹⁵ must have had considerable dimensions as well. Whether or not the arable land was fertilised with household waste is still an open question. This problem will not be solved by using the evidence from Zwaagdijk-Noorderboekert alone. C. Bakels is currently investigating this topic. Her first results are based on a comparison of nitrogen contents of prehistoric grain compared

³¹⁴ Fokkens 1982.

³¹⁵ Van Giffen 1962,; Lanting & Van der Plicht 2002.



Figure 7.25 Plan of all features at location 21 (after Knippenberg 2014, fig. 18).

to grain grown in non-fertilised laboratory conditions. The results demonstrate that fertilisation was certainly applied to the fields, but we do not yet know how and what kind of fertiliser was used.³¹⁶ The preliminary table of finds shows that quite a lot of fragmented material was present in the sieved samples, which might be related to fertilisation practices (Table 7.2).

7.6 Emmeloord Rijksweg A6-I97

The site Emmeloord Rijksweg A6-I97, or 'I97' for short, was situated on a crevasse splay deposit branching off from the river Vecht, and in the adjacent crevasse gully (Fig. 7.26). The crevasse gully connected the Vecht to the backswamps in the area, meaning the site was located on a ridge between the riverine and backswamp landscapes. Radiocarbon dates indicate that the active phase of the gully is dated between c. 3600 BC and 1760 BC.³¹⁷ During the prospective research, five test trenches were dug with a total length of 400 m.³¹⁸ These test trenches were intended to investigate both the crevasse levees and the adjacent gully. The test trenches unearthed traces of habitation on top of the levee, which included features and intact wooden posts. However, these findings paled in comparison to the spectacular finds

in the fossil stream gully. At these locations a series of excellently preserved fish weirs and fish traps were excavated. The ¹⁴C dating of several samples from the fish weirs placed these structures in the Late Neolithic and the Early Bronze Age.³¹⁹ Besides the fish weirs and fykes, it was thought that an intact occupation deposit might be present on a higher level.

7.6.1 Research history

The site at Emmeloord had been known for some time preceding the excavations in 2000. The first finds were discovered in 1950 during the digging of a ditch between two allotments, of which allotment I97 was one. These finds included Barbed Wire Culture Pottery,³²⁰ which was not actually recognised and described as such until after 1955, when Modderman first published BWBC pottery from Deventer-Margijnen Enk.³²¹ The Emmeloord finds led to an interest by the Amsterdam Archaeological Institute.³²² Members of the IPP studied the site and surrounding areas with auguring and 1 × 1 m test pits from 1984 to 1988, but the results remained unpublished.³²³ The site was targeted for more extensive research when the construction of a business park next to the A6 motorway was planned. A prospective phase of this research was conducted in 1999, which was followed by a full scale excavation in 2000 and 2001 (Fig. 7.27).

7.6.2 Excavation results

Although a good general idea was present regarding the situation of the site before the excavation started, local taphonomical, post-depositional and geomorphological processes were not fully understood. It turned out that the top of the crevasse levee had been eroded, and that the supposed in-situ occupation deposit in the residual gully had washed down from the natural levee. This erosion process would have also caused the smaller features to have disappeared. The natural levee was to be 'deselected' for further research due to these discoveries.³²⁴ However, the residual crevasse gully

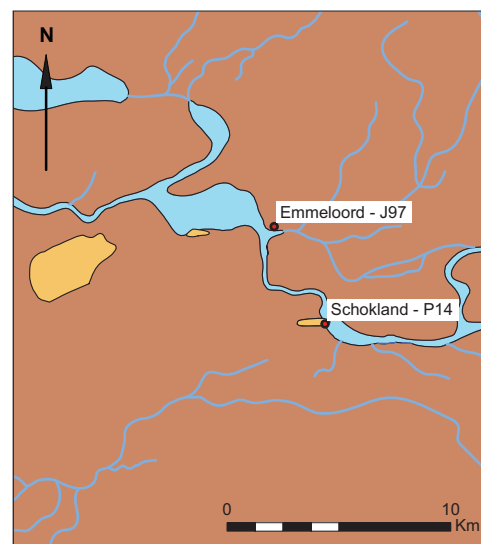


Figure 7.26 Palaeogeographic situation at Emmeloord c. 1900-1700 cal BC (after Van Zijverden 2002, 20).

³¹⁶ Bakels 2016.

³¹⁷ Van Zijverden 2017.

³¹⁸ Van der Heijden 2000, 8.

³¹⁹ Van der Heijden 2000, 13-16.

³²⁰ Bulten, Van der Heijden & Hamburg 2002, 10.

³²¹ Modderman 1955.

³²² At the time called *Albert Egges van Giffen Instituut voor Prae- en Protohistorie*, IPP for short.

³²³ Bulten, Van der Heijden & Hamburg 2002, 10.

³²⁴ Van Zijverden 2002, 30.

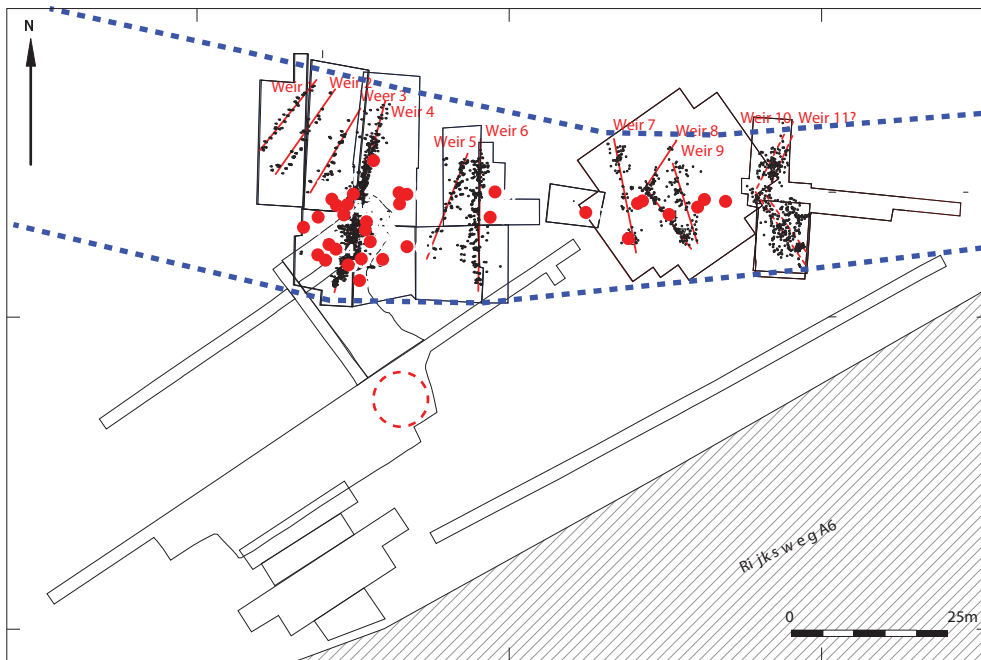


Figure 7.27 The excavation plans of the various phases of research at Emmeloord-J97. The blue dotted lines indicate the crevasse gully; the red dots indicate the locations of fykes. The dotted circle to the south of the crevasse gully contained the features discovered during the prospective phase of research (compiled after Bulten, Van der Heijden & Hamburg 2002, 10, 34, 49).

unexpectedly yielded astonishing finds. A total of 11 fish weirs and 44 fykes were discovered (Fig. 7.27). Several types of weirs were found. These include weirs with wattle work between the posts and weirs without wattle work. The weirs were predominantly placed in straight lines perpendicular to the gully, although at least one weir was placed in a V shape to funnel fish into the nets.³²⁵ The fish weirs date from the Middle Neolithic B to the end of the Early Bronze Age (Fig. 7.28). Weirs with a Late Neolithic A date were lacking. All but one of the five or six Neolithic weirs was equipped with wattle work between the posts, whilst only one Early Bronze Age weir was found to include a wattle work segment. However, the lack of wattle work in the Early Bronze Age and most of the Middle Bronze age weirs could be to the result of taphonomical processes rather than a constructional trait.³²⁶ Fykes were placed throughout the excavated segment of the site, but with a clear clustering around the southern end of weir 4. The fykes only date to the Middle Neolithic B and the Late Neolithic B (Fig. 7.28; Fig. 7.29). The season in which the weirs and fykes were made could be determined through analysis of

the wood. Most of the posts used for placing the weirs were cut down during autumn or winter, and some during spring.³²⁷ This would most likely place the production of the weirs during winter, possibly with some repairs being performed during spring. Establishing the moment of production for the fykes was more difficult, as a longer period between harvesting the material for production and finalizing the product can be expected. However, ethnographical examples also place the production of weirs in the winter periods.³²⁸ The find complex associated with the natural levee is thought to have washed down into the residual gully, which implies that the excavated find assemblage was no longer in situ. The assemblage can broadly be dated from the Middle Neolithic B to the Middle Bronze Age A. From the Late Neolithic, only a small pottery assemblage was excavated that included Bell Beakers and pot beakers.³²⁹ A total of 17 beaker sherds and 19 pot beaker sherds were present. Interestingly, cooking remains of two of the pot beaker fragments were ¹⁴C dated and yielded results of 4260 ± 50 BP and 4360 ± 50 BP,³³⁰ which implies that these sherds would be far

³²⁵ Van der Heijden & Hamburg 2002 37.

³²⁶ Van Rijn, 2002.

³²⁷ Van Rijn 2002, 75.

³²⁸ Van Rijn 2002, 75.

³²⁹ Bloo 2002, 78-89; Cf. fig. 7.12.5.

³³⁰ GrA 18835: 4260 ± 50: 3014-2848 (0.67,2%), 2813-2679 (0.32.8%) calibrated at 2 sigma; GrA 18839: 4360 ± 50: 3264-3242 (0.01,8%), 3104-2887 (0.98,2%) calibrated at 2 sigma.

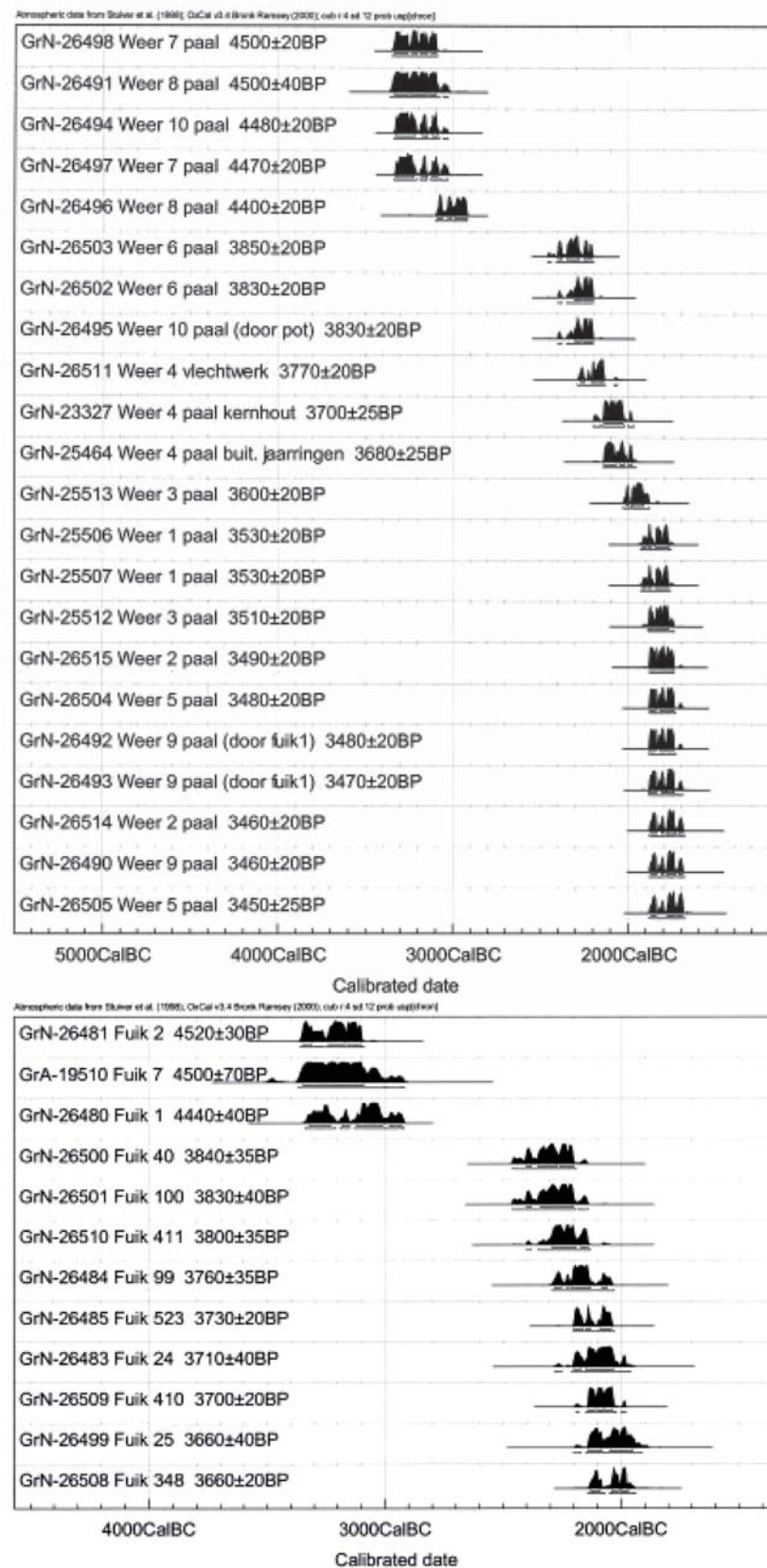


Figure 7.28 Selection of dates of weirs and fykes; weer = weir, paal = post, fuik = post (after Bulten 2002, 120, 121).



Figure 7.29 Selection of the fykes (after Van Rijn 2002, 68).

too old for a Late Neolithic B date. This could be due to the reservoir effect, or to a chalk component in the clay. The BBC sherds contain the multiple zig-zag patterns and large crosses that can be associated with late BBC material (Fig. 7.30).³³¹ The lack of Late Neolithic A weirs and fykes seems to coincide with an absence of pottery dating to this period. This is also

the case at Schokland P-14.³³² Early Bronze Age material is available in greater numbers: 79 sherds are decorated with barbed wire stamps. Food residues on one of the sherds were dated to 2023-1750 cal BC.³³³ This fits well in the expected range of the site. Six sherds were assigned to the Middle Bronze Age A Hilversum tradition. This pottery had a broken

³³¹ Cf. Ten Anscher 2012, 198.

³³² Cf. Section 7.7.

³³³ GrA-18833: 3550 ± 50 BP: 2023- 1750 cal BC (100%) calibrated at 2 sigma.



Figure 7.30 A selection of the Late Neolithic to Middle Bronze Age pottery from Emmeloord-J97, scale 1:3 (after Bloo 2002, 78-87).

quartz tempering and was decorated using nail impressions, fingertip impressions and cord impressions. This pottery was not found in the residual gully, but on the flanks of the natural levee, and dates slightly younger than the suspected closing of the gully around c. 1700 BC.³³⁴

Flint was found in greater numbers than ceramics. In total, 6900 pieces were collected.³³⁵ Most of the material is classified as debitage

(74%), the rest being waste (23%) and tools (3%).³³⁶ Given that this material, just like the pottery, washed down in the gully from the levee, we are dealing with a palimpsest. Nevertheless, the material was analysed as if it was a coherent complex. Some of the typologically specific material could be placed in a particular period. The nine projectile points, for instance, were all dated to the end of the Late Neolithic and the start of the Early Bronze

³³⁴ Bloo 2002, 78-86.

³³⁵ Verneau 2002, 88-95.

³³⁶ Devriendt 2013, 261.



Figure 7.31 Bone fishhooks uncovered at Emmeloord J97, scales as indicated (compiled after Bulten 2002, 105).

Age. A Helgoland flint Scandinavian dagger was dated to the same period.

Besides pottery and lithics, the site yielded a substantial amount of archaeo-zoological material.³³⁷ The fish are associated in a general sense to fresh water environments; remains were mostly made up from catfish (*Sularis glanis*), northern pike (*Esox lucius*) and common bream (*Abramis brama*). However, it is impossible to link these remains to specific periods.

The find and feature assemblages described above highlight the occurrence of fishing, however the presence of bird and mammal remains indicate that this was not the only activity at the site.³³⁸ Bones from the settlement on the natural levee that had slumped down into the residual gully included the remains of cattle, pig or wild boar, red deer, sheep or goat, beaver, otter, auroch, polecat, fox, and dog. Eight bird bones were also found, which included osprey,

cormorant, wild duck and tufted duck. Thus, it seems likely that fishing was supplemented with hunting, fowling and that domesticated animals were present at the site. But again, it is impossible to determine to which period these remains have to be attributed.

Another interesting find category discussed by the excavators is about worked bone objects (Fig. 7.31). These were found in rather large quantities, and were well preserved.³³⁹ The finds discussed include awls, needles, a button or bead, fishhooks, chisels, a bone dagger, a pendant and a spatula. Of these tool categories, awls occurred most frequently. The fishhooks indicate that not only passive fishing using weirs and fykes took place. The larger fish hooks were probably used for sea fish.³⁴⁰ Again, none of these finds could be attributed to period.

³³⁷ Kerkhoven & Bulten 2002, 32-33; Kerklaan 2012.

³³⁸ Kerkhoven & Bulten 2002, 32-33.

³³⁹ Bulten 2002, 103-107.

³⁴⁰ Bulten 2002, 105.

7.6.3 Comments

The site Emmeloord J97 is very important because it gives insight in other activities than the ones that are represented on settlement sites. It demonstrates that the occupants of the site have chosen a place that was particularly well suited for placing fish weirs and fykes: a crevasse gully next to a levee and splays where habitation. Year-round occupation of this site would not have been a problem, as arable land could have been located nearby, just like in many other low-lying places. But apparently fishing was just as much part of their subsistence strategy as farming. The fact that the site was in use (intermittently) over a thousand years also demonstrates the stability of this kind of subsistence pattern. Just like at Schokland-P14, people have chosen the same spot over and over again for practicing similar activities.

7.7 Schokland-P14

One of the key sites that was excavated before 2001, but published only after that date is the

site known as Schokland-P14. The site is located on the former Zuiderzee island Schokland, which became land-locked after the creation of the Noordoost polder in 1936-1942 (Fig. 7.32). The former island of Schokland is a boulder clay ridge formed in the Saalien ice age with a deposit of cover-sand on top. The site is located on a cover-sand ridge bordering a fossil stream gully of the river Vecht. Up to c. 2100 cal BC the Vecht river was connected to the Bergen inlet.³⁴¹ This geographical context was suitable for what started as repeated short-term habitation during the Swifterbant period and eventually developed in long-term habitation during the Late Neolithic to Early Bronze Age.³⁴²

7.7.1 Research history

The investigation of this site started in 1957, with the excavation of a plot of arable land probably dating to the Early Bronze Age. Following this relatively small project, excavations took place between 1982 and 1991, mostly in the form of rescue excavations preceding the levelling of the cover-sand ridge on which the prehistoric arable field was located. A short summary cannot do

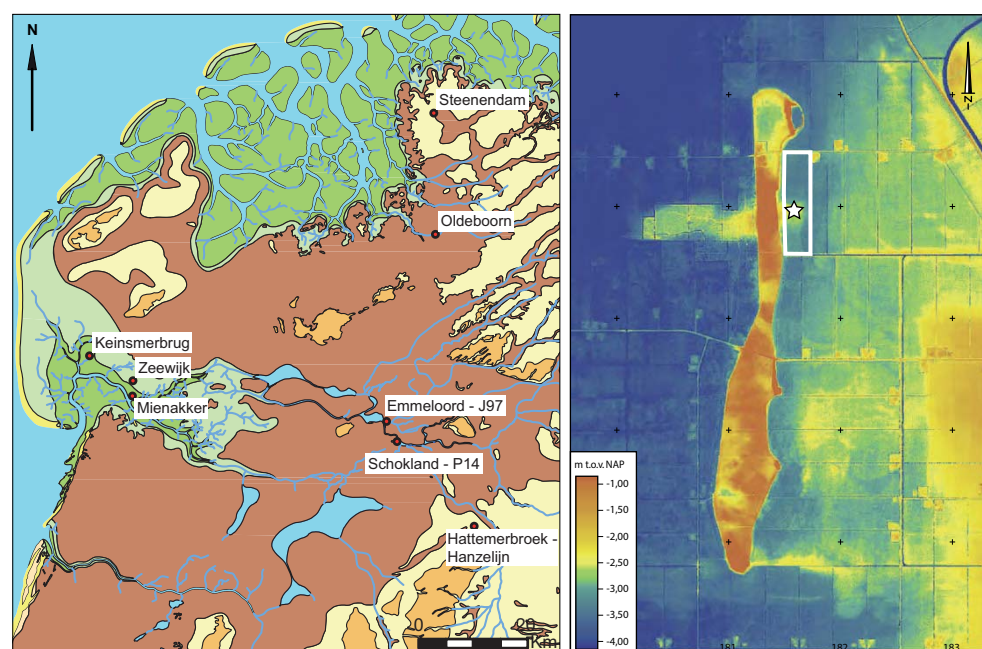


Figure 7.32 The location of Schokland-P14 on the palaeogeographic map. Left: contemporary Late Neolithic B sites placed on the map of 2750 cal BC (based on Vos & Vries 2013); right: LIDAR map of the Netherlands (AHN) with the position of the excavations on the former island of Schokland (from Ten Anscher 2012, 20).

³⁴¹ Van Zijverden 2016.

³⁴² Ten Anscher 2012, 21-22.

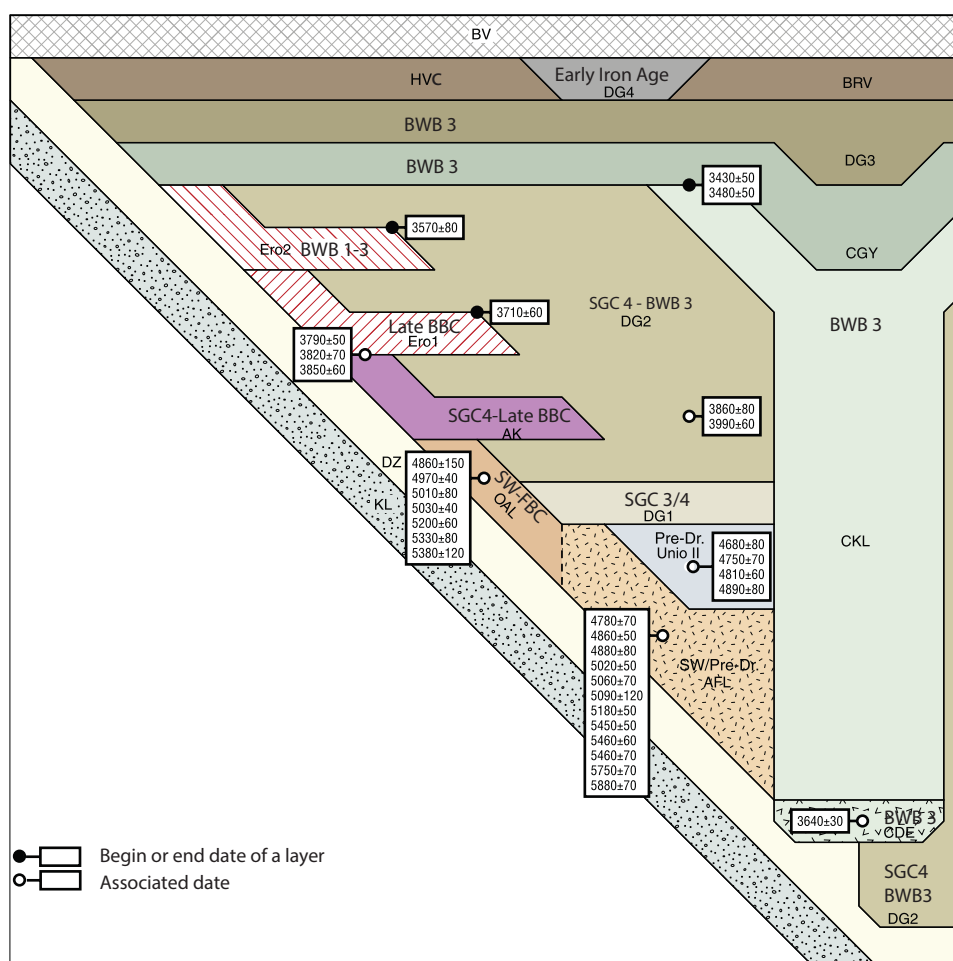


Figure 7.33 Schematic profile with different layers and their genesis (compiled after Ten Anscher 2012, 306-307; the different colours represent stratigraphic units explained in Ten Anscher 2012, 281-310).

justice to the richness of the work performed by Ten Anscher, who presented the post-excavation analyses in the form of a PhD-thesis. The work invested in understanding and contextualising the site is impressive, resulting in a 700 page report. The present site summary focusses on the features and also on the larger ecological and geographical context of the Late Neolithic to Early Bronze Age remains from the sites.

7.7.2 Excavation results

Over the years, a total area of 5276 m² was excavated at Schokland-P14. The long period during which these excavations took place meant that a variety of excavation methods was used³⁴³ and that the preservation of the

site changed as time went on.³⁴⁴ The drainage of soils in the area, the normal agricultural use of the plot, and the eventual levelling of the cover-sand ridge on which the site was located meant that preservation conditions worsened rapidly and that speedy investigation was of the utmost importance. Fortunately, the successful nomination of the entire island of Schokland for the UNESCO world-heritage list meant that the remainder of the site was protected from further intrusions.

The location of the site on a cover-sand ridge next to a river resulted in a complex stratigraphic sequence. On the flanks of the ridge, we find occupation layers, an arable layer, erosion layers formed under the influence of floods and layers including eroded gyttja (Fig. 7.33). Finds dating to the Late Neolithic can mostly be found in two of the detritus-gyttja layers, the

³⁴³ Ten Anscher 2012, 25-30.

³⁴⁴ Ten Anscher 2012, 24.

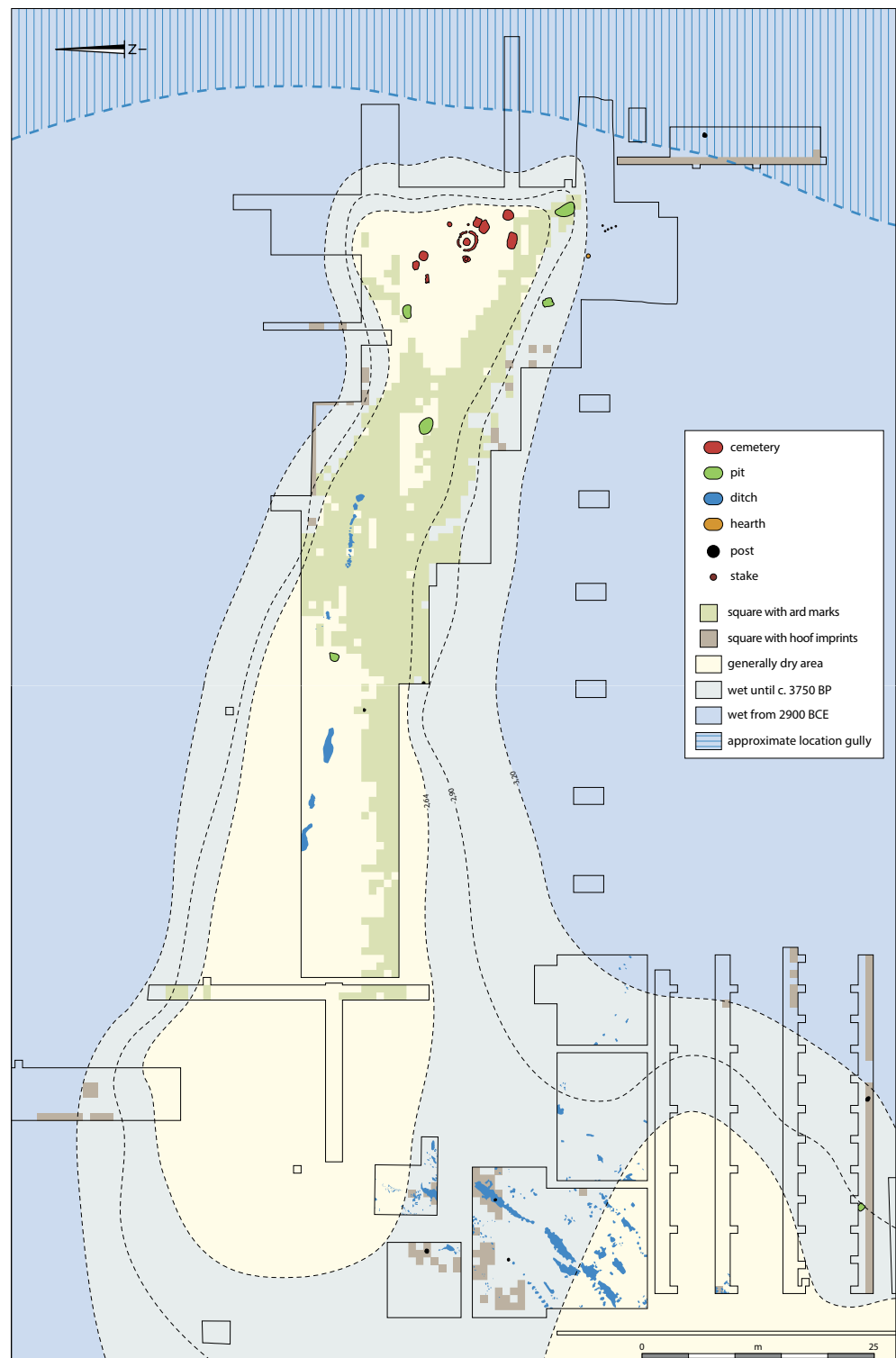


Figure 7.34 Location of features from the Late Neolithic A (SGC) and Late Neolithic B (BBC) on the palaeogeography of 3750 PB = c. 2300-2100 cal BC (compiled after Ten Anscher 2012, 440-441).

arable layer and one of the flood erosion layers. Early to Middle Bronze Age material is found in layers that have been influenced more heavily by displacement, in flood erosion layers, gyttja and peat layers (Fig. 7.33).³⁴⁵ The occurrence of these many eroded layers and flood layers is a mixed blessing: it means that the spread of pottery is not always representative of *where* activities took place, but at the same time this layering separates the materials from previous and subsequent activities. Consequently, the features can be dated with relative accuracy.

Settlement features and graves

Prior to the Late Neolithic, the site had already been visited extensively by Swifterbant and Funnel Beaker groups. The excavated area is argued to envelop the core of a late Swifterbant to early Funnel Beaker settlement site, whilst SGC habitation and later occupation mostly took place slightly to the west, outside of the excavated terrain (Fig. 7.34). Continuous habitation from the Swifterbant down to

the SGC period is difficult to substantiate, as features indicating later TRB habitation are nearly absent. There is one grave which was tentatively dated to the TRB period (grave 9), both on account of a ¹⁴C date and on account of TRB pottery in the vicinity of this grave. Other features and pottery are lacking.³⁴⁶

The first clear signs of a stable settlement at Schokland-P14 occur in the period from 2650 to 2470 cal BC. Following Drenth and Lanting, Ten Anscher places this occupation phase in phase 4 of the SGC.³⁴⁷ The features from this occupation phase include two graves and an arable field that remained in use into the end of the Late Neolithic B (Fig. 7.34).³⁴⁸ The Late Neolithic graves are situated at the same location as a cemetery of Middle Neolithic Swifterbant graves. Ten Anscher argues that this is a coincidence, since it is unlikely that the Swifterbant graves would have still visible a 1,000 years after the last Swifterbant interment. Rather, he argues, the location for the cemetery was elected because it is located on what would have been

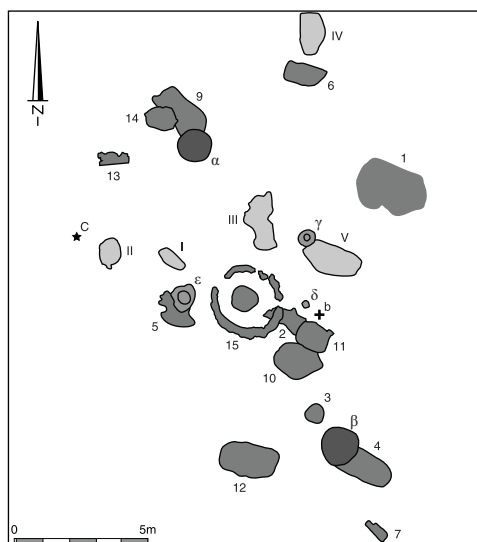
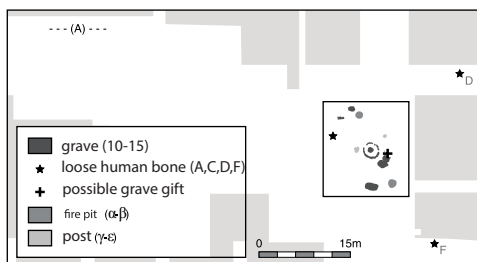


Figure 7.35 Location of the Swifterbant (1-8), Funnel Beaker (grave 9), Late Neolithic (10-15) graves in the cemetery; top right: graves 13, 14 and fire pit α, right below: grave 10, 11, 15 (compiled after Ten Anscher 2012, 314, 362).

³⁴⁵ Ten Anscher 2012, 289-309.

³⁴⁶ Ten Anscher 2012, 433.

³⁴⁷ Drenth & Lanting 1991.

³⁴⁸ Ten Anscher 2012, 439-454.

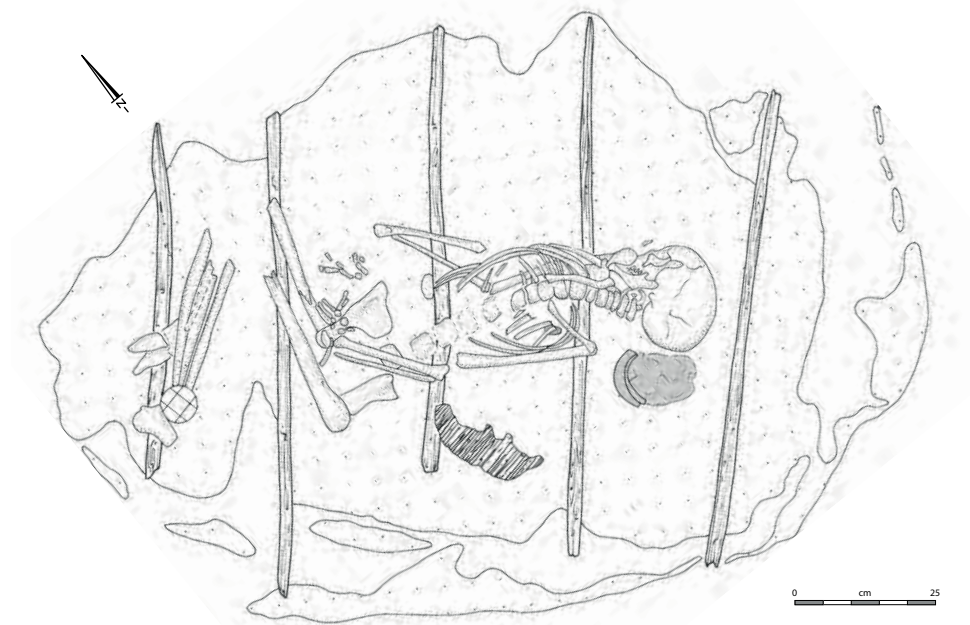


Figure 7.36 Grave 10 (compiled after Ten Anscher 2012, 331, 332).

a logical entrance to the cover-sand ridge when approaching from the river.³⁴⁹

As a comment to this interpretation, we are inclined to argue that the Corded Ware burials were consciously located on the site of the Swifterbant cemetery. Given the fact that a Funnel Beaker interment was also placed at this location, one can argue that the spot was somehow visible as or 'remembered' as burial place, even if the roots were a 1,000 years old. By remembered, we imply that narratives may have

indicated this area as a special spot and not that people specifically remembered the cemetery. Moreover, a few hundred years may have passed between the Late Neolithic A burials and the subsequent BBC graves, equally without real memory. From later periods we know that this kind of return to old cemeteries was norm rather than exception, even with an interval of a 1,000 years or more in between individual burials.³⁵⁰ The SGC component of the cemetery at Schokland-P14 consisted of two graves (Fig. 7.35,

³⁴⁹ Ten Anscher 2012, 362.

³⁵⁰ Cf. Fokkens 2012b.

Table 7.3 selection of ^{14}C dates from Schokland, recalibrated with Calib 7, Feb 2016.

| Lab code | Date BP | Context | Material | Calibrated range BC | z sigma |
|----------|----------------|------------|-------------------------|---------------------|---------|
| UtC-1949 | 3910 \pm 50 | grave 10 | human bone | 2564 - 2533 | 0.038 |
| | | | | 2495 - 2275 | 0.916 |
| | | | | 2254 - 2227 | 0.032 |
| | | | | 2224 - 2209 | 0.014 |
| UtC-1945 | 4040 \pm 70 | grave 12 | bark underneath burial | 2872 - 2454 | 0.981 |
| | | | | 2418 - 2407 | 0.007 |
| | | | | 2376 - 2351 | 0.012 |
| UtC-1950 | 3640 \pm 100 | grave 11 | oak plank coffin | 2294 - 1742 | 0.996 |
| | | | | 1709 - 1701 | 0.004 |
| UtC-1946 | 3870 \pm 60 | grave 13 | human bone | 2486 - 2194 | 0.972 |
| | | | | 2176 - 2144 | 0.028 |
| UtC-1948 | 3740 \pm 50 | grave 14 | human bone | 2294 - 2015 | 0.985 |
| | | | | 1997 - 1980 | 0.015 |
| UtC-1959 | 3820 \pm 70 | ring ditch | post of the post circle | 2469 - 2123 | 0.948 |
| | | | | 2092 - 2043 | 0.052 |
| UtC-1957 | 3790 \pm 50 | pit a | charcoal | 2454 - 2419 | 0.030 |
| | | | | 2406 - 2376 | 0.032 |
| | | | | 2351 - 2118 | 0.856 |
| | | | | 2097 - 2039 | 0.081 |
| UtC-1958 | 3850 \pm 60 | pit b | charcoal | 2472 - 2189 | 0.943 |
| | | | | 2183 - 2141 | 0.057 |

graves 10 & 12). The first of these graves, grave 10, consists of an inhumation, probably of a 25-30 year old female placed on the right side in a flexed position, facing the northeast.³⁵¹

The inhumation was placed in a pit of which the bottom and sides were probably lined with wattle work (Fig. 7.36). The fill of the grave pit indicates that a lid was also present, but eventually collapsed on the grave. The deceased was buried with a type 1d SGC beaker. A ^{14}C sample taken from the bone dated the burial to a most probable range of 2495-2275 cal BC (Table 7.3). Despite the fact that this burial has a Corded Ware beaker as a burial gift, this range places this burial at the very start of the Late Neolithic B.

The second burial that can be attributed to the SGC (grave 12) was found underneath an arable layer.³⁵² The grave contained an inhumation, probably of a 40-45 year old male who was placed on his right side and facing south. The pit in which the deceased was placed had also been reinforced with wattle work (Fig. 7.37). He was

buried on a layer of bark with a wooden club made of yew placed behind his back. A ^{14}C date obtained from bone material dated the grave to 2872-2454 cal BC.

The ard marks that covered grave 12 were found throughout large sections of the excavation. The total excavated area interpreted as an arable field is roughly 0.25 to 0.50 ha. This area was mostly located on top of the cover-sand ridge, but also extended beyond the ridge several meters into the sandy detritus gyttja at some locations.³⁵³ This gyttja layer was not formed until c. 2550 cal BC and therefore constitutes a *terminus post quem* for the arable land, which implies that the arable field was not in use until the very end of Late Neolithic A according to Ten Anscher.

Ten Anscher offers a theory that explains why a relatively low lying area was chosen for arable land,³⁵⁴ referring to a risk-reducing strategy where low-lying areas were farmed together with high-lying areas to reduce the effects of either drought or flooding. Thus, at

³⁵¹ Ten Anscher 2012, 331-333.

³⁵² Ten Anscher 2012, 334-339.

³⁵³ Ten Anscher 2012, 388.

³⁵⁴ Ten Anscher 2012, 395-396.

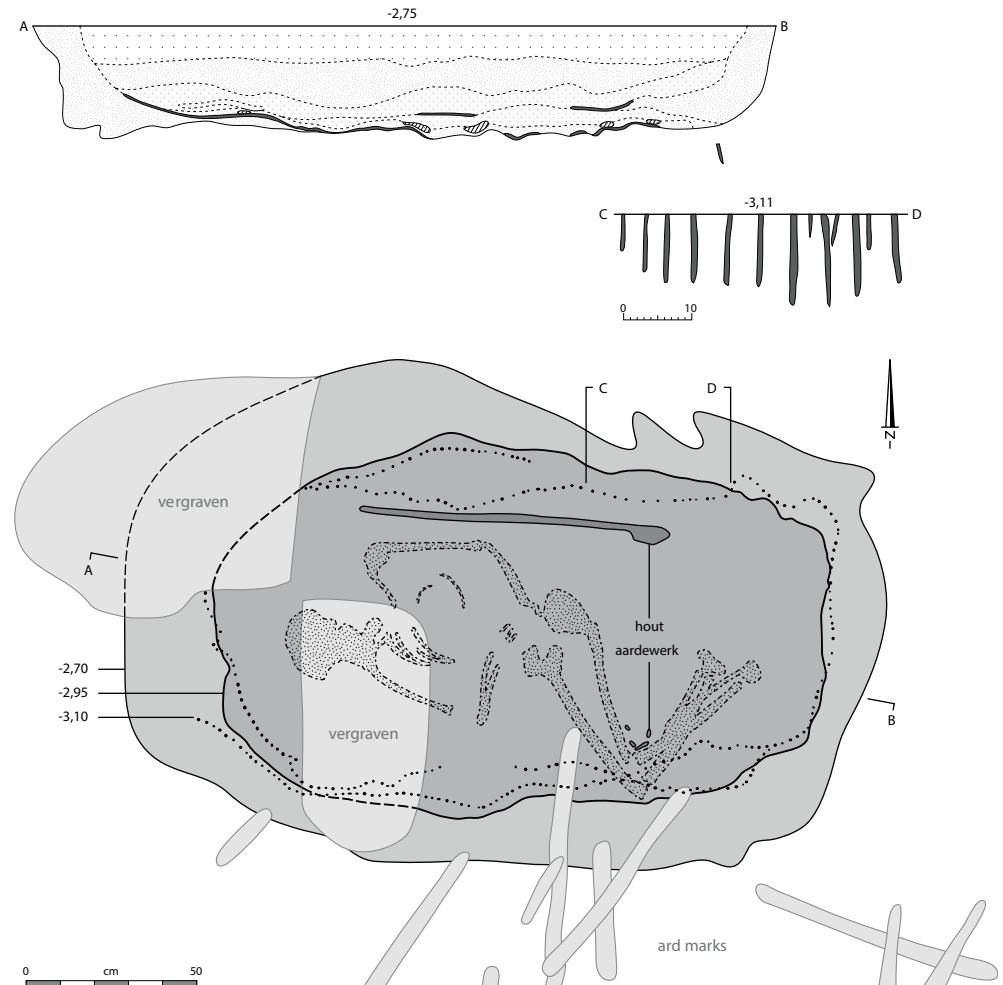


Figure 7.37 Grave 12 (compiled after Ten Anscher 2012, 336).

Schokland-P14 the presence of another arable plot situated on higher ground is assumed. We note here, that, for instance Oostwoud and at several other sites, arable land was situated in low lying areas as well on levees and crevasses that could occasionally be flooded, without the use of other arable higher up. Apparently, the risk of flooding was manageable in these cases. Therefore, in our view complicated theories to explain the low position of the arable land at Schokland-P14 are unnecessary.

Four other graves (11, 13, 14, 15) at Schokland-P14 are dated to the Late Neolithic B, to which also several ditch-systems and a series of pits are attributed (Fig. 7.38; Fig. 7.39).

According to Ten Anscher,³⁵⁵ grave 11 is the youngest of the above-mentioned graves, but the range of the ¹⁴C date demonstrates that this conclusion is unwarranted (Table 7.3). Following the date ranges, all of these graves

could be contemporary. Grave 11 contained the inhumation of a c. 18 year old male placed on his right side and facing southwest. Remarkably, the oak tree bark planks that made up a coffin-like structure had been preserved. This construction consisted of two separate planks, the lower of which was bent upwards, supporting the pit walls. No grave gifts were found (Fig. 7.38). Grave 13 was poorly preserved and damaged by a modern drain (Fig. 7.39). As the pit was only 10 cm below the estimated living surface, it is suspected that a small barrow had been erected on top of the grave.³⁵⁶ The age of the deceased was estimated around 30 to 40 years at death, but the sex of the individual could not be established with certainty. The deceased had been placed on his or her right side, facing south and several fragments of wood in the grave suggest that he or she had also been buried on top of a tree bark plate.

³⁵⁵ Ten Anscher 2012, 333-334.

³⁵⁶ Ten Anscher 2012, 339-340.



Figure 7.38 Grave 11 (compiled after Ten Anscher 2012, 334, 335).

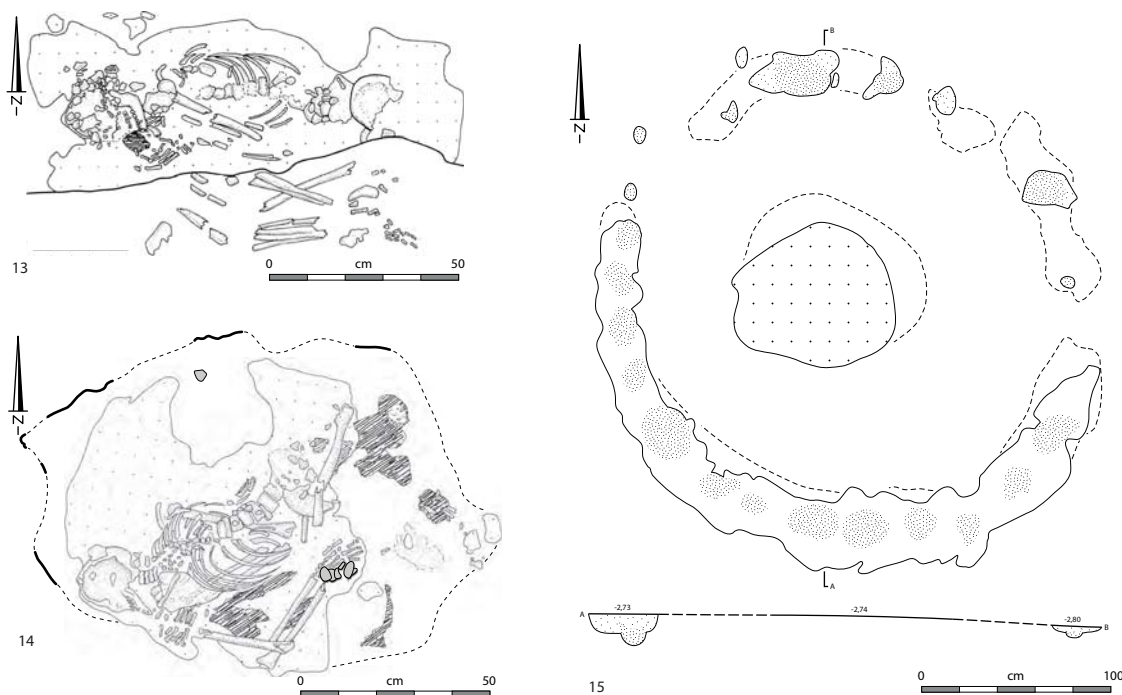


Figure 7.39 Grave 13, 14, 15. Top left: grave 13, bottom left: grave 14, right: grave 15 (compiled after Ten Anscher 2012, 340, 341, 343).

The adjacent grave 14 was comparable to grave 13 (Fig. 7.39). Farming activities had taken their toll on this grave, disturbing its contents significantly. For this grave too, a small barrow is thought to have been present that covered the otherwise shallow grave pit. The deceased

is thought to have been a male, who was most likely between 35 and 45 years old. He was probably buried on his right side, facing the south, but the caving in of the grave pit had caused the remains of the deceased to shift considerably.³⁵⁷ Six flint flakes were located next

³⁵⁷ Ten Anscher 2012, 340-342.

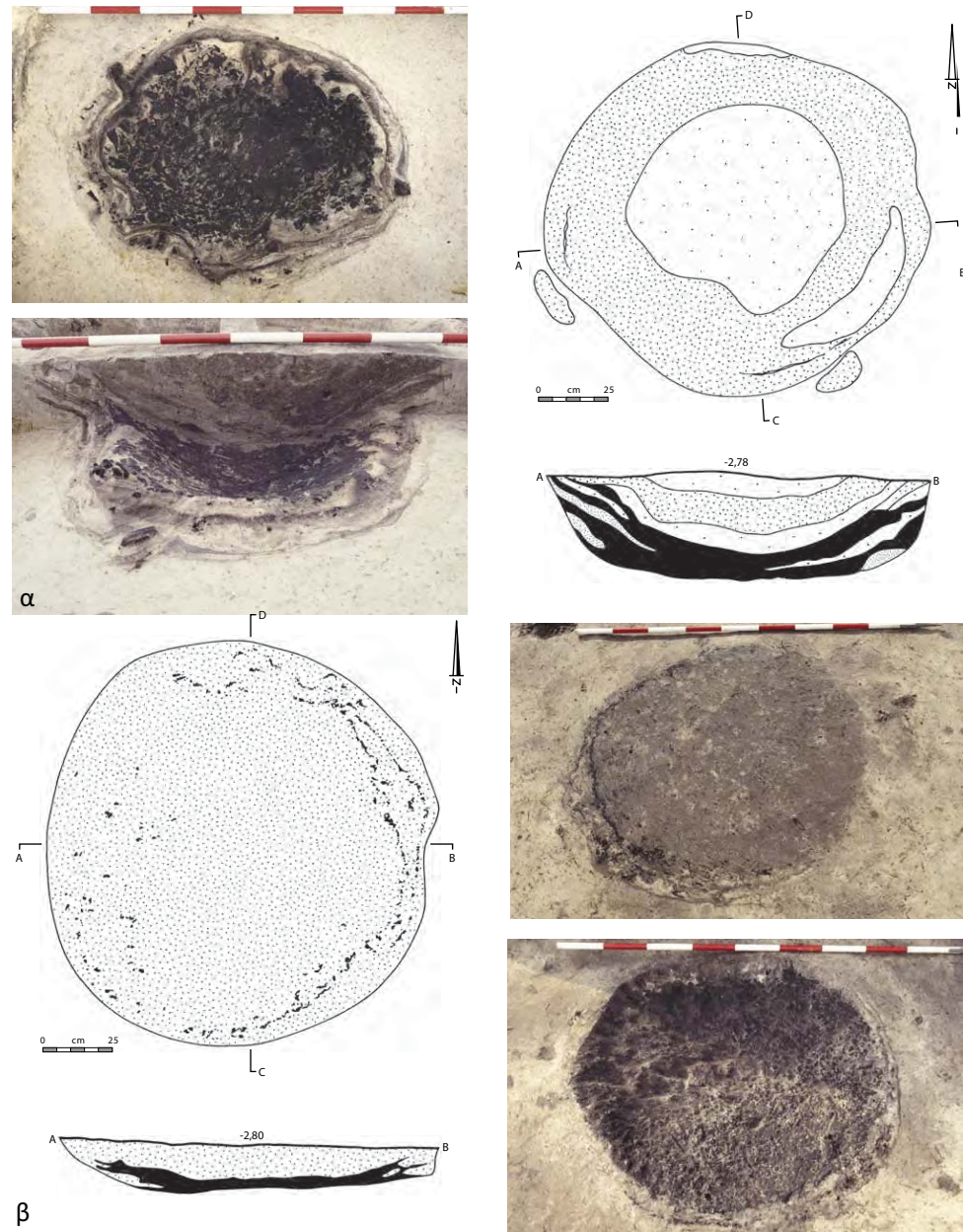


Figure 7.40 Fire pits α and β. Top: fire pit α, bottom: fire pit β (compiled after Ten Anscher 2012, 349, 350, 351).

to the deceased's left hand and these flakes are interpreted as grave gifts.

Grave 15 did not actually include a burial, but its nature was inferred based on the presence of a circular ditch with posts set in the ditch (Fig. 7.39).³⁵⁸ A pit was found within the centre of this ring ditch, but it was devoid of finds.

Other features which are discussed in the context of the cemetery include two pits with large amounts of charcoal; hence they were interpreted as fire pits (Fig. 7.40; cf. Fig.

7.35).³⁵⁹ Both of these pits were found at the edges of the cemetery. The first of the two pits (pit α) contained at least two separate layers of charcoal, whilst the second (pit β) had three separate charcoal layers. The excavators interpret each layer as a separate phase of use. According to the ¹⁴C dates it would seem that the pits were in use during a period when the area was also used as a cemetery (Table 7.3). As a comment to this interpretation, we would like to point at the six comparable Late

³⁵⁸ Ten Anscher 2012, 342-344.

³⁵⁹ Ten Anscher 2012, 349-351.

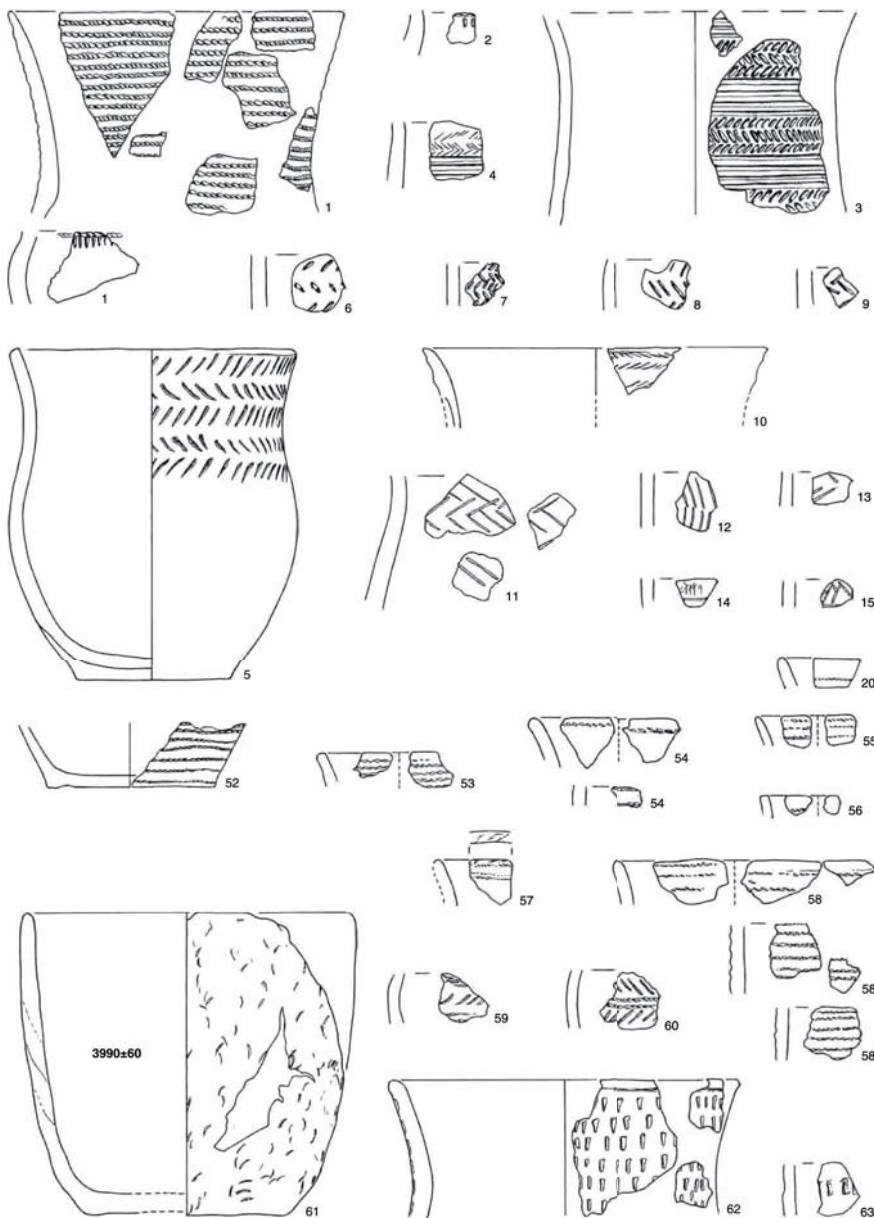


Figure 7.41 SGC beakers scale 1:3 (compiled after Ten Anscher 2012, 172-173).

Neolithic B features that were excavated at Hattermerbroek.³⁶⁰ Apparently, the occupants of these sites in the Late Neolithic B carried out activities that required them to dig pits in which fires burnt, or at least in which the remains of substantial fires were repeatedly deposited. Elsewhere at the site Schokland-P14, at its western perimeter and roughly in the centre at the northern edge, two possible ditch systems were found.³⁶¹ Regrettably, erosion and the disturbance of top soil is thought to

have resulted in most of these ditches being disturbed to such a level that only the deepest parts remain, or sometimes even only 'ghosts' of these ditches.³⁶² In contrast, the western ditch system does consist of actual features. Interestingly, these are overcut by a multitude of hoof imprints belonging to cattle, pigs and sheep. The depth of these ditches is estimated to have been c. 40 cm. The limited depth of this ditch, which apparently was not able to keep cattle in or out, is argued to have been enough

³⁶⁰ Cf. Fig. 7.58.

³⁶¹ Ten Anscher 2012, 397-403; cf. Fig. 7.162.

³⁶² These ghosts are the result of iron formation underneath the ditches.

to serve as a drainage system. The re-digging of these ditches along the same axis as previous ones following a flooding event also argues that the terrain was relatively wet, and needed to be drained.³⁶³

The period after 2000 cal BC was characterised by a rise in the water table, which implies that the birch swamps that surrounded Schokland-P14 drowned and that large amounts of sedge and reed started to grow in the area.³⁶⁴ For the excavated area itself, this meant that the former settlement and arable field had drowned for the most part. The higher part of the same cover-sand ridge to the west was most likely still settled, which is visible in the available archaeological remains from this period. The remains associated with the Early Bronze Age consist of several posts and stakes, and a number of pits and hearths. The posts were located in one of the flood erosion layers, and were not yet completely degraded. Some of these posts had been swept away by flood waters, but others were still in-situ and were clearly worked. The stake rows were interpreted to belong to fish weirs that would have been attached to the previously mentioned posts.³⁶⁵ Several features can also be found to cut into the flood erosion layers. These include pits and hearths, but also imprints of cattle hooves and human feet. These features are only found near the riverbank, which would probably only have been accessible during the summer when the water table was at its lowest.³⁶⁶ Burnt pieces of soil are thought to be indicative of the burning down of sedges and reeds in the area.³⁶⁷ The pits contained charcoal and stones that displayed signs of having been heated. These are interpreted as having been used as stoves, which meant that fish or meat could have been placed on the heated stones or inside of a small heated stone oven.³⁶⁸

Find material

The main purpose of this summary of the finds from Schokland-P14 is to portray the elusive pottery types more commonly associated with settlements. The Corded Ware fine wear, as Ten Anscher indicates ‘true’ beakers, turned out to be highly fragmented. Most sherds (n=229) could not be associated with a specific type. However, all decoration types appear to have been present, including AOO types (Fig. 7.41). A number of pottery fragments (n=74) was

attributed to ‘settlement pottery’ or coarse wear. The distinction between settlement pottery and true beakers is understandable, but difficult to maintain in settlement contexts, because both categories seem to mix. For that reason, the term beaker-pot was invented, indicating large beakers with decorations and forms known from fine wares.³⁶⁹ Ten Anscher discusses all different names that are used to indicate rather ill-defined different types of Beaker (settlement) pottery. In Dutch terms are used like *amfora*, *bekerpotten*, *proto-potbekers*, *Riesenbecher von Bentheimer Typ*, *golbandpotten*, *vingertoppotten*, *Wellenbandpotten*, etcetera. For the non-specialist and even for the specialist, it is impossible to come to grips with this extensive terminological apparatus. Given that these types have broadly speaking lost their chrono-typological relevancy, it is also a fruitless effort to distinguish between these different ‘types’.

However, we might want to retain a term for coarse wear, since it is in general thicker and has different decorative styles and techniques. The material from Steenendam demonstrates this well.³⁷⁰ The German term *Wellenband* pottery (Dutch *golbandpot*), entails more than just decoration with the characteristic *Wellenband*, in English indicated as short-wave moulding.³⁷¹ Floore³⁷² has studied Corded Ware settlement material in his doctoral thesis and has made a typology of mouldings. Ten Anscher does not use this, but he does use the term *vingertoppotten* (fingertip pots) also designed by Floore.³⁷³

Plastic fingertip decorations in the shape of rows of deep impressions indeed are part of the decorative repertoire (Fig. 7.42), though it is unnecessary to introduce a new name for these pots. In our view we do best to keep only one term for these pots: SGC or Corded Ware pots (as opposed to fine ware *beakers*). This indication includes the pots with fingertip decoration. Ten Anscher calculated that from the category with fingertip decoration, 53 % showed charred remains of cooking, whilst this was the case for only 6% of the ‘true’ beaker material.³⁷⁴ This indicates that there may be differences in function between the two types, even though a clear differentiation between drinking and cooking utensils is certainly not present. The BBC assemblage was larger than the Corded Ware assemblage. A total of 595 sherds could be classified as ‘true’ Bell Beakers, whilst another 785 pot beaker sherds were present.

³⁶³ Ten Anscher 2012, 403.

³⁶⁴ Ten Anscher 2012, 465-470.

³⁶⁵ Ten Anscher 2012, 470.

³⁶⁶ Ten Anscher 2012, 483.

³⁶⁷ Ten Anscher 2012, 476-477.

³⁶⁸ Ten Anscher 2012, 475.

³⁶⁹ Ten Anscher 2012, 177.

³⁷⁰ Cf. Section 7.9.

³⁷¹ Following the term used by Becker (1956).

³⁷² Floore 1991, cited in Ten Anscher 2012.

³⁷³ Ten Anscher 2012, 176.

³⁷⁴ Ten Anscher 2012, 187.

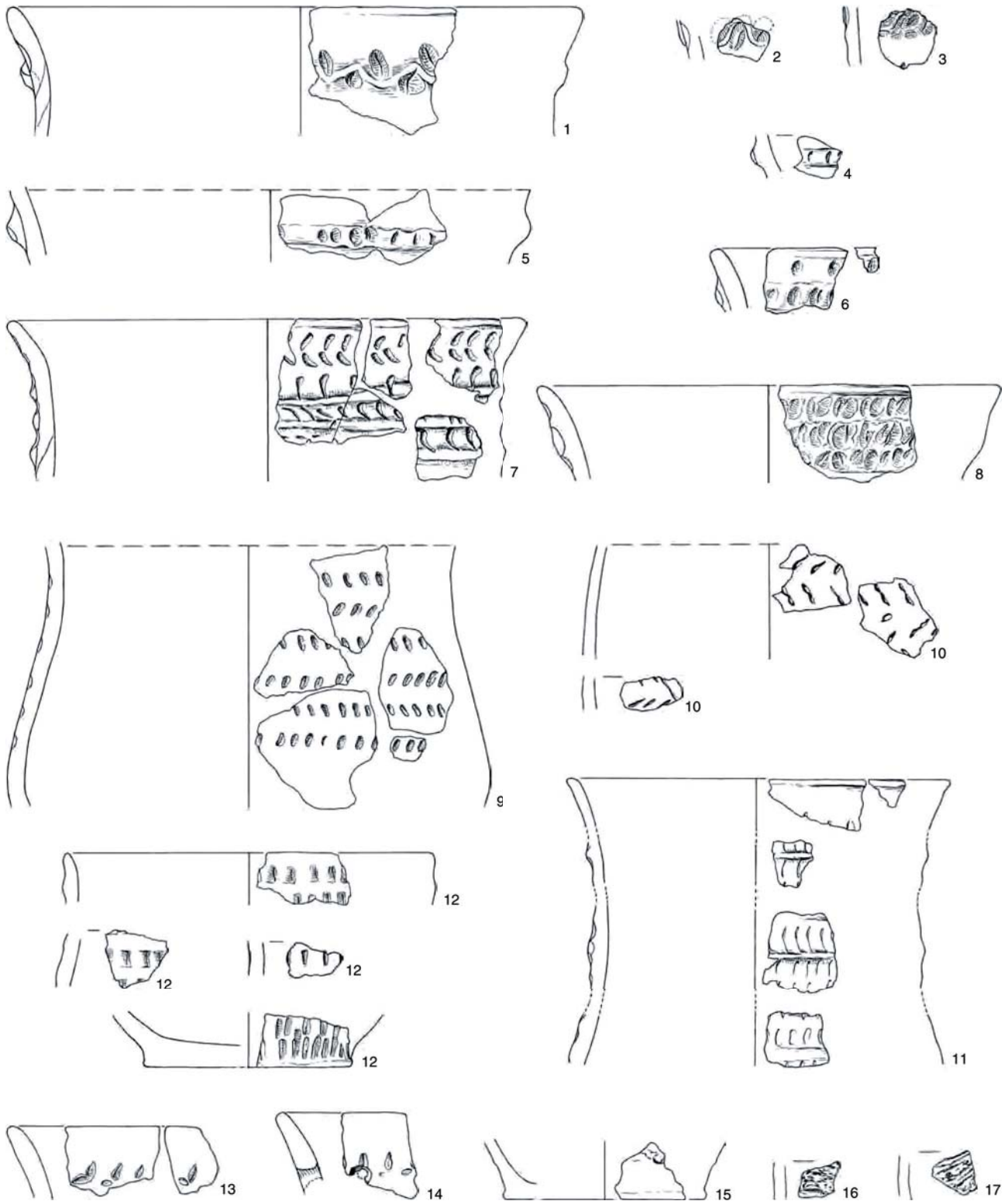


Figure 7.42 SGC pots scale 1:3 (compiled after Ten Anscher 2012, 180).

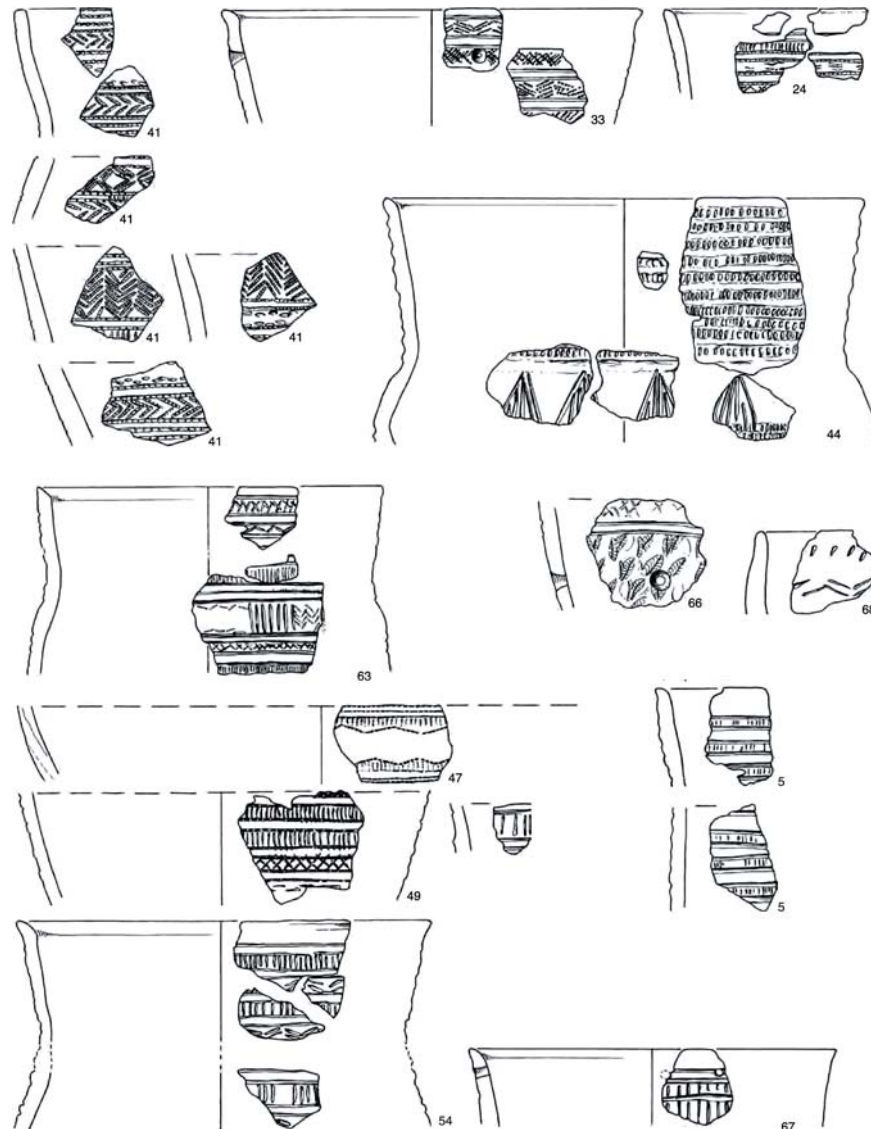


Figure 7.43 Late Bell Beakers, scale 1:3 (compiled after Ten Anscher 2012, 207, 208).

Ten Anscher distinguishes between Early and late Bell Beakers, the first of which in his view occurs preceding the 2300 cal BC mark and the second of which only occurs after this time. This early group mostly consists out of maritime beakers of type 21a, but type 21b is also present (Fig. 7.43). Most of the material associated with the Late BBC is most commonly known as Veluwe type beakers (Fig. 7.44). This material is entirely comparable to that of Oldeboorn and Hattemerbroek, although the earlier SGC material is lacking at these sites.³⁷⁵ Early Bell Beakers appear to have been used less often for cooking (5%) than late Bell Beakers (13%). Within the pot beaker segment, 40% of the vessels

features cooking residue.

Early Bronze Age pottery was present in such numbers that Ten Anscher decided to propose a new BWB pottery phasing in order to distinguish between the various types.³⁷⁶ These phases are called BWB (WKD) assemblages 1 through 4. The problem is that an absolute chronology can only be provided for the use of barbed wire decoration in the general sense, which is between 2000 cal BC and 1700 cal BC according to Ten Anscher.³⁷⁷ Three of the phases recognised by Ten Anscher, occur at Schokland-P14, although his BWB 3 phase is clearly the largest group.³⁷⁸ The last phase of his scheme, BWB 4, is missing at Schokland.

³⁷⁵ Cf. Section 7.8, 7.11.

³⁷⁶ Ten Anscher 2012, 242-246.

³⁷⁷ Ten Anscher 2012, 266.

³⁷⁸ Ten Anscher 2012, 248.

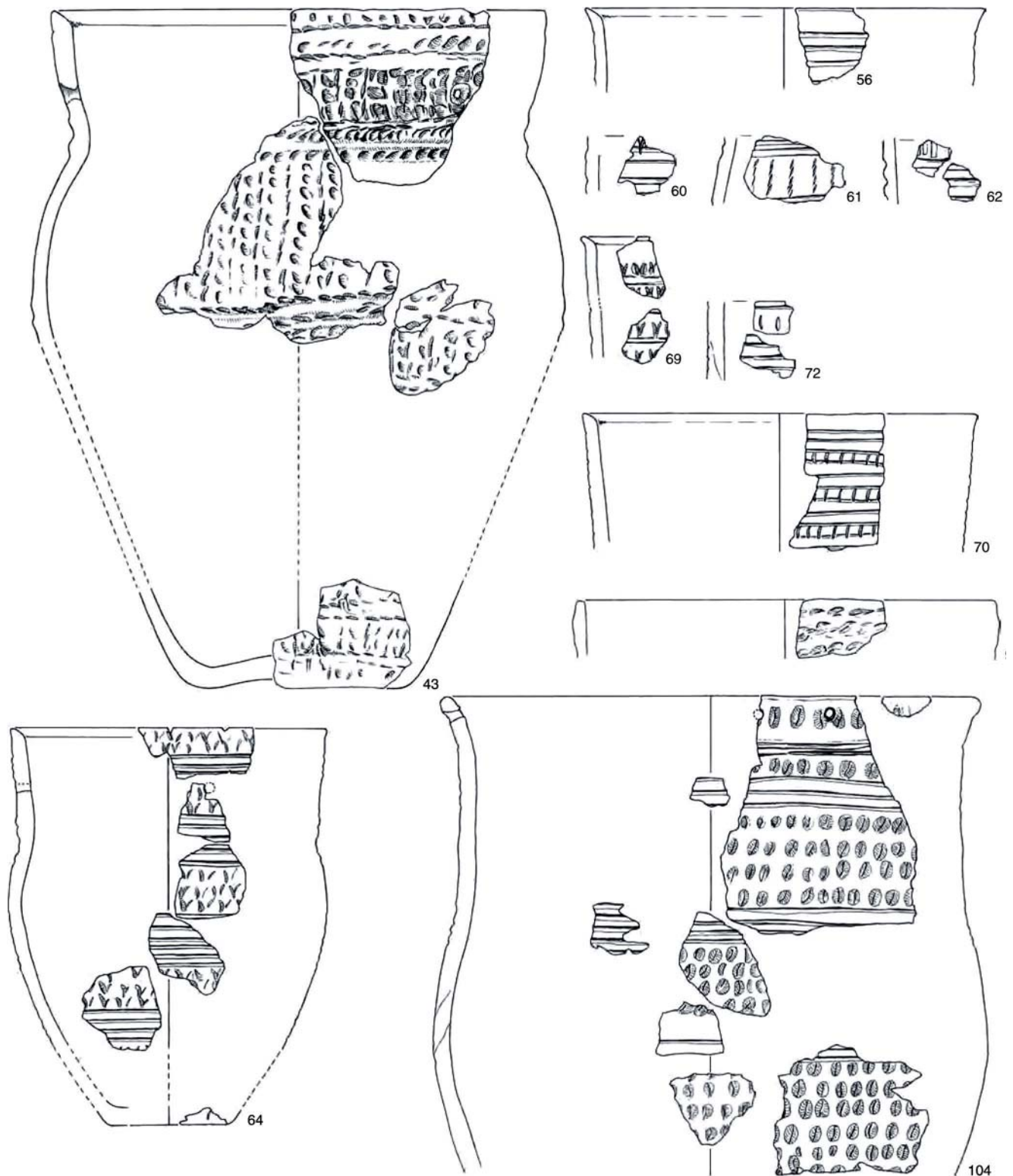


Figure 7.44 BBC pot beakers, scale 1:3 (compiled after Ten Anscher 2012, 224-227).

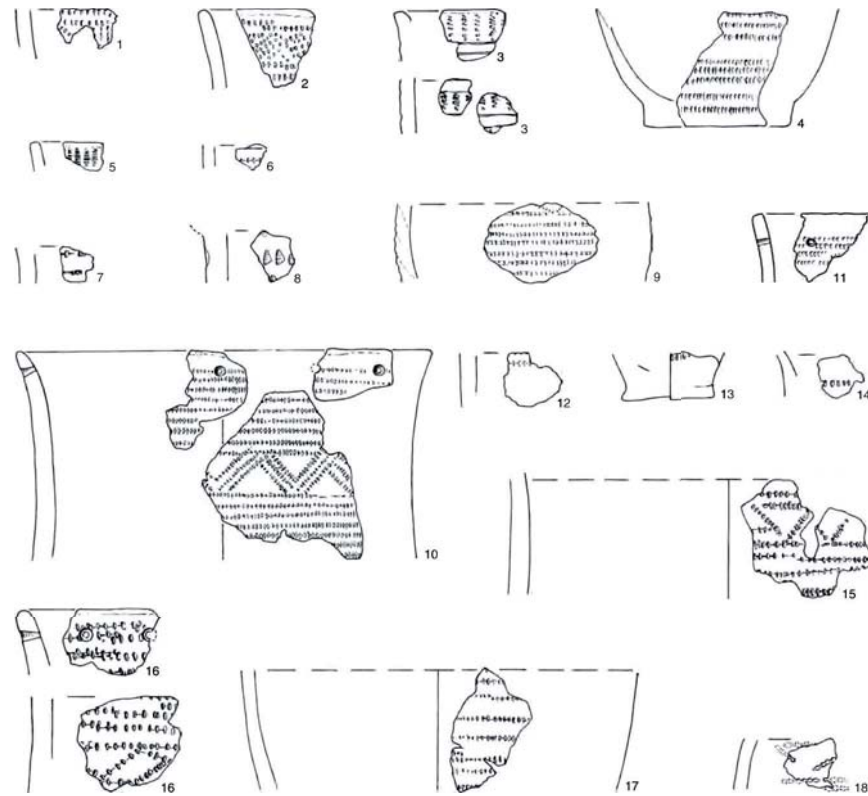


Figure 7.45 Barbed Wire Beakers BWW 1 and BWW 2, scale 1:3 (compiled after Ten Anscher 2012, 253).

The differences between phases BWW 1 and BWW 2 are minimal. The definition of BWW 1 is mainly based on only individual pots from graves. Ten Anscher states that there is in fact no type site for this phase, except maybe Meteren Boog C-Noord.³⁷⁹ The main characteristic of this phase is that the decorative patterns show barbed wire stamps in Late BBC patterns (Fig. 7.45). In a BWW 1 assemblage true Bell Beakers or pot beakers can also still occur. The BWW 2 phase is based on only one site: Molenaarsgraaf phase 2 (Fig. 7.46).³⁸⁰ The main characteristic of this phase is that a certain percentage of the assemblage is not decorated, and that Bell Beaker motives are absent in the decoration. By implication, individual pots are hard to position in this scheme.

The BWW 3 phase is marked by BW decoration without Bell Beaker patterns as well. Part of the assemblage can be undecorated in this phase. Cord decorations do occur, but only on the shoulder or just below the rim. Holes below the rim are often present (Fig. 7.46). A type from this phase that does occur on more sites has a plastic ring around the shoulder (Fig. 7.46 nr. 21), in this case also combined with cord decoration

on the inside of the pot. This type occurs at Molenaarsgraaf,³⁸¹ but also at VleuGelzo³⁸² and Barendrecht-Carnisselande site 3.³⁸³ These forms and motives do look like Early Hilversum pottery and as such are probably relatively late in the sequence. In this phase, decoration with bird bone or reed impressions also occurs.

According to Ten Anscher, ceramics from the BWW 4 phase are largely or even completely undecorated and mostly restricted to the north-eastern Netherlands. Ceramics may have an occasional barbed wire stamp decoration, but only very few.³⁸⁴ This phase lasts from about 1700-1550 cal BC according to Ten Anscher.³⁸⁵

This is a very difficult phase to recognise, because the difference with the later Middle Bronze Age B Elp pottery is minimal or absent. BWW 4 is -paradoxically- characterised by the absence of barbed wire (or any other) decoration. That is also the definition of Elp pottery. In the central and southern Netherlands early Hilversum pottery can easily be recognised because of its cord decoration, but in the northern Netherlands any decoration lacks after the application barbed wire decoration stops. It is therefore virtually

³⁷⁹ Ten Anscher 2012, 242; Cf. Section 7.35.

³⁸⁰ Louwe Kooijmans 1974; Ten Anscher 2012, 243.

³⁸¹ Louwe Kooijmans 1974, 222-223.

³⁸² Cf. Section 7.28.

³⁸³ Cf. Section 7.27.

³⁸⁴ Ten Anscher 2012, 267-269.

³⁸⁵ Ten Anscher 2012, 297.

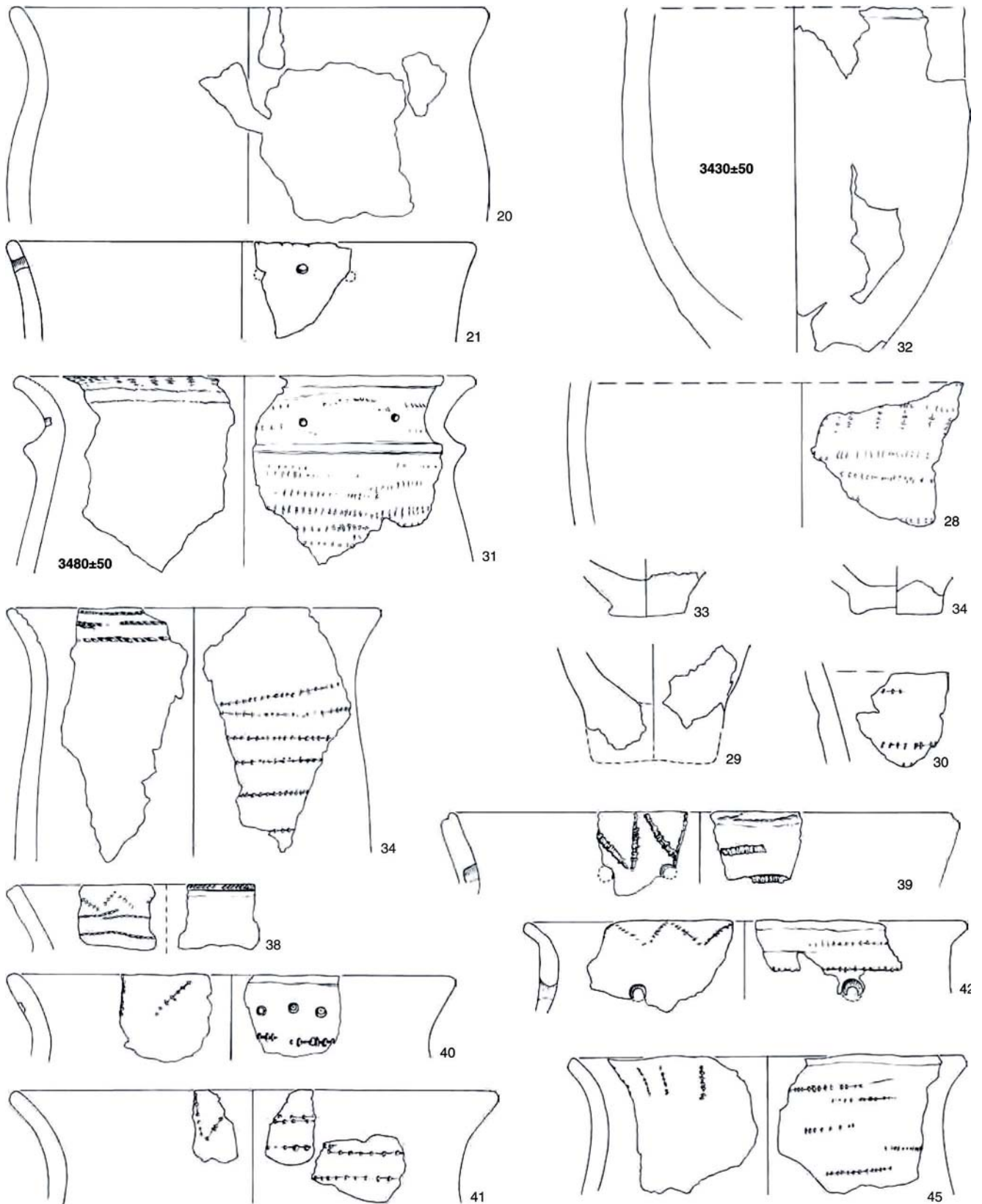


Figure 7.46 Barbed Wire Beakers BWB 3, scale 1:3 (compiled after Ten Anscher 2012, 256-259).

impossible to distinguish between early and later Elp pottery. Complexes like the one from Oldeboorn can be indicated could be considered early Elp pottery, because it is clear that it dates between 1745 and 1616 cal BC, but we have no clue for a typological early date.³⁸⁶ Besides pottery, flint artefacts were also present at Schokland-P14. However, these artefacts have not yet been analysed.³⁸⁷ The archaeo-zoological remains have received more attention, as these have been used to discuss the environment of the site during the Late Neolithic. Gehasse analysed a selection of remains whose depositional context was relatively certain.³⁸⁸ From the mammal assemblage, these mostly include domesticated animals. Cattle remains dominated the faunal remains. Remains of pig and goat also occurred in relatively high frequency, but dog and horse remains were rarer. Non-domesticated animals mostly include beaver and red deer, who would have been hunted relatively frequently. Remains of brown bear, roe, elk, fox and wild cat occur less frequently in the assemblage, leading to the interpretation that these species were not structurally targeted as prey, but were only hunted when encountered in the field.³⁸⁹

The Schokland-P14 archaeo-zoological assemblage also contains fish and bird remains. Bird remains were rare and only consisted of eight bones from wild duck, swan, goosander, goose and the Eurasian eagle-owl. Fish remains were found in far greater numbers ($n=162$), but these probably also concern fish who died under natural circumstances on or around the riverbed. A predominance of adult predatory fish is interpreted to mean that the assemblage does contain a selection on fish that were targeted for consumption.³⁹⁰ Despite the relatively small amount of remains relating to fishing, this activity is thought to have been a vital part of subsistence strategies. This is also attested at the nearby and contemporary site Emmeloord J-97.³⁹¹

7.7.3 Comments

Schokland-P14 is in more than one aspect a key site for understanding the Late Neolithic and Early Bronze Age settlements and burial. All sub-periods of these phases are present in the find material and coincide with settlement and burial features. The small cemetery is exemplary

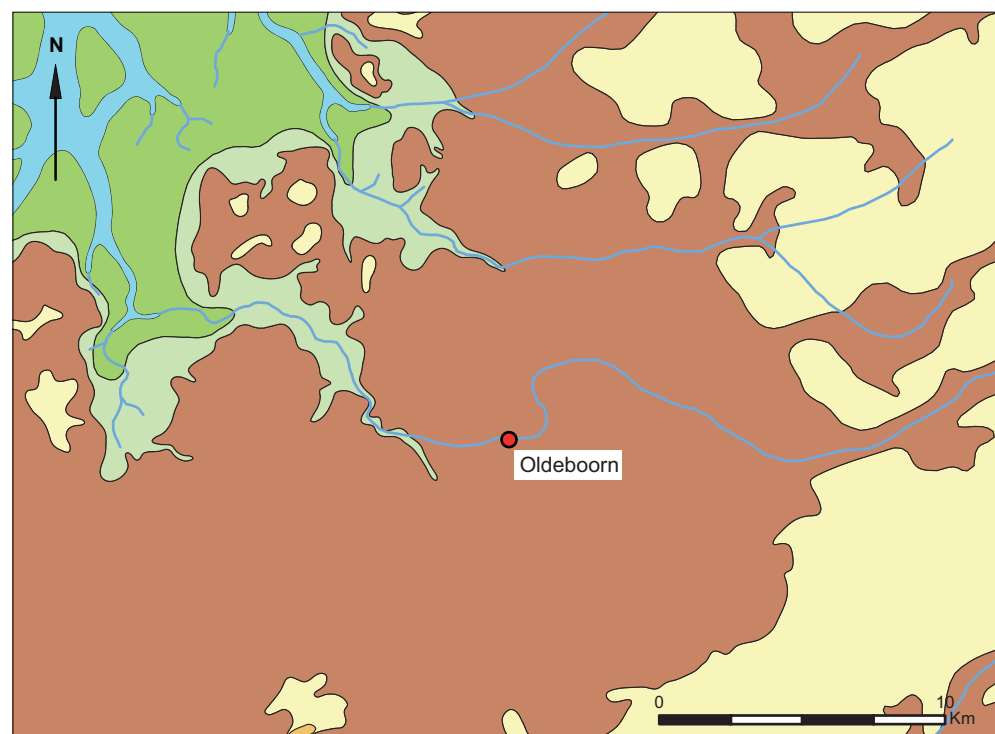


Figure 7.47 Location of Oldeboorn on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

³⁸⁶ Cf. Section 7.8.

³⁸⁷ Ten Anscher 2012, 457.

³⁸⁸ Gehasse 1995; also in Ten Anscher 2012, 458-459.

³⁸⁹ Ten Anscher 2012, 459.

³⁹⁰ Ten Anscher 2012, 459.

³⁹¹ Ten Anscher 2012, 459-464.

for this broad coverage of archaeological periods and cultures. Just like at Hattemerbroek, Molenaarsgraaf, Oostwoud and Mienakker there is a small cemetery at the site without that many grave gifts, but otherwise following the Corded Ware and BBC traditions with crouched burials, laid down on a bed of bark (P14), wickerwork (Oostwoud) and sometimes supported by sticks (P14). In the Bell Beaker period there is generally a chamber lined with planks and covered with a lid.³⁹² This construction is not a coffin in the modern sense of the word, but it has the same effect. Whenever grave gifts are present, they fall within the normal repertoire that is known from barrow excavations, even though the good preservation at Schokland-P14 sometimes shows more material than the burial mounds of the central Netherlands.

The site itself shows many interesting aspects of daily life in an environment that we would not consider suitable for farming. Yet, the ard marks demonstrate that it was, despite Ten Anschers' claim that people grew half their grains higher up the sand dune. Moreover, it should be noted that such a risk-avoiding strategy was not really necessary. Schokland-P14 demonstrated that in the Late Neolithic and the Early Bronze age people were very well adapted to the dynamic environments in which normal transport would have been by boat or canoe. Hence, we must think of water-oriented rather than land-oriented communities in this region.

7.8 Oldeboorn

The site of Oldeboorn is situated on the banks of the river Boorne, not far (5–10 km) from the tidal gullies entering the land from the north (Fig. 7.47). There was probably only a relatively small sandy outcrop on which the people stayed. (Fig. 7.48). The site was submerged in the Bronze Age and became overgrown with peat afterward.

7.8.1 Research history

The site (Oldeboorn 1) was discovered in 1980 by J.K. Boschker who surveyed road works and ditch digging projects on a professional basis for the Fries Museum at Leeuwarden. He found

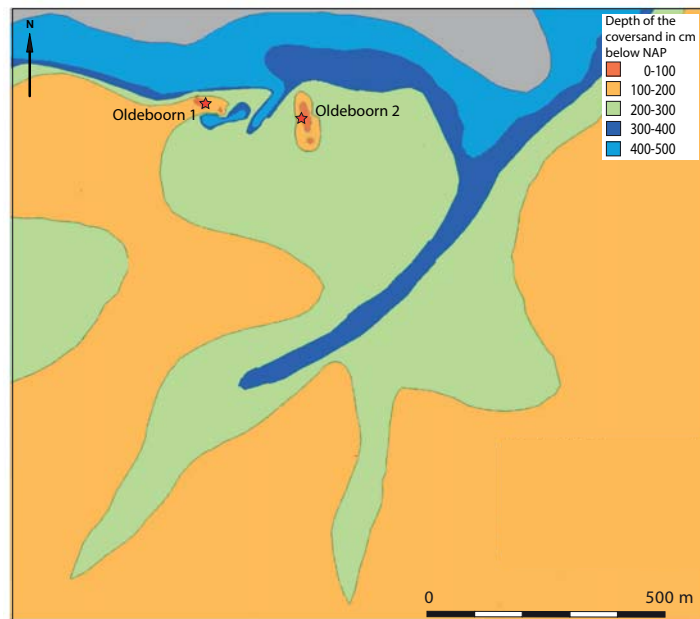


Figure 7.48 Detail of the site location of Oldeboorn 1 and Oldeboorn 2 on the contour map of the area, showing that the site is situated on a 'dune' near the Boorne (based on raw data collected through auguring by the first author and the State Geological Survey; after Heijnis 2013 Figure 1).

Bell Beaker sherds next to a cleaned ditch in the peat district just south of the river Boorne. A subsequent auguring campaign showed that a 'Pleistocene sand dune' covered by peat lay near the surface and that the deposits on top of this dune contained a dark layer indicated as a 'find layer'. Given that at the time of its discovery, Oldeboorn was only the second or third possible settlement site with BBC material in the Netherlands, it was decided to excavate part of it, even if it was not threatened directly by construction activities. However, lowering of the groundwater table might damage bone material that was present. The site was excavated by the first author of this book, H. Fokkens, under supervision of J.N. Lanting. Lanting has published the pottery from the site in his 2008 survey of Bell Beakers, but the site proper was never published. We took the writing of this book as an opportunity to present an analysis of the site data, because it is one of the few sites with Bell Beaker and Middle Bronze Age A material in the north.³⁹³

The excavation lasted from 14 April to 10 June 1980. During the auguring campaign undertaken during the excavation, another outcrop was

³⁹² Bourgeois 2013.

³⁹³ Lanting 2008, 297–303.

discovered nearby (Fig. 7.48). In 1981 we excavated part of that dune as well, but apart from a few very weathered sherds (possibly of SGC origin) it yielded only masses of flint, most of it Mesolithic in Age.

Most of the find analyses were carried out straight after the fieldwork. Flint was analysed by A.L. van Gijn as part of her Master's thesis.³⁹⁴ The bone material was studied by A.T. Clason, fishbone by H. Kastelijn as his Master's thesis under supervision of D.C. Brinkhuizen.³⁹⁵ A pollen core, taken by S. Bottema and H. Woldering in a peat filled trough just east of the site, was studied by C.C. Bakels. Recently another pollen sample was collected from the same area and studied by Smit & Brinkkemper.³⁹⁶

When H. Fokkens moved to Leiden in 1982, he adopted the site as a Leiden excavation project, the finds were all drawn, the pottery was analysed and drawn as well. However, the work then stagnated at a point where most of the analyses had been carried out and were partly available in database files (pottery data) and as paper versions. Even a draft of the site report was available. In 2010 the analyses of the material was initiated again in the framework of a Research Master project³⁹⁷, culminating in a thesis that combined all of the assembled analyses.³⁹⁸ The present sections are brief summary that is based on the original site documentation and the thesis of A. Heijnis.³⁹⁹

7.8.2 Description of the site

Oldeboorn 1 was situated on a relatively steep outcrop near the river Boorne. Its top was level at 0 m OD, but on the northern, western and southern sides there were very steep gradients towards the river and depressions near the river. On the eastern side the sand lay at 1-2 m below OD. In the Late Neolithic, the upper part of the dune was probably just above sea level and could have been used as arable land and for grazing. The top of the dune was approximately 400 m² in surface (Fig. 7.49).

The topsoil on the dune was removed with a hydraulic digger. Then, a drawing was made of the underlying find layer after which the team started to excavate the site in 1 x 1 m squares in spits of 5 cm. At first, finds were collected by hand, after which the excavated soil was sieved in a 4 mm sieve. After a few days of shaving thin layers of sand and hand-collecting artefacts, it became clear that the pottery from the site was very fragile and was easily damaged in this manner. Moreover, since much of the material was collected in 1 x 1 m squares, all site analyses would have to be done on that level of resolution. It was decided that not much information would be lost if we would collect the spits of 5 cm per square by taking out the entire square at once



Figure 7.49 Contours became visible after one particularly wet weekend when the site nearly was submerged and we had to pump water for 4 hours before we could start to excavate again (photo by H. Fokkens).

³⁹⁴ Van Gijn 1983.

³⁹⁵ Kastelijn 1983.

³⁹⁶ Smit & Brinkkemper 2012.

³⁹⁷ Carried out by S. van de Vaart-Verschoof, P. Valentijn, S. Lemmers and A. Heijnis.

³⁹⁸ Cf. Heijnis 2013.

³⁹⁹ Since H. Fokkens carried out most of the initial work and wrote all the field diaries of the site, much of the analysis of the site is based on his interpretation. Use of the first person in this section refers to his personal observations and analyses.

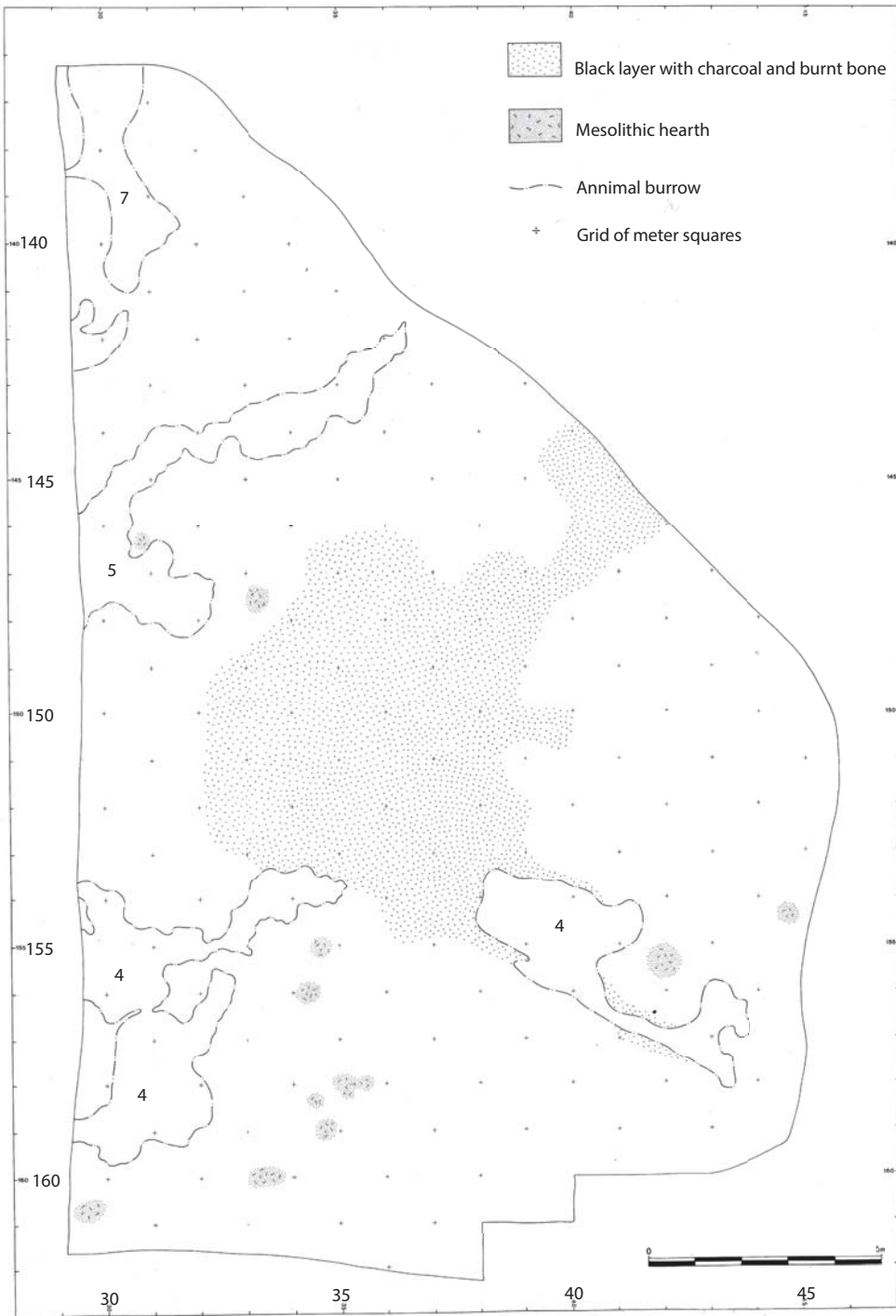


Figure 7.50 Plan of the excavation with animal burrows that were visible at the lower most level (C).

and skip the shaving and hand-collecting of finds. A sample of six squares was sieved on a smaller 1 mm mesh, but since that yielded only small roots from the overlaying peat, only the 4 mm mesh was used. This implies that also all fish bones were also collected on that mesh.

Site formation

The site was difficult to interpret in terms of site-formation and taphonomic processes. Figure 7.50 shows the distribution of several features. The 'black layer' indicated is a layer of about 5 cm in thickness that we have indicated as an

occupation layer. Its blackness derived from the presence of charcoal and burnt bone and in that respect it was not a buried soil. The layer was not present on the whole site or at least not in the same thickness. In the western and southern parts of the site it may have been present as well, but it was not visible in the top of the dune. The very fact that burnt bone and charcoal were abundant in the southern-most feature (q) indicates that the anthropogenic deposit was originally present here as well.

The features on the plan of Figure 7.50 are indicated as animal burrows, and dark spots as 'Mesolithic' hearths. We have dated only two features of the latter type, but we assume that most of these dark spots indeed were Mesolithic hearths. Their presence is probably the result of multiple visits to the site between 6500 and 6200 cal BC (Table 7.4).

The features interpreted as animal burrows are an entirely different matter. In the horizontal plane they did not look like hand-dug features at all. They had a very irregular form and looked 'natural' even though they had sharp boundaries. They were filled with peat and organic matter and finds were only present near the bottom of the features. They changed in form in every level and also became wider at lower levels (Fig. 7.51). When we made sections it became clear that we were probably dealing with animal burrows, judging by the size most probably those of badgers. Considering the fact that the site eventually submerged under

peat, and that it was near the river, I have the following explanation for these features. Figure 7.51 shows a layered fill becoming wider at the bottom. At the bottom of these features concentrations of find material (flint, pottery, burnt bone, charcoal) were present that had probably originally been embedded in the layer on top of the dune. The material must have washed down into the burrows around the time the site became submerged. The submerging of the dune may have occurred in one event or more gradually when the ground water table rose over the course of time. In the sections of the burrows, we could observe that these features were dug after the occupation of the site, because they cross-cut the black layer (Fig. 7.51). Therefore, part of the find material may also have been brought into these burrows by the animals themselves.

Dating the site

The dating of the site Oldeboorn is problematic, because we encountered two different kinds of pottery: BBC and Middle Bronze Age pottery. The question therefore was: to which of those occupation phases does the 'black layer' with the bone material and the associated charcoal belong? We know that the site was covered by peat after 1500 cal BC: the start of the peat growth on top of the find layer was dated to 1507-1411 cal BC with a median of 1461 cal BC. That implies that about 1500 cal BC the site already had become too wet for habitation,

Table 7.4 ^{14}C dates from Oldeboorn.

| Lab code | Date BP | Context | Calibrated range BC | 2 sigma |
|---------------|------------------|------------------------|---------------------|---------|
| GrN6155/10340 | 7560 \pm 70 BP | charcoal 147/31a | 6565 - 6546 | 0.020 |
| | | | 6529 - 6247 | 0.980 |
| GrN6156/10341 | 7400 \pm 70 BP | charcoal 153/33c | 6415 - 6097 | 1.000 |
| GrN6157/10342 | 2975 \pm 30 BP | peat above clay band | 1367 - 1364 | 0.001 |
| | | | 1287 - 1107 | 0.982 |
| | | | 1100 - 1083 | 0.015 |
| | | | 1063 - 1059 | 0.002 |
| GrN6158/10343 | 3185 \pm 30 BP | peat above sand dune | 1507 - 1411 | 1.000 |
| GrN6675/11267 | 3380 \pm 30 BP | central stain charcoal | 1745 - 1616 | 1.000 |
| GrN6676/11255 | 1010 \pm 25 BP | wood (alnus) 156/31 | 981 - 1044 | 0.948 |
| | | | 1098 - 1119 | 0.049 |
| | | | 1143 - 1146 | 0.003 |



Figure 7.51 Photograph of feature 5 in section. 1. Clay layer, 2. Peat layer formed after 1507 cal BC, 3. Animal burrow, 4. Black layer, 5. sand of the river dune (photo H. Fokkens).

because even the top of the dune had drowned and had had been covered by peat by then. Consequently, the bone and charcoal layer on the dune has to be older than 1500 cal BC. In 1981 it was not yet possible to date cremated bone, so we collected charcoal from the dark layer at the highest level (A) in square 147/38A. The charcoal was hand-picked from the square and the sample was large enough to date with conventional ^{14}C equipment. The sample yielded a date of 1731–1616 cal BC, with a median of 1674 cal BC. However, this date may be too young, as contamination from roots of the much younger peat cannot be excluded. With hindsight, we should have dated more samples, also from cremated bone, even though this material might have been contaminated as well. We also took two samples of charcoal concentrations in hearths. We suspected these to be Mesolithic even though we hoped them to be Neolithic. The date confirmed the Mesolithic age: the samples had a median age of 6421 and 6285 cal BC respectively (Table 7.4). In the end, we were left with typological dates and these are not straightforward either. On

the one hand, there is plenty of (late) BBC material at the site: Bell Beakers in Veluwe style, pot beakers, arrowheads, flint dagger, flint axes, etc. There is no doubt that we have the remains of a BBC period settlement here, even though we have no ^{14}C dates to strengthen this interpretation. However, the question is whether there was Bronze Age pottery at the site as well? We do have several undecorated pots that in other contexts would be classified as Bronze Age (B) Elp pottery (see Fig. 7.57). Elp pottery is undecorated, tempered with quartz and exclusively has bucket or barrel shapes. A handicap here is that pre-Middle Bronze Age B pottery is virtually unknown from the northern Netherlands. In the southern and central Netherlands Early Hilversum pottery is well recognizable, for instance by raised cordons and cord impression, but early Elp pottery is unknown because pottery has not been presented as grave gifts or included as urns in barrows in the northern and eastern Netherlands. Settlements with Middle Bronze Age A pottery are also unknown in the north, so typological dates are lacking. If the Bronze Age material present at Oldeboorn would be ‘Early Bronze Age’, we would expect barbed wire decoration, but that is absent.⁴⁰⁰ So either the undecorated material is Late Neolithic as well, or we are dealing with pottery left on the site somewhere in the Middle Bronze Age A between 1800 and 1500 cal BC, which would coincide with the date of the charcoal. This material is typical for what Ten Anscher has called BWB 4 pottery, characterised by plain pottery with simple forms and no BWB decoration.⁴⁰¹

7.8.3 Find analysis

The analysis of find distributions might be useful to determine whether or not the bone and charcoal layers are associated with the BBC or the Bronze Age habitation. If, for instance, there was a later, separate Bronze Age occupation period at the site associated with the Middle Bronze Age A date of the charcoal-bone layer, one might expect that there was a better correlation between the Bronze Age pottery and this layer than between (pot)beakers and this layer. Therefore, I have run a number of analyses in the pre-computer era first and then in the very

⁴⁰⁰ Ten Anscher 2012.

⁴⁰¹ Cf. Section 7.7.2.

early computer era when we had no hard disks yet. The DBII database file that I had produced in the early 1980's still opened in 2010 in Microsoft Excel and we could use it as a basis for further analysis.

Pottery

The pottery can be divided into three rough categories. In 1981, we distinguished between Bell Beakers, pot beakers and *Kümmerkeramik*. The latter name was the usual indication for Bronze Age pottery from the Northern Netherlands. In 1991, I have proposed to change this term into Elp-pottery, because *Kümmerkeramik* is an old-fashioned term, literally meaning miserable pottery.⁴⁰² Ceramics of this type are often crumbly, thick-walled and the temper sticks out on the outside. However, Barbed Wire Beaker pottery and pot beakers turn out to be tempered with mineral particles in a similar fashion and in that respect do not differ that much from Elp pottery.

Of the 970 sherds found at the site, the majority is classified as Bell Beakers (Fig. 7.52), though sometimes the distinction between pot beaker and Bell Beaker material is difficult to make. Where the distinction could be made, it was mostly because of the decoration of the vessels. The Elp material was all undecorated, the Bell Beakers and pot beakers all decorated. All classes of pots had 'cooking' residue, pot beaker sherds the most (10%), Elp ware and Bell beaker least (3-4%). In terms of wall thickness, there are no major differences between these types. On average, Bell Beakers are just a little bit thinner than pot beakers and Elp pottery (6 vs 7 mm), but there range is very much comparable (3-9 mm).⁴⁰³

Fabric analysis

In 1984 ten sherds were thin-sectioned by Overweel for the purpose of fabric analysis, especially regarding the mineral components of the clay.⁴⁰⁴ In 2010, 25 additional sherds were selected for detailed petrographic analysis and re-firing. This analysis was conducted by Jacobs.⁴⁰⁵ Jacobs distinguishes four fabric groups (Fig. 7.53).

Group 1: 'Oldeboorn samples, 100; 112; 134; 325; 361; 366; 370; 375; 400; 405; 409 and 451'⁴⁰⁶ can be considered as soft, coarse and badly sorted fabrics. The major inclusions are broken and thus most often angular shaped quartz and

Classes of pottery

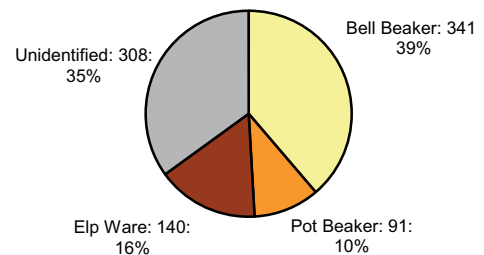


Figure 7.52 Classes of pottery recognised at Oldeboorn.

feldspar grains often in combination with some mica's. A plausible explanation is that the heavy local clays were used to make the pottery and that a considerable amount of temper was necessary to mix through these clays as to make them more workable and to open their structure, which is important during drying. Compared to stylistic information this group represents "Elp-pottery" and two fabrics marked as "Pot beakers".⁴⁰⁷

Group 2: 'Fabrics numbers 56; 70; 98; 143 and 317 are tempered with the same types of mineral inclusions, though the grainsizes are finer and most often limited around 1.5 mm. Again these inclusions are angular to sub-angular in shape and the quantities are around 20 to 30 %. On a stylistic basis these fabrics were classified as being part of Bell-Beakers'.⁴⁰⁸

Group 3: 'Some remarkable fabrics are 102; 124; 146; 229; 336 and 337. Besides about 10 % of crushed rock fragments with grain sizes up to 1.5 mm. and angular to sub-angular in shape, they contain 10 to 15 % of grog grains (crushed pottery fragments), with grain sizes up to 3 mm. Stylistically all fragments in this group are classified as Bell Beakers'.⁴⁰⁹

Group 4: 'An exception are nrs. 129 and 154 both coarse and badly sorted fabrics which contain apart from crushed rock fragments also some bone fragments (compare the big white grain in the upper right corner). Both fabrics were stylistically classified as "Elp-pottery".⁴¹⁰

Jacobs concludes: 'A combination of ingredients necessary for tempering pottery made of local clays can be found in granitic boulders left behind in the landscape around Oldeboorn, at the end of the Glacial period. Such boulders could relatively easy be crushed, eventually after pre-heating them. In part of the pottery

⁴⁰² Fokkens 1991, 2005.

⁴⁰³ Heijnis 2013, 41.

⁴⁰⁴ Overweel 1984, internal report.

⁴⁰⁵ Jacobs 2010, internal report.

⁴⁰⁶ The numbers refer to potnumbers of the pottery presented in Figures 55-58.

⁴⁰⁷ Jacobs 2010, internal report.

⁴⁰⁸ Jacobs 2010, internal report.

⁴⁰⁹ Jacobs 2010, internal report.

⁴¹⁰ Jacobs 2010, internal report.

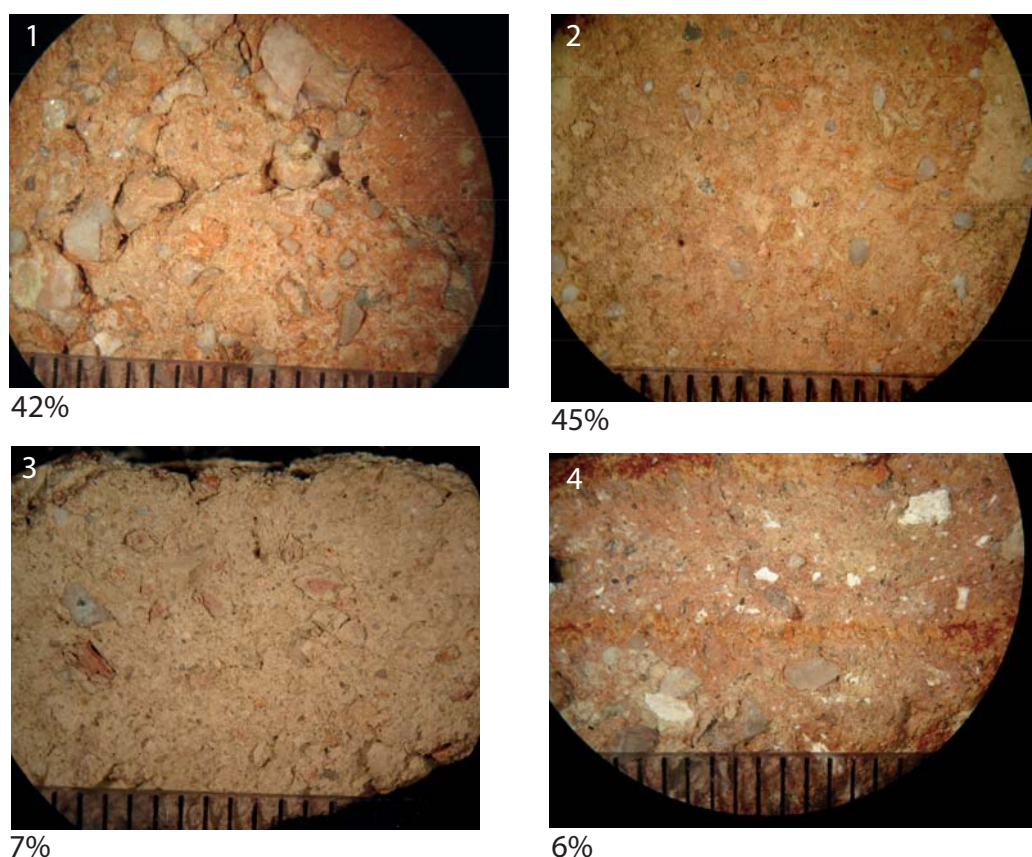


Figure 7.53 Four fabric groups distinguished by Jacobs, the percentages in which they occur are listed below the image (from Jacobs 2010).

repertoire the resulting sharp and badly sorted coarse quartz and feldspar grains were added to the clay without much care for grainsize selection. The grains were added in quantities of about 20 to 30 %.' 'The pottery was baked under reducing circumstances. The coarse quartz grains expand during firing around 573°C, whereas the heavy clays themselves tend to shrink on drying and heating. This contradictory process causes small cracks to develop around the grains. It is the type of cracks however that make the vessel resistant to the development of the dangerous longer cracks which might develop by thermal stress (as can result from constantly heating and cooling by cooking'.⁴¹¹

Residue analysis

In 2011, a residue analysis was conducted on three pot beakers and three early Elp pots. All of them had charred remains on the inside, but they all were rather weathered and difficult to interpret.⁴¹² Oudemans writes in her conclusion

on these residues: 'Residues OB11, OB4 and OB6 are alike in the sense that they all contained edible components (food) and that they all suffered from post-depositional degradation to some degree. Lipids were poorly preserved (they were almost completely hydrolysed), and sulphur from soil bacteria had been absorbed into all the samples. Because of the absence of clear sterol profiles, it is not possible to make any statements about the possible organic or animal origins of the residues. The remaining information shows that all residues are mostly composed of proteins and small amounts of fats. Residues OB1 and OB4 are mostly composed of proteins. Some lipids of unknown provenance are also present, but these concern small amounts of fats or oils. It is likely that both samples contained little to no carbohydrates. Comparable chemical profiles can be achieved by cooking a low-fat milk product, a soup with many animal or fish bones (because of the cooked proteins) or an omelette. Residue OB6

⁴¹¹ Jacobs 2010, internal report.

⁴¹² Oudemans 2011.

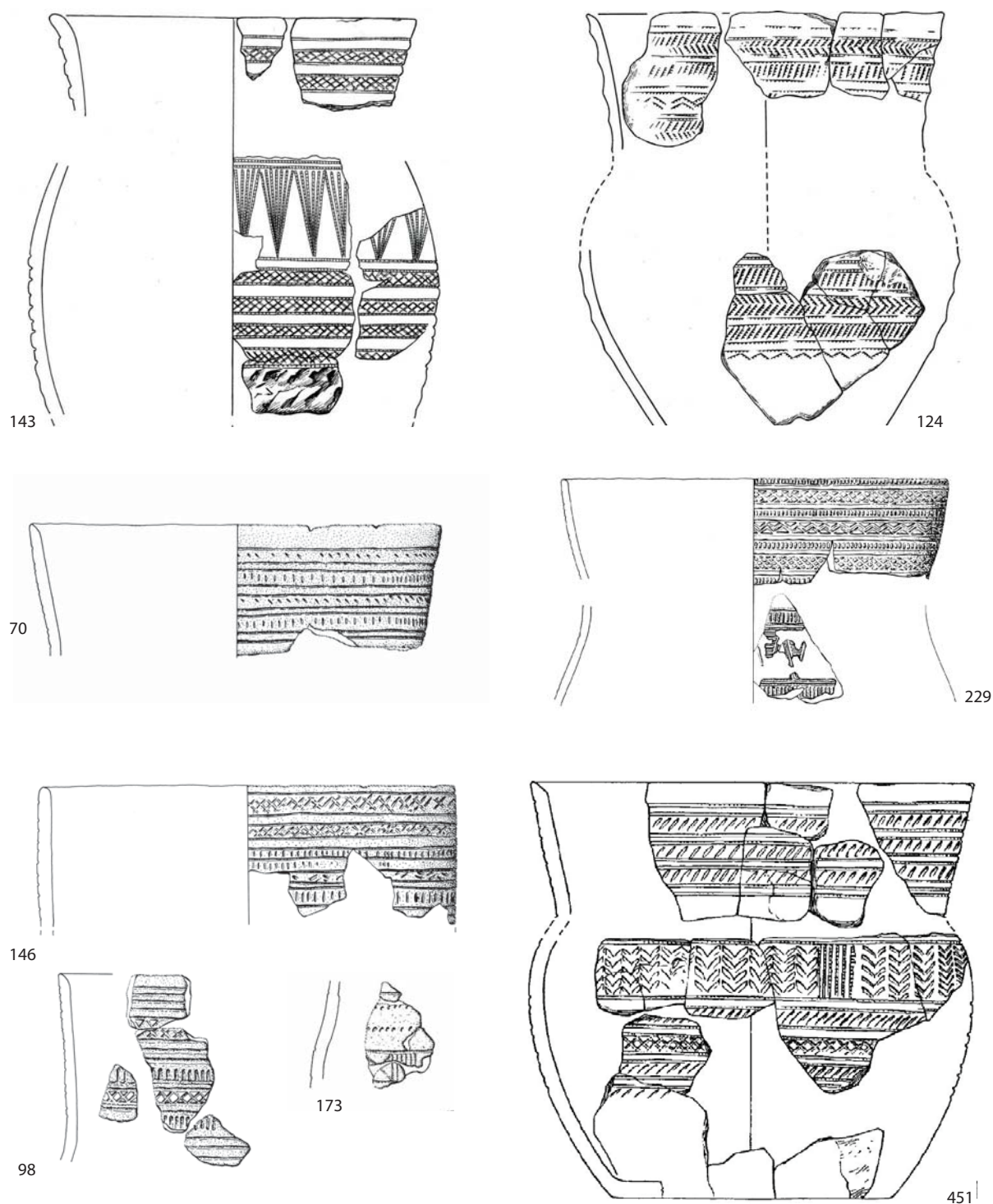


Figure 7.54 Beakers and pot beakers found at Oldeboorn, scale 1:3 (drawing by H. de Lorm, UL).

had been preserved better, and can be described as a moderately charred residue composed of proteins and fats to which carbohydrates had been added. The provenance of the residue could for instance be found in a meaty soup or a

fish-soup also containing grains, boiled mashed grains with milk or a soup containing legumes and grains.’⁴¹³

⁴¹³ Oudemans 2011; our translation.

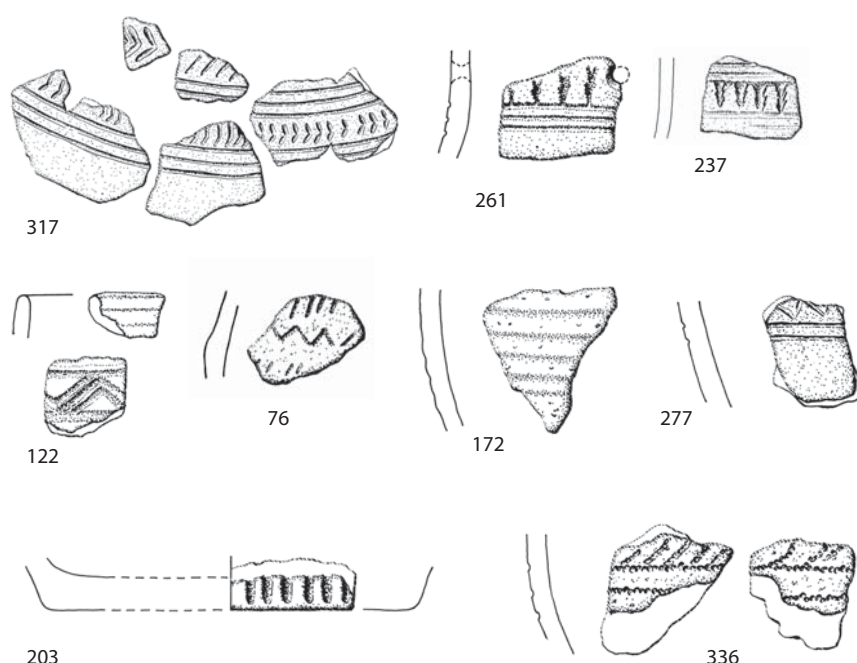


Figure 7.55 Beakers and pot beakers found at Oldeboorn, scale 1:3 (drawing by H. de Lorm, UL).

Typology

The BBC material can be subdivided between beakers and pot beakers. According to Lehmans, the difference is that Bell Beakers have impressed or incised decoration in fields; pot beakers have plastic decoration that is organised in coarser bands of fingerprints and pinches.⁴¹⁴ Pot beakers also are larger than beakers and 20–50 cm high, according to this definition. However, this size criterion is not based on settlement ware and may not be relevant anymore.⁴¹⁵ Fact is that a fair number of very large pot beakers is known, often in almost complete state, indicating that these are not just ‘normal’ pot beakers.⁴¹⁶ At Oldeboorn, the ‘borders’ between beakers and pot beakers are not always clear. Since Lanting has described most of these beakers and pot beakers in detail,⁴¹⁷ we do not have to reiterate this discussion.

The Beakers are of the Veluwe type (Fig. 7.54, 7.55). Moreover, the Oldeboorn assemblage does fit in the central Dutch repertoire according to Lanting.⁴¹⁸ The same goes for the pot beaker material: the decoration of the pot beakers has Veluwe type motives, but with a plastic element to it. Hanging or standing triangles are a frequent element.⁴¹⁹ Several pots were decorated with a dented spatula.⁴¹⁹

The pot beakers (Fig. 7.55; Fig. 7.56) probably

classify as necked pot beakers (*halspotbekers*) as defined by Modderman⁴²⁰, Lehmans⁴²¹ and Lanting.⁴²² Ten Anscher discusses the various typo-chronological dimensions of these ceramics in detail⁴²³, so we do not need to repeat that here. The bottom line of the discussion is that the ceramics that Lehmans called *gordelpot beakers* are in general Late BBC or Early Bronze Age beaker-pots. These vessels are frequently associated with pots that have primary perforations and plastic ridges underneath the rim.⁴²⁴ All other types of pot beakers occur earlier. Since Ten Anscher’s observations are based on assemblages rather than on individual pots from barrows, we think these qualification probably will prove to be right in the end. Following his scheme, the Oldeboorn material dates to the Late BBC period as there are no associations with barbed wire decoration and perforations below the rim lack.

The early Elp pottery from Oldeboorn (Fig. 7.57) is not very characteristic in terms of form. Some of the bottom parts have an S-shaped profile and are rather narrow. The Elp vessels do not exhibit clear necks and are more bucket-like as are most Elp pots of later period.

Pottery distribution

During the post excavation analysis in the 1980’s, I have conducted a refitting analysis

⁴¹⁴ Lehmans 1965, 3–5; Heijnis 2013, 39.

⁴¹⁵ Cf. ten Anscher 2012, 214.

⁴¹⁶ Lehmans 1965. These probably are depositions of the same kind as known from Barbed Wire Beaker and Early Hilversum context (Cf. Section 8.6).

⁴¹⁷ Lanting 2008, 214–222.

⁴¹⁸ Lanting 2008, 90.

⁴¹⁹ E.g. Fig. 7.190 124.

⁴²⁰ Modderman 1955.

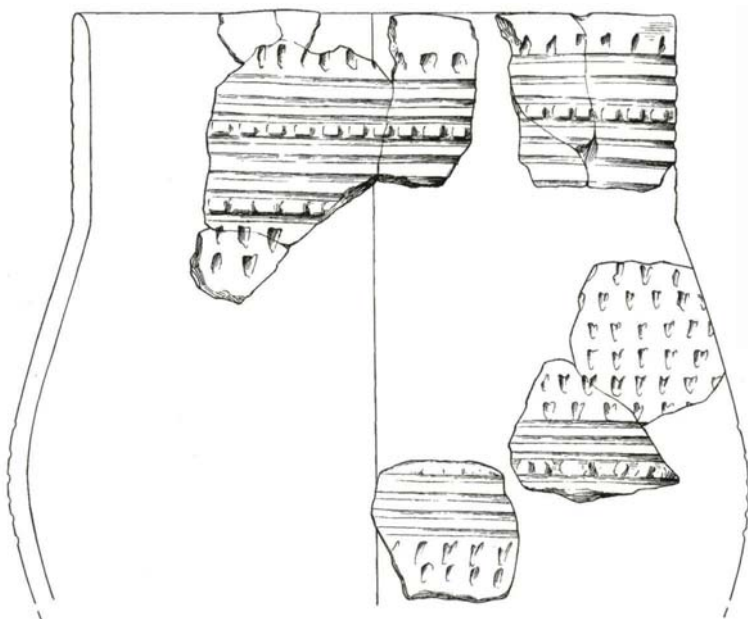
⁴²¹ Lehmans 1965.

⁴²² Lanting 2008.

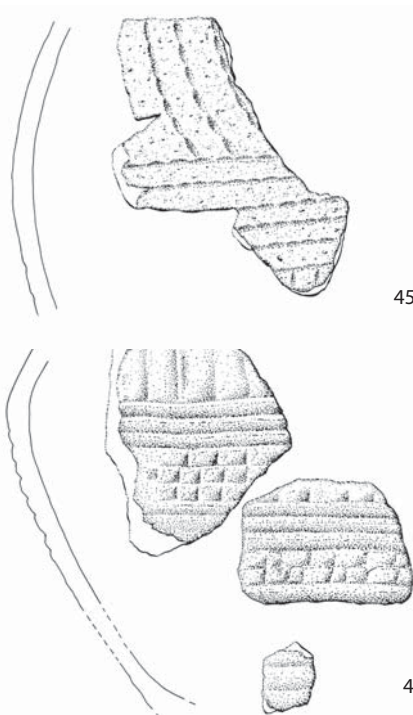
⁴²³ Ten Anscher 2012, 214.

⁴²⁴ Ten Anscher 2012, 221, Table 9.3.

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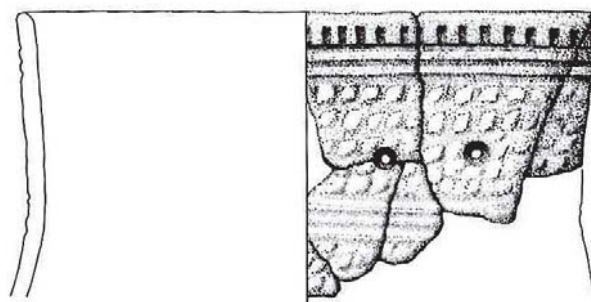
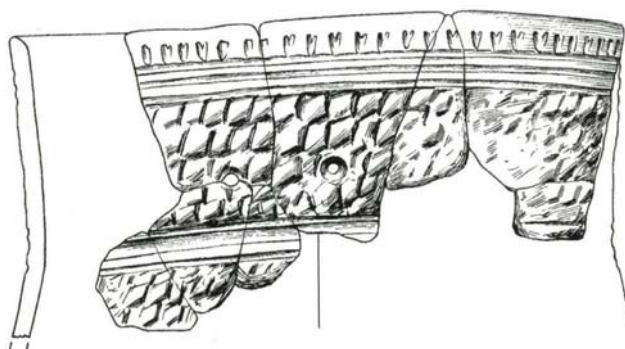


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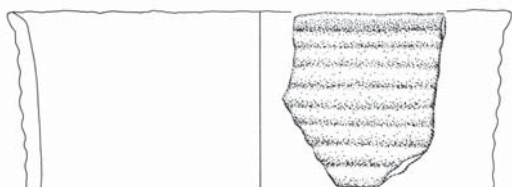


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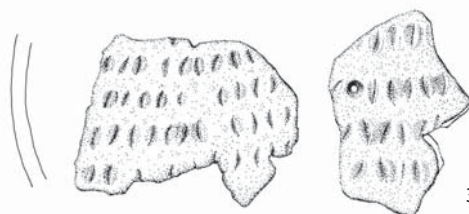
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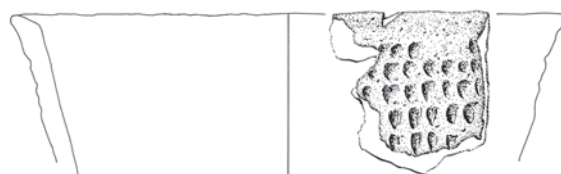


Figure 7.56 Pot beakers found at Oldeboom, scale 1:3 (drawing by H. de Lorm, UL).

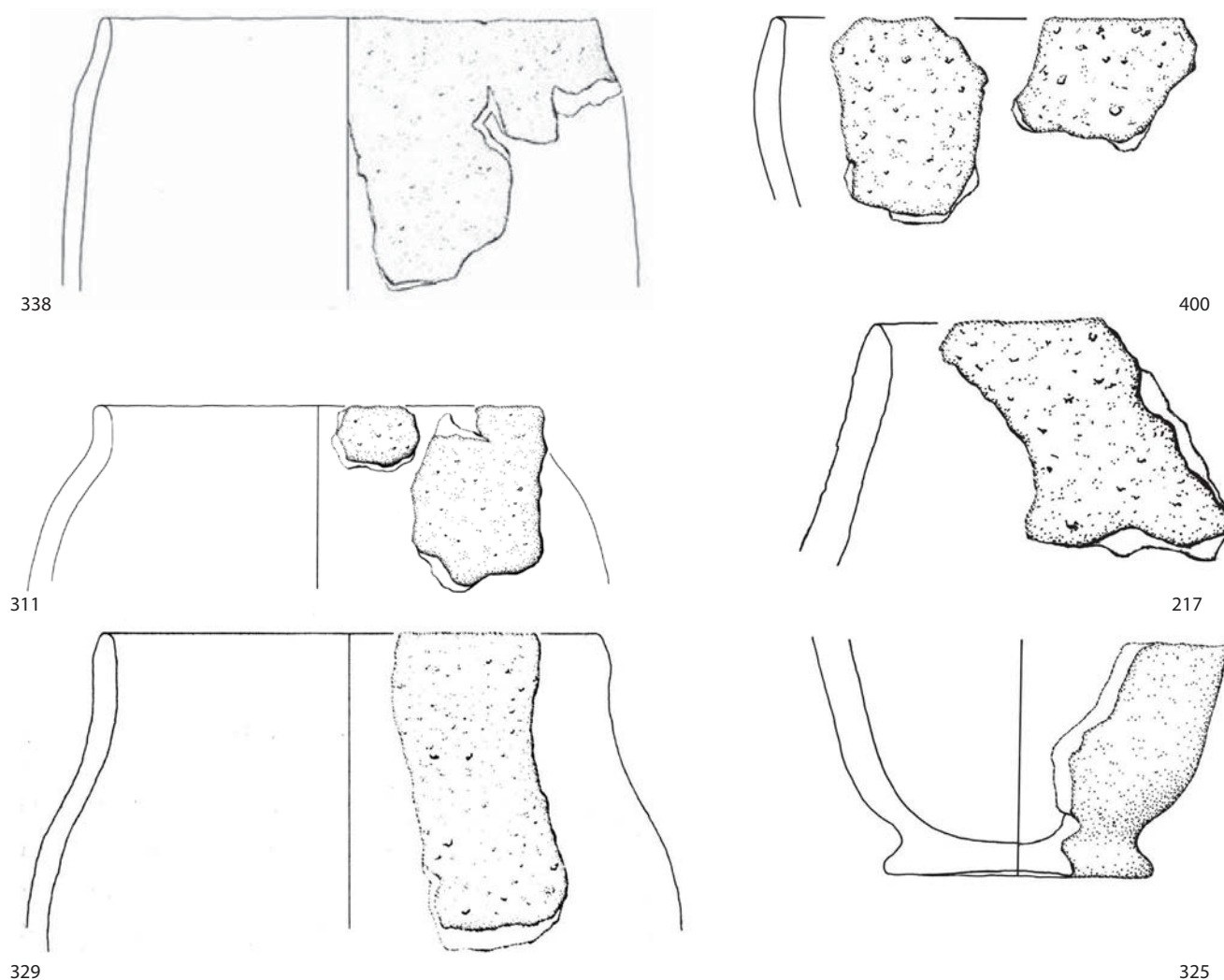


Figure 7.57 Early Elp ware found at Oldeboorn, scale 1:3 (drawing by H. de Lorm, UL).

allowing us to plot the distribution of several of the reconstructed pots and of the pot beaker, beaker and Elp wares in general. The conclusion that we may draw from this analysis is that BBC pottery in general 'avoids' Elp ware and that the latter type of pottery is predominantly associated with the 'black layer' (Fig. 7.58). Many of the beaker sherds were recovered from the animal burrows and not from the 'black layer' proper. This seems to confirm the idea that the 'black layer' is a product of the activities of Middle Bronze Age A people who used Elp ware. The fact that Beaker and pot beaker sherds are less present in squares that have Elp pottery is explained by taphonomic processes: since the people using Elp pottery have made substantial fires and burned a lot of bone material, the older pottery probably disappeared in that area.

Bone material

The bone material from Oldeboorn was studied by Clason⁴²⁵ and by Kasteleijn.⁴²⁶ Kasteleijn wrote his master thesis supervised by D. Brinkhuizen, but his determinations were not checked in detail.⁴²⁷ The majority of the faunal remains, including fish bones, were burnt, but unburnt bones were also preserved in the 'animal burrows'. Most of the burnt material was warped and did not allow for precise measurements.

Most bone material consists only of small fragments retrieved by wet sieving over a 4 mm mesh. In all, some 16,500 fish bones (or 2.5 kg) were counted and determined 90%. Of these fish bones was burnt. The centre of the 'black layer' contained so many fish bones that it was decided to analyse only a selection of the

⁴²⁵ Clason 1982, internal report reproduced by Kasteleijn 1983.

⁴²⁶ Kasteleijn 1983.

⁴²⁷ There was some reservation as to the correctness of *all* determinations, but we follow here the thesis largely since we trust that the majority of these identifications is correct.

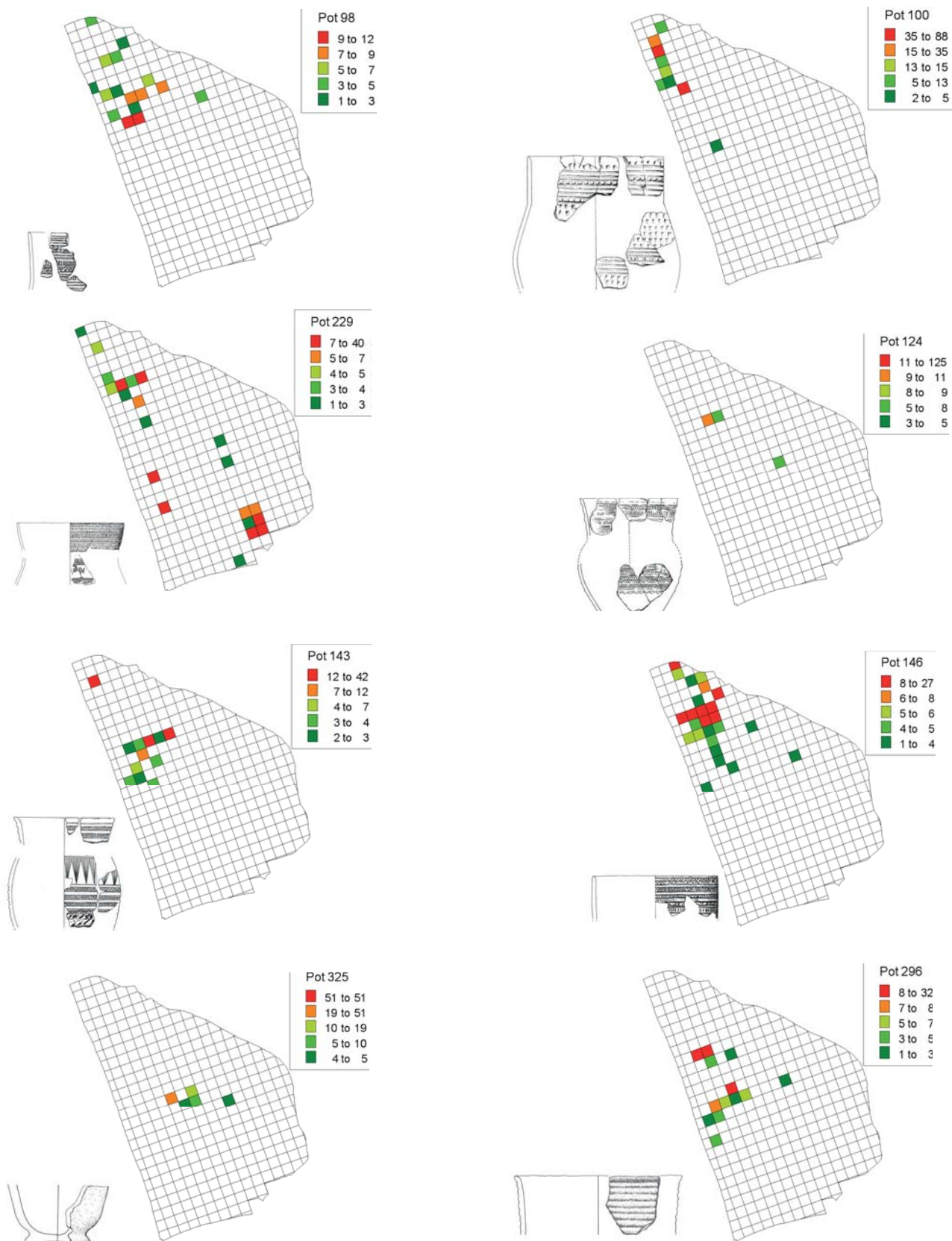


Figure 7.58 Distribution of individual pots on the site, only pot 425 is identified as Elp ware (after Heijnis 2013).

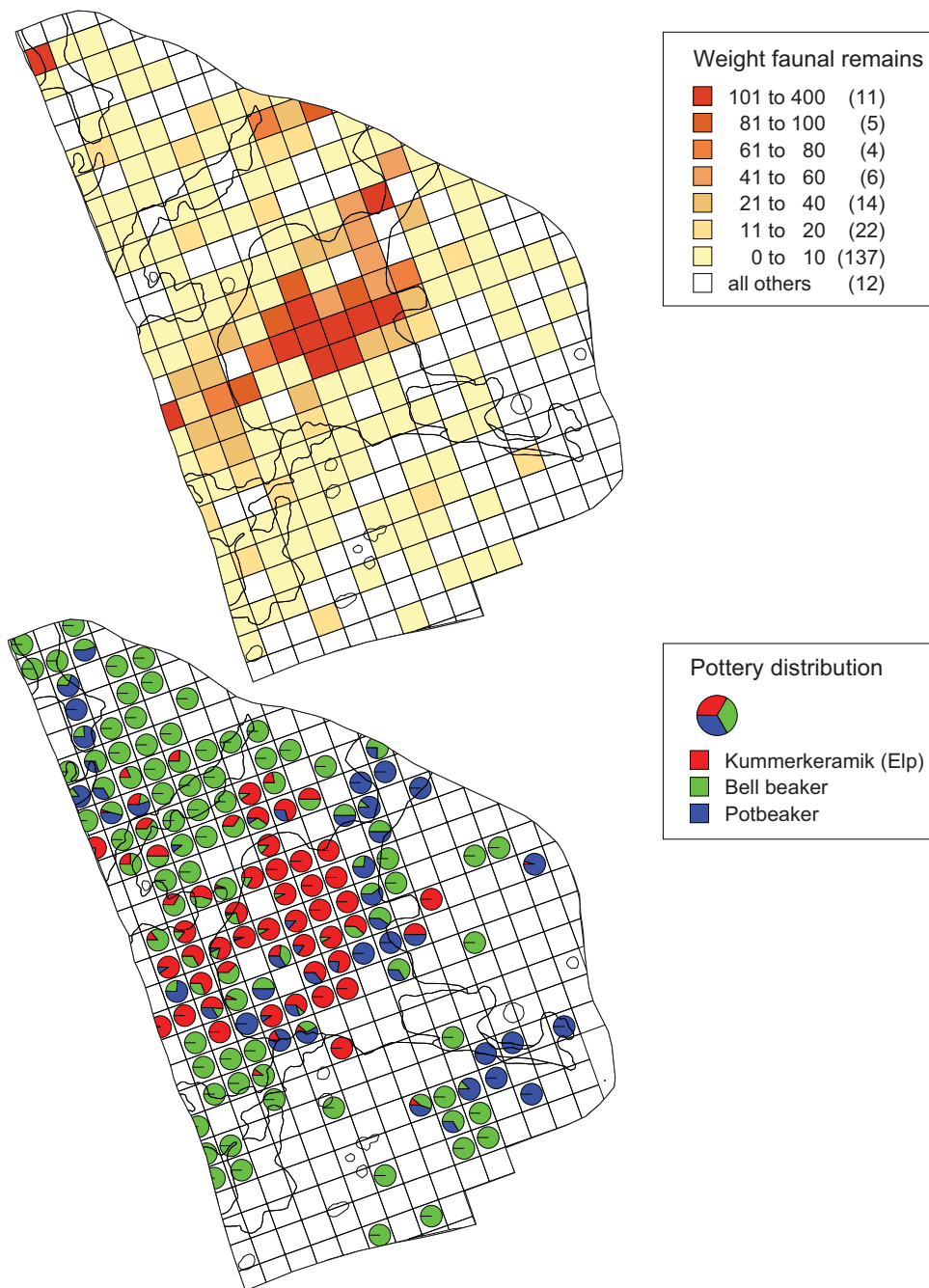


Figure 7.59 Top: Weight distribution of fish bone in grams (data compiled after Kasteleijn 1983), bottom: distribution of Elp pottery, Beaker pottery and Pot beakers based on weight (after Heijnis 2013).

material by selecting squares in a checkerboard pattern (Fig. 7.59). In this way squares 147/39, 148/36, 148/38, 149/39, 150/36, 150/38, 150/40, 151/35, 151/37, 151/39, 152/32, 152/36 and 152/38 have not been analysed and counted.⁴²⁸ If we include the fish bone from these squares in the above-mentioned total, the amount of fish bones from the sites probably doubles, because

the adjacent squares alone already contained 1,800–2,500 fish bones each.

An interesting proposition in the study by Kasteleijn is that he thinks that the majority of the parts of the fish that were recovered derive from the heads of the fish, rather than the bodies or tails. The latter parts were strikingly absent for pike, perch and cyprinids (Table 7.5).

⁴²⁸ Kasteleijn 1983, 9.

Table 7.5 Numbers of fish bone identified from Oldeboorn (compiled after Kasteleijn 1983, table 7 and 9).

| Species | Number of bones | % of total | Minimum number of individuals | Head |
|--------------|-----------------|-------------|-------------------------------|--------|
| Pike | 5499 | 83% | 307 | c. 85% |
| Perch | 437 | 7% | 25 | c. 50% |
| Flat fish | 31 | 1% | 4 | - |
| Cyprianides | 623 | 10% | 67 | c. 60% |
| Mud blower | 1 | 0% | 1 | - |
| Eel | 4 | 0% | 1 | - |
| Total | 6595 | 100% | 405 | |

Anadromous fishes, species that swim upriver from sea to spawn, like sturgeon or salmon were absent from the site. According to Kasteleijn, this indicates that the site was used outside the season that these species swim up-river, which is between April and fall. Pike spawns in February to May, so he argues that it is most likely that people were catching these fishes in winter or early spring.⁴²⁹ Therefore, he concludes that the occupants of the site caught the fish, cut off the heads, roasted or smoked the bodies and took them away to elsewhere or ate them elsewhere on the site.⁴³⁰ Therefore, the suggestion that at least this part of the site was used for catching and preparing fish for consumption at another moment and possibly another place, forms the best explanation for the observed pattern. The number of bones from mammals and birds is relatively low. Kasteleijn has calculated minimum number of individuals for these skeletal remains based on the analysis of Clason and this calculation demonstrates that most of the mammal bones were from beavers (Table 7.6). There are a few bones from cattle, sheep or goat and maybe a pig, but in the remains of these animals occur in such low numbers that they could represent chops of meat or even bait. Since the date of the burnt material (obtained from charcoal) demonstrated that we are probably dealing with an occupation horizon of the Middle Bronze Age A Early Elp period, the interpretation of the site is actually only valid for that period. However, given the long term use of a comparable site like Emmeloord,⁴³¹ and also Schokland-P14,⁴³² it is not far-fetched to assume that this type of occupation was also practiced by the BBC occupants of the site. We would expect that they have used fish weirs to catch

Table 7.6 List of minimum individuals of mammals and birds from Oldeboorn (data Clason 1982, interpreted by Kasteleijn 1983, table 16).

| Species | Minimum number of individuals |
|----------------------|-------------------------------|
| Beaver | 12 |
| Tundra vole | 2 |
| Water vole | 4 |
| Wild cat | 1 |
| Badger | 1 |
| Otter | 2 |
| Pig | 1 |
| Wild pig | 2 |
| Domesticated pig | 3 |
| Bovines | 3 |
| Aurochs | 1 |
| Domesticated bovines | 1 |
| Sheep/goat | 2 |
| Red deer | 1 |
| Roe-deer | 1 |
| Wild duck | 5 |
| Pochard | 1 |
| Red-throated diver | 1 |
| Duck spec. | 3 |

fish in the deep stream between Oldeboorn 1 and 2, or in the longer branch of the Boorne River running south Oldeboorn 2 on a distance of only 300 m (see Fig. 7.48). We have found no indications for dug features, houses or arable

⁴²⁹ Kasteleijn 1983, 80.

⁴³⁰ Kasteleijn 1983, 79.

⁴³¹ Cf. Section 7.6.

⁴³² Cf. Section 7.7.

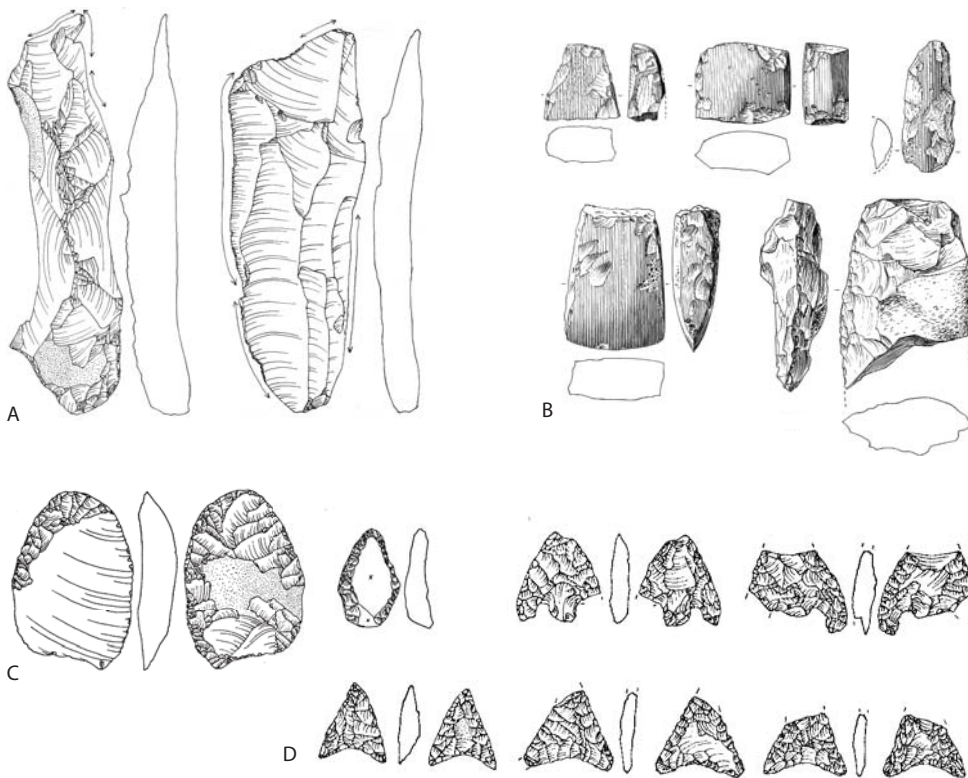


Figure 7.60 (Late) Neolithic flint objects from Oldeboorn. A. two large flint blades (15 cm long), Scale 1:3. B fragments of flint axes, scale 1:3. C. BBC 'knives', scale 1:3. D. BBC (barbs and tang) or Early Bronze Age arrowheads scale 1:2. Drawings: B: H.J. Roelink (GIA Groningen), C, D, A. Christova (compiled after Van Gijn 1983, 27, 35, 37, 40).

land at Oldeboorn. Therefore, we think that the excavated location does not represent a permanent settlement, which does not exclude the possibility that it was located nearby.

Flint and stone

Flint from the site Oldeboorn has been studied by Van Gijn,⁴³³ but the stone remains have not yet been studied intensively. The problem is that the site was clearly a palimpsest. It is fairly sure that most of the bone material derives from the Middle bronze Age A occupation, but with flint and other stone material this assumption cannot be made convincingly. Much of the flint from the site can be either Mesolithic, Late Neolithic or Bronze Age material.

A grand total of 15,094 flint artefacts were recovered from Oldeboorn. Roughly a third of these artefacts was heated. Some of the material is characteristic for Beaker flint, notably barb and tang arrowheads and Bell Beaker knives (Fig. 7.60 C). The flint was remarkably fresh and not affected by frost weathering. Therefore, it was most likely found near from boulder clay

outcrops. Such outcrops were present about 7 km upstream from Oldeboorn.⁴³⁴ Van Gijn states that there is so much material and that such a large amount of the material is not retouched, that we must assume the presence of a flint source nearby (Fig. 7.61). Whether this conclusion also holds true for the two large blades is still a matter of debate (Fig. 7.60 A). It is not considered likely that these blades could have been made from the locally available flint because the quality is very high and fresh.⁴³⁵ Quite a few axe fragments were found at Oldeboorn (Fig. 7.60), but it is difficult to assess whether they belong to the BBC occupation of the site or to an even older occupation phase. It is not very likely that they belong to the Elp phase because flint and stone axes are not known from that period. An indication that at least some of the polished axes may be older than the Elp occupation is that there is a fragment of a 'thin butted flint axe with rectangular cross-section'. Axes of this type are considered to be exclusive to the latter half of the Middle Neolithic or the Late Neolithic A

⁴³³ Van Gijn 1983.

⁴³⁴ Van Gijn 1983, 12.

⁴³⁵ Van Gijn 1983, 40.

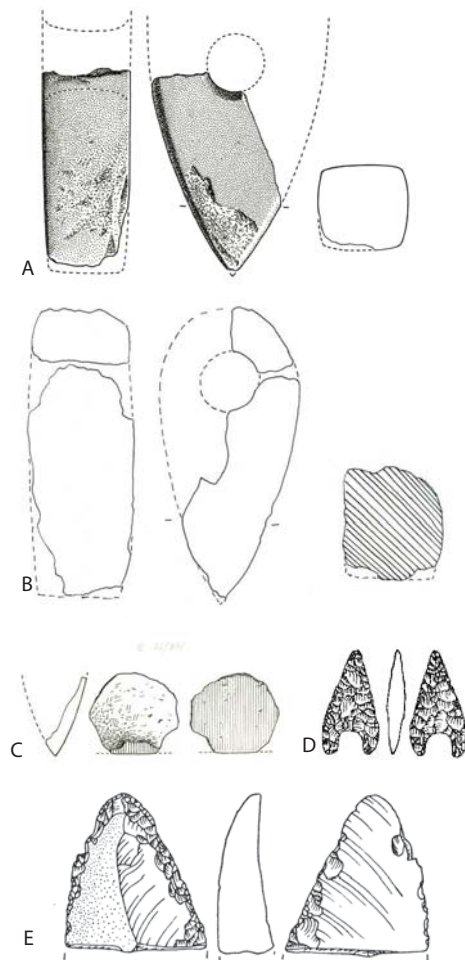


Figure 7.61 Early or Middle Bronze Age A flint and stone objects from Oldeboorn. A, B large fragments of *Arbeitsäxte*, scale 1:3. C cutting edge of a stone axe or *Arbeitsaxt*, scale 1:3. D Sögel type arrowhead, scale 1:2. E tip of a flint dagger, scale 1:3. Drawings: A, B, C: H.J. Roelink (GIA Groningen), D, E: A. Christova (compiled after Van Gijn 1983, 27, 35, 37, 40).

(Fig. 7.61 B).⁴³⁶ However, fragments of a polished oval flint axe and a rough-out for such an axe are uncommon in BBC contexts, in contrast to the two small rectangular axes from the site. These could be part of the BBC assemblage. Two fragments of hammer axes were present. Both hammer axes belong to a late type of hammer axe that is generally indicated as '*Arbeitsaxt*' (Fig. 7.61). One of the characteristics of this type is the flat or rounded top, which is broader than the Emmen and Zuidvelde type axes that have been found in association with Late BBC and Early BWBC beaker-pots.⁴³⁷ The cross-section of the axes is square. These

Arbeitsäxte have been found with flint daggers that are dated to the end of the Early Bronze Age or the beginning of the Middle Bronze Age.⁴³⁸ A Sögel type arrowhead (slender, with tangs but no barb) probably belongs to the same Early Bronze Age context.

The amount of stone that was brought to the site is substantial: over a 1,000 stones with a total weight of 19 kg were recovered from the site. This may not seem much in absolute terms, but this material must have been brought in from elsewhere. However, as with the flint, we should note that the site is a palimpsest of Mesolithic and Neolithic visits. Therefore, it has been decided not to study the material in detail.

7.8.4 Comments

To summarise, the site Oldeboorn was still a puzzle to some extent in 1980. The two phases of occupation, the appearance of an extraction camp, the Veluvian Bell Beakers up in the north: it was all unique. To some extent the site is still unique, but it is easier to place it in a larger context of comparable and contemporaneous sites: Emmeloord, Schokland-P14, Barendrecht-Carnisselande and sites in the river area all show a similar pattern of wetland exploitation of through a combination of hunting, fishing and farming. However, we do not doubt that the BBC occupants of the Oldeboorn site were also farmers. Therefore, we think that the nature of the BBC occupation may have been a more permanent settlement comparable to other sites in the lowlands.

During the Middle Bronze Age A, the location had become situated in a much wetter environment and the bone assemblage does not indicate any other activities than fishing and possibly some hunting for deer. Thus, it is very well possible that Oldeboorn is an extraction camp of farmers living a bit further upstream on the edge of the Pleistocene uplands. That such camps still existed in the Middle Bronze Age need not surprise us either: the locations and the faunal assemblages of the West Frisian Middle and Late Bronze farming settlements proves that hunting, gathering and fishing were still part of the subsistence economy of these communities and probably served to extend their means of subsistence.⁴³⁹

⁴³⁶ Cf. Bakker 1979, 82.

⁴³⁷ Lanting 1973, 199.

⁴³⁸ Lanting 1973, 300.

⁴³⁹ Van Amerongen 2016; Roessing & Lohof 2011.

7.9 Steenendam

The site Steenendam is situated on the northern end of the Drents Plateau (Fig. 7.62).⁴⁴⁰ The find horizon lies between -1.35 and -1.80 OD. The site is covered by peat and with clay sediments from recent times. In the Late Neolithic, the site was situated in a low area bordering the higher sandy soils about 6 km from the mudflats at the sea shore.

7.9.1 Research history

The site of Steenendam was discovered in 1972 by J.K. Boschker, who was acting for the Fries Museum in Leeuwarden as 'fynstensiker', Frisian for 'find searcher'. Boschker prospected areas in advance of road constructions and other building projects as a professional occupation. His discovery of the site led to a short excavation in the winter of 1972-1973 under the direction of the provincial archaeologist G. Elzinga, assisted by technicians and staff of the Biological Archaeological Institute in Groningen.⁴⁴¹ Members of the national youth organization for the study of history (NJBG) assisted in the fieldwork. It turned out that a SGC site was present of which the remains were mixed in with older Mesolithic habitation at the site. The site was only very briefly summarised⁴⁴²



Figure 7.62 Location of Steenendam on the palaeogeographical map of 2750 cal BC (based on Vos & De Vries 2013).

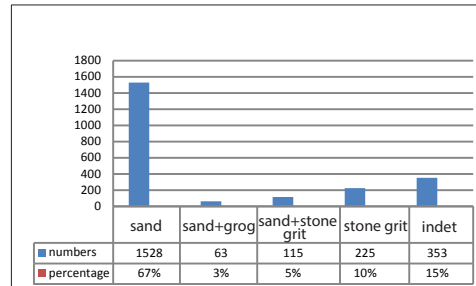


Figure 7.63 Classes of temper of the Steenendam pottery (adapted from Vasbinder 1987).

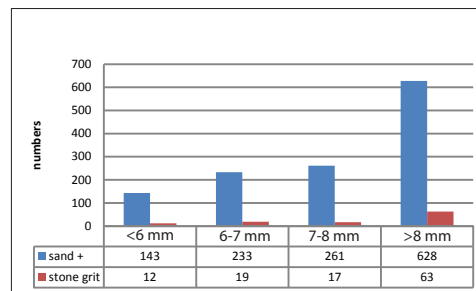


Figure 7.64 Distribution of wall thickness. The total number of sherds presented in this graph is 1376, the remainder was too small to measure or eroded too much (adapted from Vasbinder 1987).

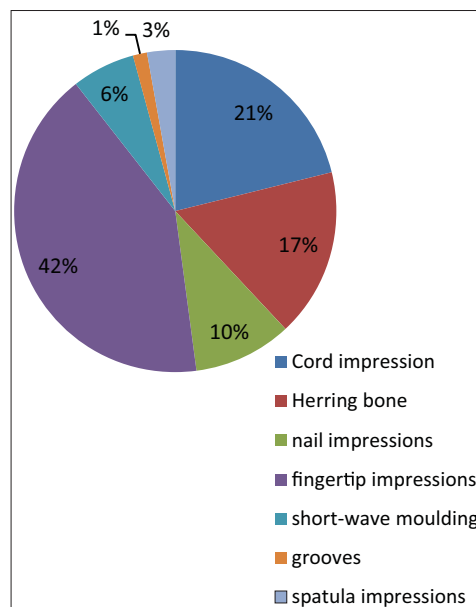


Figure 7.65 Percentages of decoration types. The total number of sherds presented in this graph is 142 (adapted from Vasbinder 1987).

⁴⁴⁰ Cf. Section 8.2.1.4.

⁴⁴¹ Amongst others A. Meijer, H. Zwier and J.N. Lanting.

⁴⁴² Elzinga 1973.

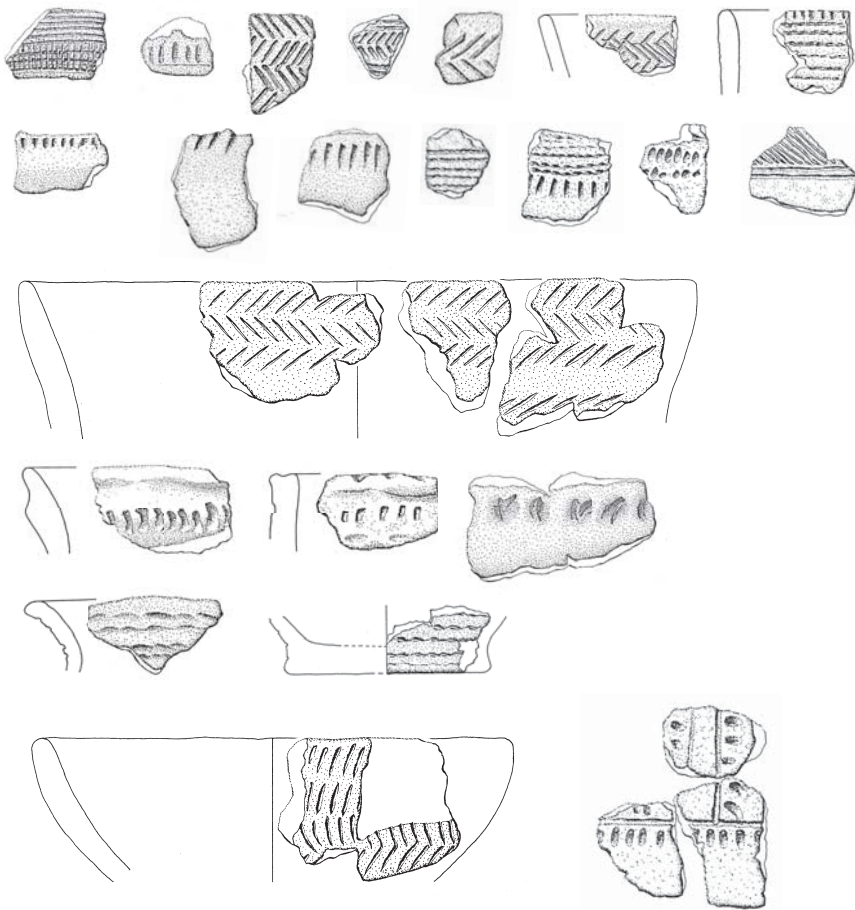


Figure 7.66 Sherds of SGC beakers from Steenendam, including a bowl and a fragment of an amphora (bottom right), scale 1:3 (drawing H. de Lorm, Leiden Faculty of Archaeology).

and then studied in the framework of a doctoral thesis by H. Fokkens, later by A. Vasbinder.⁴⁴³ A small selection of the pottery was published by Fokkens.⁴⁴⁴ The doctoral thesis by Vasbinder only exists as a handwritten manuscript. For this publication we have used that manuscript and the drawings made in preparation of a final publication.

were collected from the squares by hand. Flint was recovered from the site as well, but it was difficult to distinguish between the Mesolithic and Neolithic flint. Therefore the flint was not studied. The pottery from Steenendam can be divided into pottery that has sand temper, sand and grog temper, or mineral temper (Fig. 7.63). The wall thickness of the vessels generally exceeds 8 mm (Fig. 7.64).

In this section, we publish all of the pottery that was drawn for a publication back in 1987 by H. de Lorm at the Faculty of Archaeology in Leiden. The table of decoration types (Fig. 7.65) shows that most of the decoration consists of cord decorations and grooves or impressions in a herringbone pattern (Fig. 7.66). Plastic decorations made by fingertip impressions or short-wave moulding are prominently present as well (Fig. 7.68).⁴⁴⁵ The cord-decoration on several of the bottom sherds indicates that AOO pottery is present in the assemblage (Fig. 7.67). There is one fragment of an amphora (Fig. 7.67). Amphorae are known from burial context,⁴⁴⁶ but also from settlement context, for instance from Bornwird⁴⁴⁷ and Voorschoten.⁴⁴⁸ Most types of the SGC beaker spectrum (apart from 1e and ZZ) are represented in the assemblage.

The stone tempered pottery has some grooved line motives that resembles Late Funnel Beaker pottery just like the ceramics at Bornwird (Fig. 7.67 centre).⁴⁴⁹ On the other hand, the undecorated material does remind of VLC material (Fig. 7.69). If this assemblage had been situated in the western Netherlands or in West Frisia, we would have no problems with identifying this material as the undecorated 'VLC' component of SGC pottery.⁴⁵⁰

Many of the sand-tempered sherds show signs of scraping the outside (Fig. 7.68). This is a correlation that has been recognised in other settlement complexes as well, for instance at Voorschoten-De Donk.⁴⁵¹

7.9.2 Excavation results

The excavation was only 5 x 18 m in surface area. The finds were collected in squares of 2 x 2 m (18 squares) or in 1 x 1 m (54 squares). None of the material removed from the squares were sieved and no features were found. 2,562 Potsherds were recovered from the site, of which 2,304

7.9.3 Comments

Steenendam and Bornwird are two sites that both seem to belong to the same spectrum of the SGC, although the pottery recovered from the arable land at Bornwird was largely attributed to the Funnel Beaker Culture.⁴⁵² These sites compare very well with VLC-SGC

⁴⁴³ Vasbinder 1987.

⁴⁴⁴ Fokkens 1998.

⁴⁴⁵ 48% Of the decorated material.

⁴⁴⁶ Van der Waals 1964.

⁴⁴⁷ Fokkens 1982.

⁴⁴⁸ Glasbergen *et al.* 1967.

⁴⁴⁹ Fokkens 1982, 59.

⁴⁵⁰ Cf. Beckerman 2014.

⁴⁵¹ Wasmus 2011.

⁴⁵² Fokkens 1982.

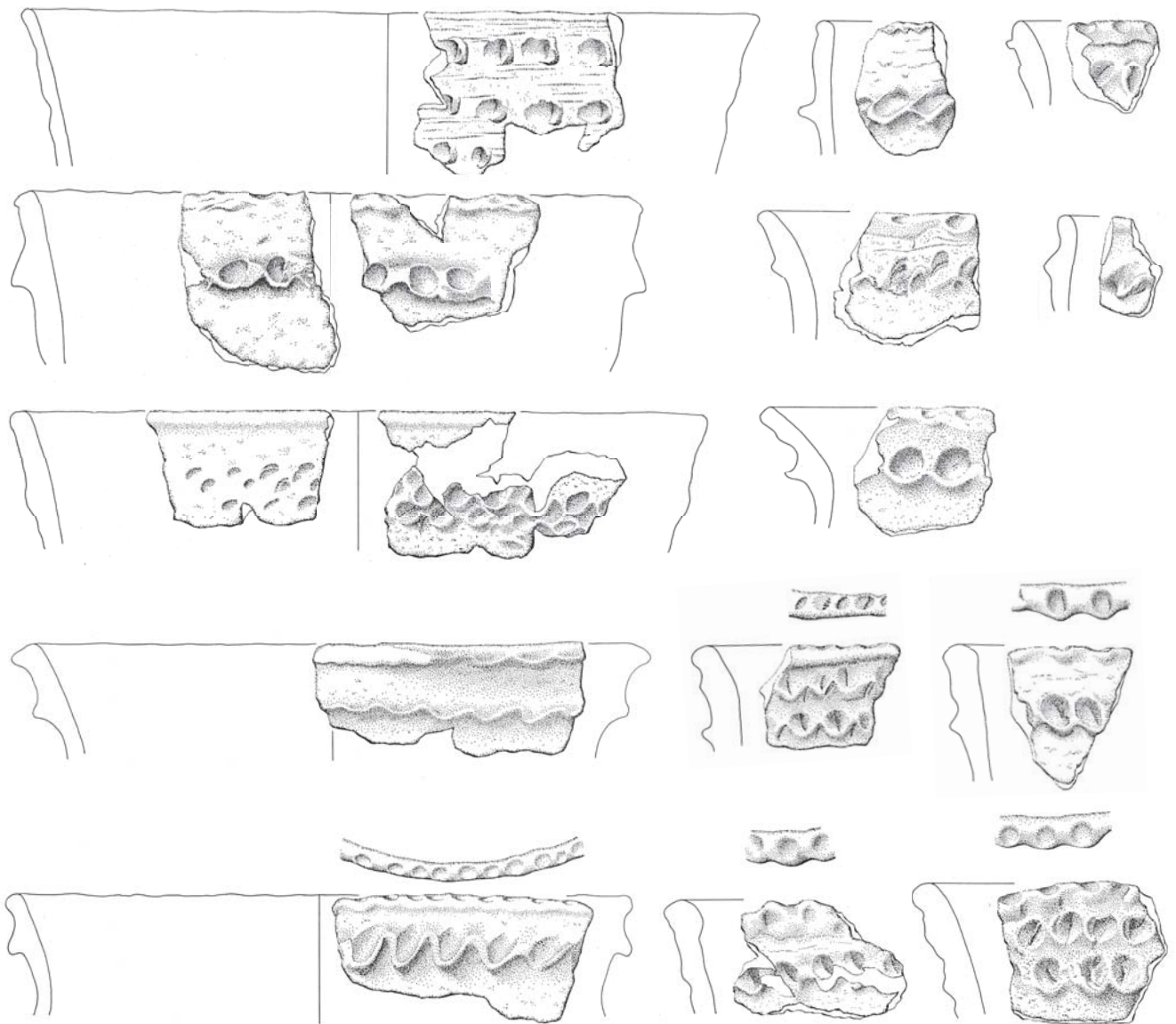


Figure 7.67 Sherds of SGC pots with fingertip decoration and short wave-moulding from Steenendam, scale 1:3 (drawing H. de Lorm, Leiden Faculty of Archaeology).

sites in West Frisia and in the The Hague area, for instance Voorschoten-De Donk. Especially at Voorschoten-De Donk, the same kind of plastic decoration motives with shortwave-moulding and fingertip impressions were present. However, this decoration is lacking at all West Frisian sites.⁴⁵³ We do not yet know whether this has to be interpreted as a temporal phenomenon, or a phenomenon that can be related to existing networks of communication and practice.

⁴⁵³ Beckerman 2015.

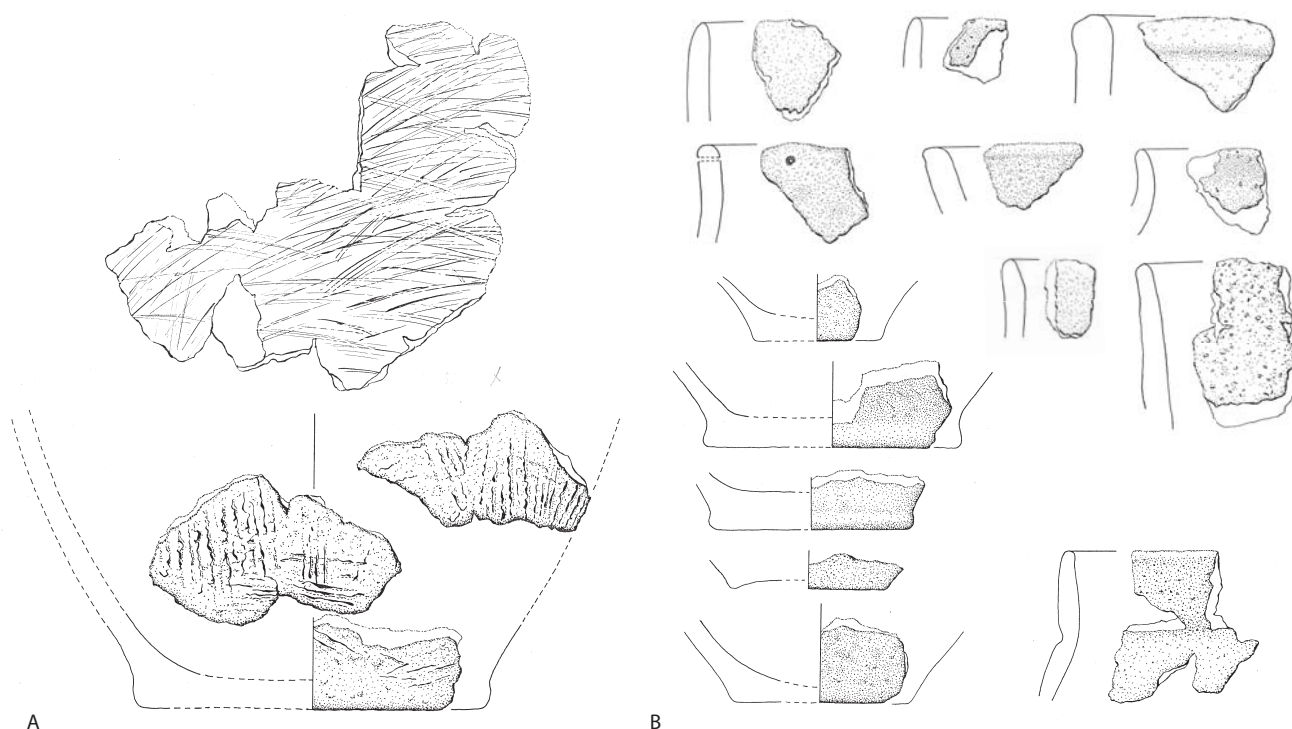


Figure 7.68 Sherd of a SGC pot with traces of scraping from Steenendam(A); B: undecorated sherds, one with a primary perforation under the rim, scale 1:3 (drawing H. de Lorm, Leiden Faculty of Archaeology).

7.10 Leek-Hoge Traan

Leek-Hoge Traan and Traan AZC are situated on the flanks of a coversand ridge bordering a stream valley (Fig. 7.69).

7.10.1 Research history

At Leek-Hoge Traan several infra-structural projects had to be carried out. Prospective research included an auguring campaign and test trenches. At several places remains from the Neolithic, the Iron Age and the Middle Ages were discovered; nevertheless the area was not selected for excavation. It was decided to carry out a watching brief during digging activities. This brief was carried out by ADC ArcheoProjecten. Their archaeologists oversaw the digging of about 100.000 m².⁴⁵⁴

At Leek-Traan AZC the ARC company excavated test trenches and an larger area of over an hectare in advance of the building of a refugee centre.⁴⁵⁵

7.10.2 Excavation results

Remains of settlements and burials from the Mesolithic, the Neolithic, the Bronze Age and the Middle Ages were discovered. One of the finds at

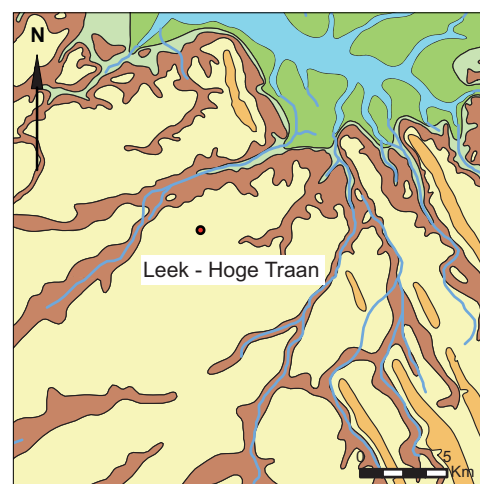


Figure 7.69 The location of leek-Hogetraan on the palaeogeographic map for 2750 cal BC (based on Vos & De Vries 2013).

⁴⁵⁴ Opbroek, Wijsenbeek & Beckerman 2008, 5.

⁴⁵⁵ De Wit 2001, 11.

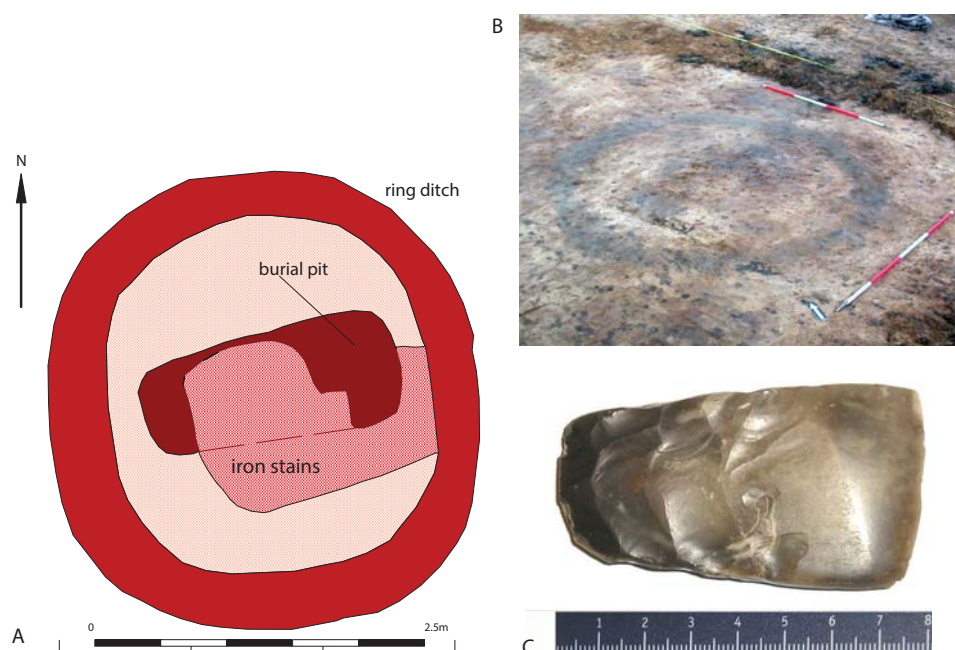


Figure 7.70 The ring ditch around the burial found at Leek-Hoge Traan (A, B), and the axe that was found near the location of the grave (C) (after Opbroek, Wijsenbeek & Beckerman 2008, 21, 22, 29).

Leek-Hoge Traan was a possible Late Neolithic burial, surrounded by a small ring ditch. It probably concerned a levelled barrow. There were no finds, but a small polished flint axe was found nearby (Fig. 7.70).

The excavation at Leek-De Traan AZC was focussed on a large cluster of Mesolithic hearths, but also a Late Neolithic burial was discovered. The burial pit was 150 x 100 cm, and was surrounded by a narrow ditch of 225 cm in diameter and 20-25 cm wide and 20 cm deep. On the west side of the pit some badly preserved remains of pottery were found. Reconstructed, these turned out to belong to a rather unique combination of beakers: a SGC 1c beaker, a miniature SGC beaker, an undecorated flat bowl, a spoon, a flint flake, a splinter and a small unmodified stone (Fig. 7.71).

7.10.3 Comments

The finds at Leek are the most northern examples of Late Neolithic (SGC) burials. The set of pottery objects from Traan AZC is unique. The individual objects do occur more often, but this is also infrequent. Ufkes cites a burial from Xanten where parts of a comparable set were

also found together. This grave contained a late beaker, a small beaker 'for a child' and a flat bowl.⁴⁵⁶ The spoon found at Traan AZC is unique. Since the Leek set consist of a large and a small beaker accompanied by a bowl - like at Xanten - such assemblages may have had a special meaning. Whether that indeed is related to the burials of children is hard to say.

7.11 Hattermerbroek-Hanzelijn and -Bedrijventerrein Zuid

Hattermerbroek-Hanzelijn is located on the edges of a river terrace, bordering a residual gully of the river Vecht. Just several hundred meters to the southwest of the site the northernmost edge of the glacially pushed Veluwe region begins, which is where Bedrijventerrein Zuid can be found. At the two sites, Pleistocene soils occur in the form of fluvio-periglacial sediments covered below cover-sand. This situation implies that there was a relatively high contrast between higher and lower areas, which during for the Holocene also came to mean a difference between wet and dry areas.⁴⁵⁷ At the sites, the formation of peat occurred at differing scales. The sedimentation

⁴⁵⁶ Ufkes 2001a, 20.

⁴⁵⁷ Van Zijverden 2011.

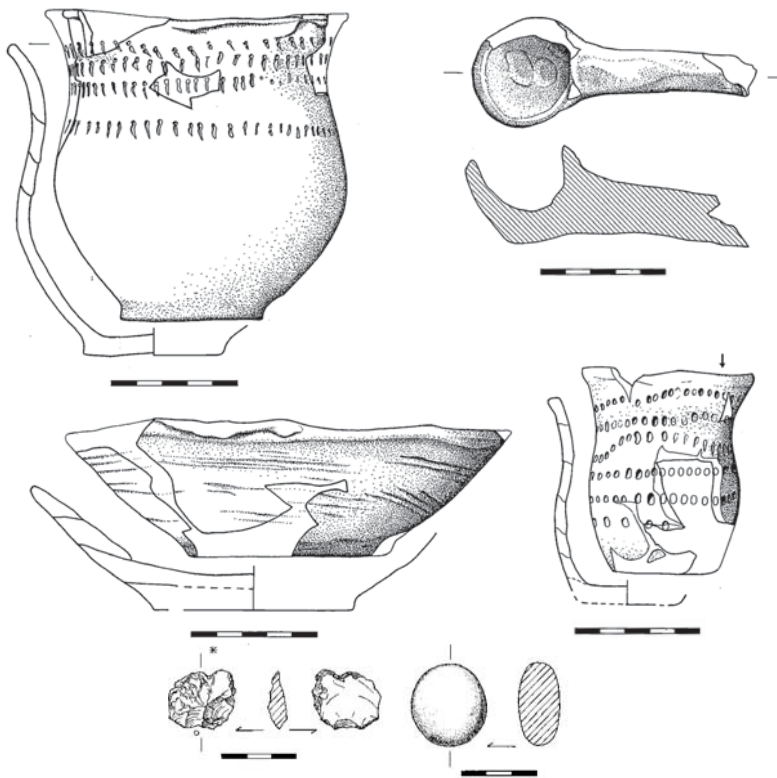


Figure 7.71 The inventory of the Leek SGC burial: two beakers, a bowl, a spoon, a flint flake and a round unmodified stone, scale 1:3 (after Ufkes 2001b, 20, 21, 22, 26).

of clay (river marshes) had occurred on top of the largest part of the Hanzelijn site and at the north of the Bedrijventerrein site. The first peat formed around 2800 cal BC at the Hanzelijn site and peat growth continued until c. 400 cal BC. At Bedrijventerrein-Zuid, peat did not develop until the Middle Bronze Age. According to the palaeogeographic reconstructions (Fig. 7.72), most of this site remained dry. These processes resulted in a thick layer covering the Late Neolithic to Middle Bronze Age remains at the Hanzelijn site, whilst the higher parts of the Bedrijventerrein site were somewhat disturbed by later erosion.

7.11.1 Research history

The area surrounding the junction between motorways A28 and A50 at Hattemerbroek was extensively excavated for prior to the construction of a railway (Hattemerbroek-

Hanzelijn) and the construction a business park (Hattemerbroek-Bedrijventerrein-Zuid; Fig. 7.73). These two sites were excavated consecutively by the same archaeological companies (a collaboration between Archol and ADC). This section discusses both sites together, because of their proximity of these two sites, and the fact that they were excavated and published consecutively and in a comparable manner.

The prospective phase of research differed somewhat between the two sites. Following two phases of auguring surveys, the Hanzelijn site was selected for test-trench research,⁴⁵⁸ whilst the site Bedrijventerrein-Zuid was selected for excavation without test trenches having been dug first.⁴⁵⁹ The finds at the Hanzelijn led to the expectation of a Late Neolithic to Early Bronze Age settlement at that site.

7.11.2 Excavation results

A predominance of Mesolithic and Late Neolithic to Early Bronze Age finds and features and good soil conditions resulted in a proposed methodology that was heavily focused on locating pottery and flint scatters in the top layers. This was combined with a more traditional approach to excavating soil features after the top layers were removed. This methodology was applied at both the Hanzelijn site and at Bedrijventerrein-Zuid.

The occupation horizon at both sites was excavated using three different sampling methods. A 5 × 5 m grid was projected on the Hanzelijn site, and the centre 1 m² of each block was excavated by hand, collecting all the finds. Areas that proved to be rich in finds were sampled more densely. Some areas with very high densities in finds were sieved. The areas in between these sampled areas were excavated using a hydraulic digger and finds were collected during this procedure. Most of the features dating to the period 2900 BC-1500 cal BC at the Hanzelijn site were diffusely spread pits. Several graves were also discovered, both at the Hanzelijn and at the Bedrijventerrein-Zuid sites. The latter site also yielded two possible house plans from the first half of the Middle Bronze Age. These features will be treated separately per theme and per period.

⁴⁵⁸ Lohof *et al.* 2011, 16.

⁴⁵⁹ Hamburg, Lohof & Quadflieg 2011, 4-5.

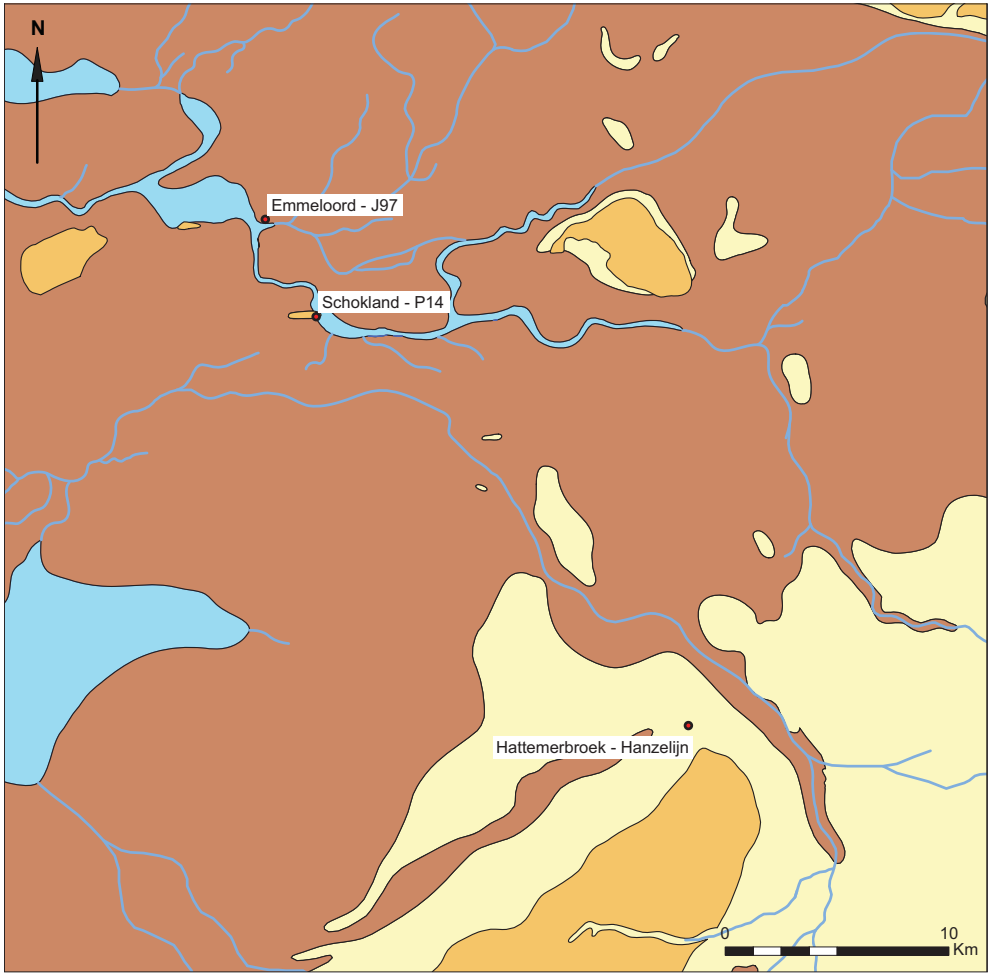


Figure 7.72 Palaeogeographic map for 2750 cal BC showing contemporary sites for the Late Neolithic B (palaeogeography from Vos & De Vries 2013).

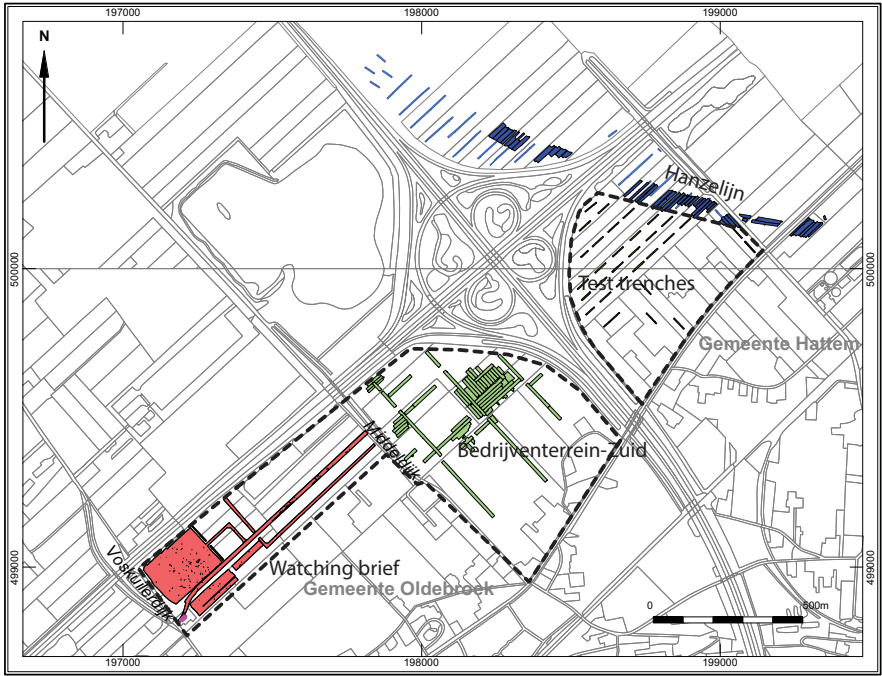


Figure 7.73 The location of the Hanzelijn and Bedrijventerrein-Zuid sites (from Hamburg, Lohof & Quadflieg 2011, 14).

Settlement

At the Hanzelijn site a possible Funnel Beaker Culture (TRB) settlement site was uncovered on one of the highest points in the landscape. Most of these Middle Neolithic remains were uncovered in block 7, on a cover-sand terrace bordering a fossil gully of the river Vecht (Fig. 7.74).⁴⁶⁰ A number of ¹⁴C-dates show that the habitation can be dated between c. 3500 and 3000 cal BC.⁴⁶¹ A remarkable structure found here is the 73 m long palisade, which was constructed with only 10 cm distance between the posts. This structure reminds of the palisaded enclosure discovered at Anlo,⁴⁶² which originally was interpreted as an animal pen for the lack of a better explanation.⁴⁶³ Presently the site is interpreted as a Funnel Beaker Culture communal site that was used as a place where people occasionally gathered and carried out ritual activities.

There are few features from the Late Neolithic A at Hanzelijn, and at Bedrijventerrein-Zuid there are none.⁴⁶⁴ Most of the finds from this period are dispersed sherds from the occupation layer. Finds and features dating to the Late Neolithic B are more numerous. This includes pits in block 2 and block 7, both of which had several charcoal-rich layers, indicating repeated fire related activities in or around the pit (Fig. 7.75). Block 4, located on the border between the area of the first peat formation and dryer sandy soils, has a higher density of BBC finds and features. These features include pits that are also rich in charcoal, and consist of multiple layers, indicating that the pits were used more than once. At Bedrijventerrein-Zuid, three more BBC pits were found. Again, these pits share a charcoal rich fill on the bottom. They are found isolated from other contemporaneous finds. The spread of finds in the top layers in most cases appears to correspond with the occurrence of features in the excavation plane. Excavation blocks 1 and 4 at the Hanzelijn especially show a clear spread of BBC material near unambiguously dated pits.⁴⁶⁵ These sherds include Bell Beakers with Veluwe type decoration (Fig. 7.76). The material is directly comparable to the Oldeboorn material.⁴⁶⁶ In that respect, the chronology is interesting because such a detailed view at the site chronology is lacking at Oldeboorn. Table 7.7 shows that the dates are fairly consistent: they are spread over the Late Neolithic B, although Lohof *et al.*

argue that they cluster in the early part of the Late Neolithic B.⁴⁶⁷ With exception of two pits that indeed appears to be the case. Most of the Bedrijventerrein-Zuid site yielded a comparable date range.

With respect to the pottery proper, Drenth goes to great lengths to discuss the chronotypological position of Bell Beakers, beaker-pots and Barbed Wire Beakers. However, as will be explained in more detail in Chapter 8, such discussions are problematic given the wiggle platforms that are present in the ¹⁴C calibration curve for the Late Neolithic A and Late Neolithic B.

BWBC pottery is also present at the site, but in minor quantities (Fig. 7.77). One early HVC sherd has been found (Fig. 7.77 v4976), which in any case shows that pottery was also used in this part of the Central Netherlands.

Pottery, features, flint and stone material demonstrate clearly that the area was settled in the Late Neolithic and that people dug several deep pits in which the remnants of fires were deposited or which they used to make fire in. Rather than calling these pits hearths, as the excavators do, we would prefer to connect these fires to yet unknown special activities carried out here.

During the Early Bronze Age, the Hanzelijn area would have already been subjected to significant drowning, although the thick layer of peat that would come to cover the area did not form until 1800 cal BC.⁴⁶⁸ At the Hanzelijn site, it seems that activities mostly ceased at all but the highest parts of the landscape. Pottery was found at the cover-sand elevation in excavation block 1, although some finds were also recovered from block 7, adjacent to the fossil stream gully (Fig. 7.74).⁴⁶⁹ Soil features could not be unambiguously dated to this period, although it is possible one or more of the stake rows found in block 1 date to the Early Bronze Age.⁴⁷⁰

Because of a considerable height difference between the two sites, the drowning landscape did not significantly affect the Bedrijventerrein site. A relatively large Bronze Age settlement was found there, with the remains of 23 farms from various periods throughout the Bronze Age.⁴⁷¹ Two of the house plans were dated to the Middle Bronze Age A (Fig. 7.78). Both were found in the centre of the excavated area, with house 29 being situated towards the east. The first of these, designated as structure 21, is c. 12 m long.

⁴⁶⁰ Lohof *et al.* 2011, 160–168.

⁴⁶¹ Lohof *et al.* 2011, 161.

⁴⁶² Waterbolk 1960; Harsema 1982.

⁴⁶³ Waterbolk 1960.

⁴⁶⁴ Hamburg, Lohof & Quadflieg 2011, 124;

Lohof *et al.* 2011, 168–172.

⁴⁶⁵ Lohof *et al.* 2011, 88–90; 99–101; 288.

⁴⁶⁶ Cf. Section 7.29.

⁴⁶⁷ Lohof *et al.* 2011.

⁴⁶⁸ Van Zijverden 2011, 68–69.

⁴⁶⁹ Lohof *et al.* 2011, 288–289.

⁴⁷⁰ Lohof *et al.* 2011, 182–183.

⁴⁷¹ Hamburg, Lohof & Quadflieg 2011, 144.

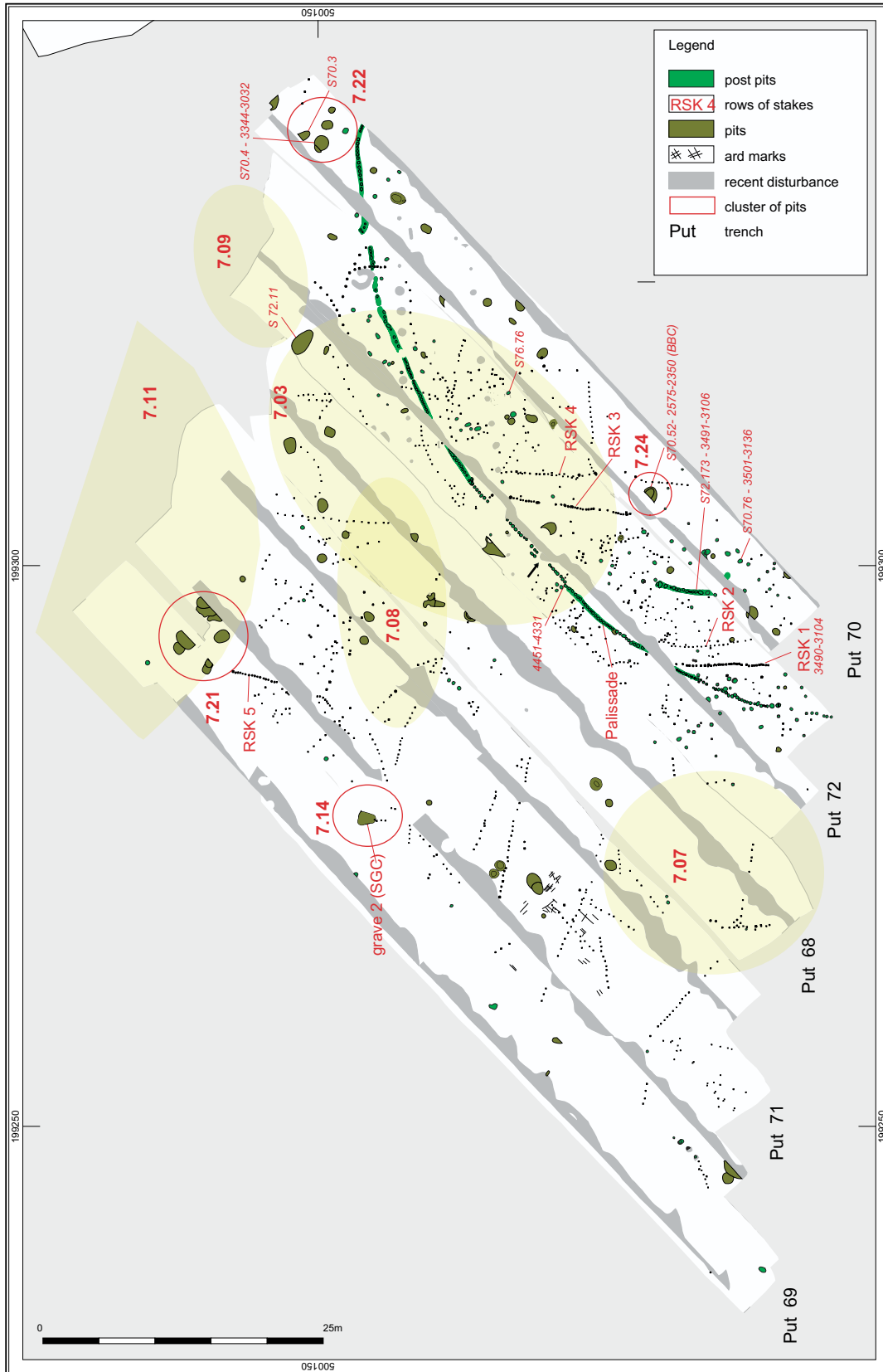


Figure 7.74 Plan of features in block 7 of the Hanzelijn site (after Wansleeben *et al.* 2011, 157).

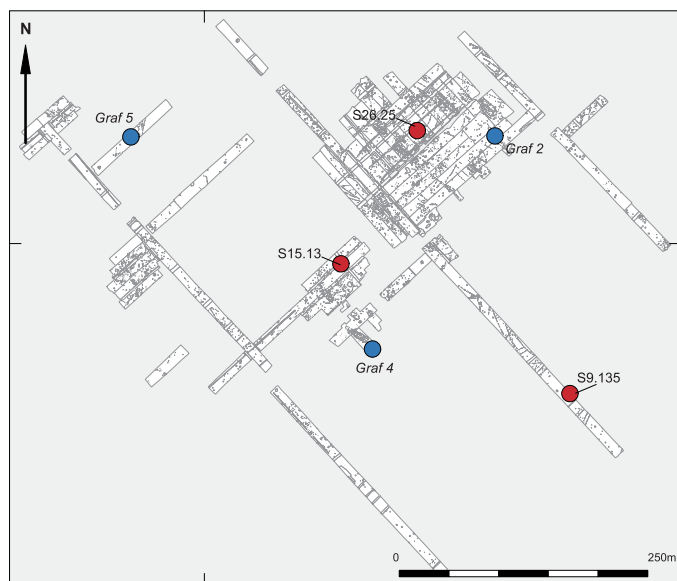


Figure 7.75 Location of Bell Beaker features at the Bedrijventerijn Zuid site, including three pits with layers of charcoal from (compiled after Hamburg, Lohof & Quadflieg 2011, 125 and 126). The lowermost three pits are comparable BBC pits from the Hanzelijn site (compiled after Lohof *et al.* 2011, 174).

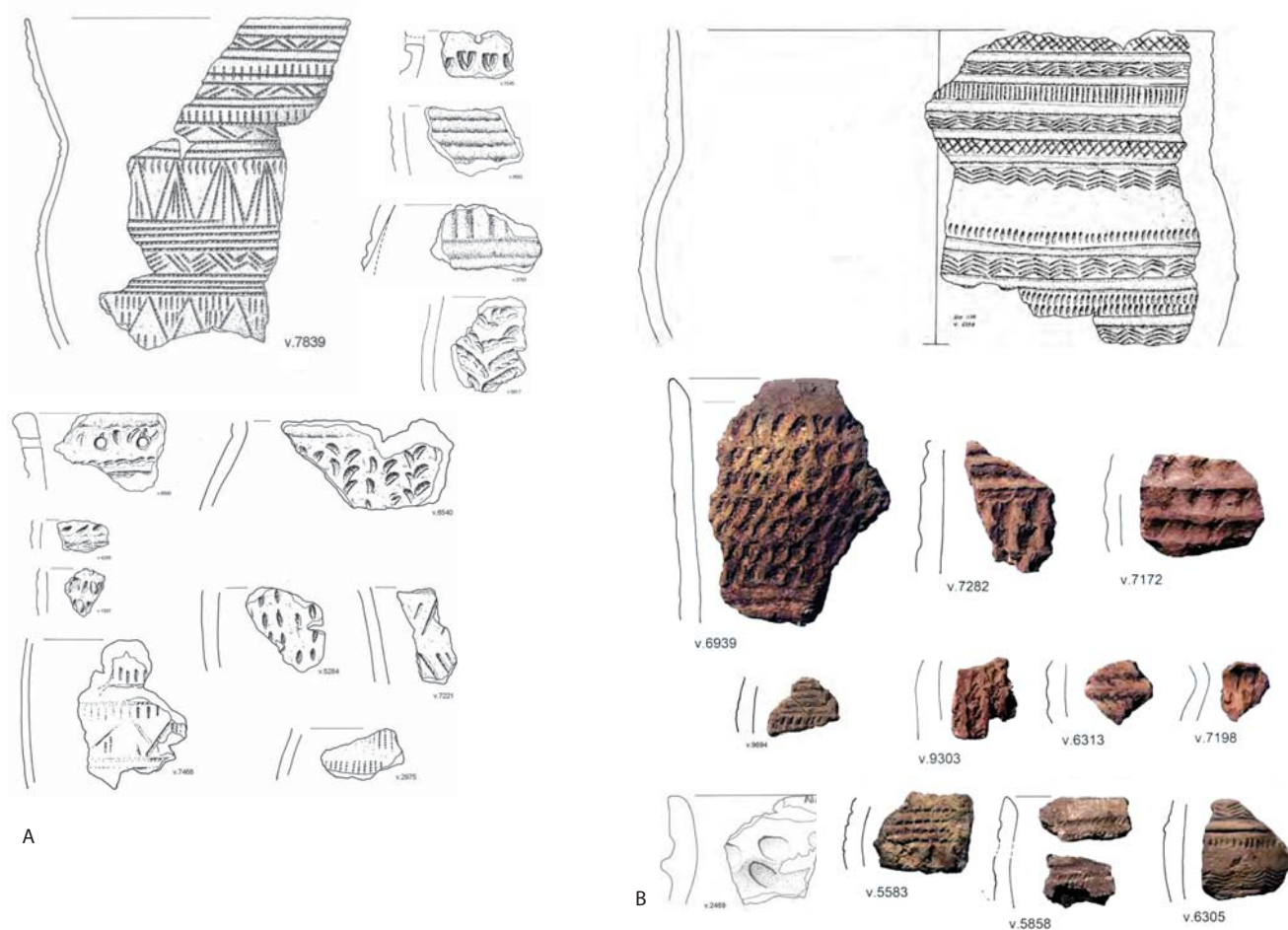


Figure 7.76 Bell Beaker and pot beaker sherds from the excavations at Hanzelijn B) and Bedrijventerrein-Zuid (A), scale 1:3 (compiled after Drenth & Meurkens 2011, 292,296; Lohof e.a. 2011, 303, 310).

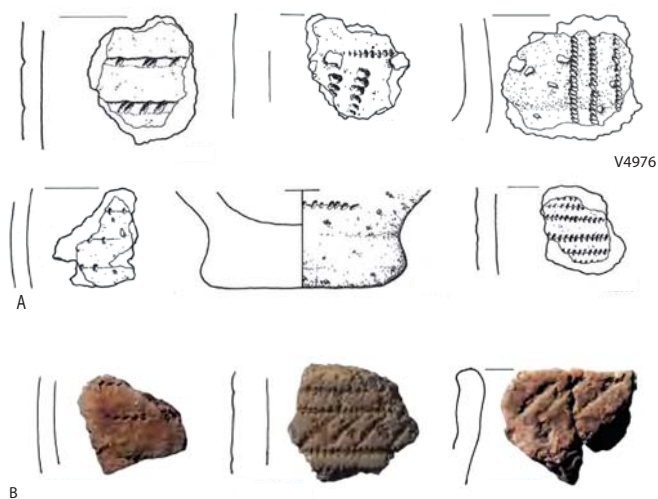


Figure 7.77 Barbed Wire decorated and HVC sherds from the excavations at Hanzelijn (B) and Bedrijventerrein-Zuid (A). Sherd v4976 was thought to be the only Hilversum sherd at Bedrijventerrein-Zuid, scale 1: 3 (compiled after Drenth & Meurkens 2011, 295,297).

Table 7.7 Survey of pits dated to the Late Neolithic B at the Hanzelijn site of Hattemerbroek (after Hamburg, Lohof & Quadflieg 2011, 173).

| Lab code | Date BP | Site | Complex | Context | Material | Calibrated range BC (2 sigma) |
|-----------|-----------|-----------------------|---------|----------------------|----------------|-------------------------------|
| GrA-39977 | 3730 ± 30 | Hanzelijn | 4,15 | pit 40.66 | Calluna root | 2267 - 2032 |
| GrA-39447 | 3740 ± 30 | Hanzelijn | 1,07 | pit 52.3 | Alnus fragm. | 2275 - 2036 |
| GrA-39439 | 3790 ± 30 | Hanzelijn | 4,15 | pit 48.3 | branch | 2338 - 2135 |
| GrA-39431 | 3810 ± 30 | Hanzelijn | 4,13 | pit 39.3 | Alnus trunk | 2400 - 2140 |
| GrA-39438 | 3815 ± 30 | Hanzelijn | 4,09 | hearth 47.1 | Alnus branch | 2434 - 2141 |
| GrA-39451 | 3820 ± 30 | Hanzelijn | 2,07 | pit 54.10 | Corylus branch | 2454 - 2144 |
| GrA-39655 | 3830 ± 30 | Hanzelijn | 5,02 | grave 64.37 | Quercus fragm. | 2458 - 2152 |
| GrA-39672 | 3970 ± 30 | Hanzelijn | 7,24 | pit 70.52 | Quercus fragm. | 2575 - 2350 |
| GrA-41631 | 3120 ± 30 | Bedrijventerrein-Zuid | 8 | grave 33.148 | - | 1460 - 1310 |
| GrA-41385 | 3555 ± 35 | Bedrijventerrein-Zuid | 3 | waterpit 4.79 | - | 2020 - 1770 |
| GrA-41627 | 3670 ± 30 | Bedrijventerrein-Zuid | 11 | cremation grave 16.5 | - | 2140 - 1950 |
| GrA-43270 | 3810 ± 30 | Bedrijventerrein-Zuid | 47 | hearth 15.13 | - | 2400 - 2140 |
| GrA-41388 | 3865 ± 35 | Bedrijventerrein-Zuid | 48 | hearth 9.135 | - | 2470 - 2200 |
| GrA-41394 | 3875 ± 35 | Bedrijventerrein-Zuid | 12 | hearth 26.25 | - | 2470 - 2200 |
| GrA-41636 | 3875 ± 35 | Bedrijventerrein-Zuid | 9 | grave 53.63 | - | 2470 - 2230 |
| GrA-41646 | 4075 ± 30 | Bedrijventerrein-Zuid | 44 | grave 65.1 | - | 2860 - 2490 |

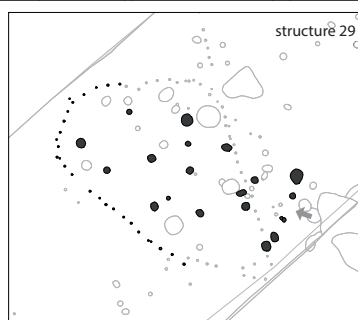
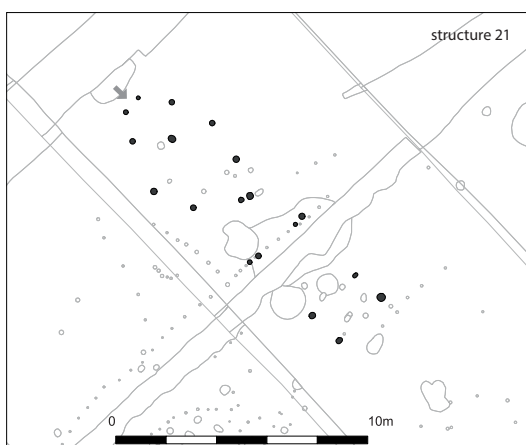


Figure 7.78 Proposed Middle Bronze Age A house plans from Bedrijventerrein-Zuid (from Knippenberg & Hamburg 2011, 148).

The second, structure 29, is no more than 10 m. The structural characteristics of these houses are not discussed in much detail in the report, nor are they very clear. The structures were ¹⁴C dated on with charcoal samples obtained from some of the features, indicating a date after 1600 cal BC.⁴⁷² Given that the exact association between the features and these structures is problematic, these dates are only a general indication that structures in this area date to the start of the Middle Bronze Age B or the end of the Middle Bronze Age A.

Graves

In all, seven graves were discovered at the two sites. Two were found at Hanzelijn, five at Bedrijventerrein-Zuid (Fig. 7.79). Three of these graves are classified as primary SGC graves, four as primary BBC graves. Nevertheless, we cannot speak of a cemetery like at Schokland-P14,⁴⁷³ since only the graves Bedrijventerrein 1, 2 and 3 form a small cluster. The other burials were found several hundreds of meters removed from each other. None of the burials were covered by a burial mound, or rather: no signs of burial mounds were discovered. An analysis of the area by Bourgeois makes clear that the area has

⁴⁷² The two samples from the same feature belonging to structure 21 are dated to 3320 ± 30 BP and 3250 ± 30 BP respectively, which results in a combined calibrated range (2 sigma) of 1612-1489 (84,4%) or 1485-1450 (15,6%) cal BC. A sample from a hearth associated with structure 29 dated to 3230 ± 30, which is even younger (between 1609-1582 (8,4%) or 1561-1432 (91,6%).

⁴⁷³ Cf. Section 7.7.

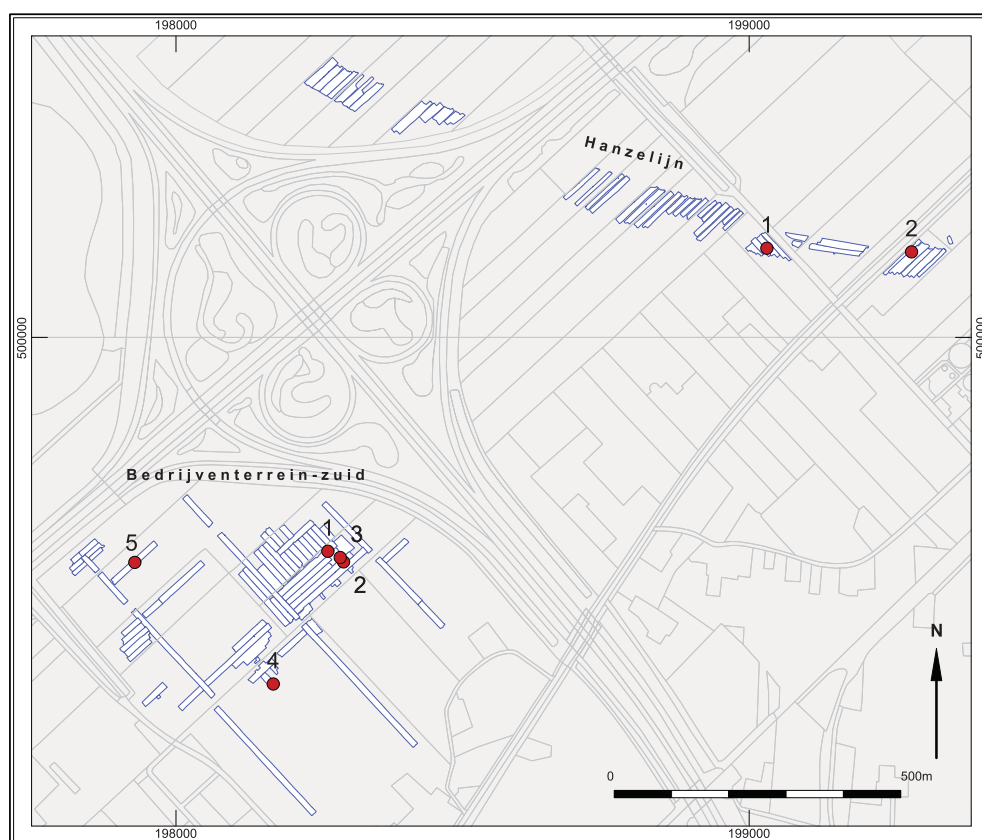


Figure 7.79 Location of the Late Neolithic graves on at the Hattemerbroek sites (from Drenth & Meurkens 2011, 197).

been in use as arable land for hundreds of years preceding the excavation, which would lead to the disappearance of original burial mounds if they had been present.⁴⁷⁴ There are at least two instances (Hanzelijn 1, Bedrijventerrein 3) where a SGC grave was suspected to have been marked, because a Bell Beaker had been buried in the top of an existing SGC grave. Since the number of graves is small, this cannot have been a coincidence. Drenth and Meurkens extensively described all graves, and a number of specialists were involved in studying the objects found at and the samples taken from the graves. The graves were discussed twice: the first time in the Hanzelijn report⁴⁷⁵ and the second time in a revised version in the Bedrijventerrein-Zuid report.⁴⁷⁶ Both versions are nearly identical, but there are a few differences. The most recent account can be found in the Bedrijventerrein-Zuid report.⁴⁷⁷ We will only briefly summarise the presented results.

The three mayor research questions that Drenth and Meurkens present for these graves, demonstrate a focus on typology (dating) and

regionality that is more or less standard in Dutch commercial archaeology.⁴⁷⁸ These are as follows:

- Representativity, with the most important question: to what extent do the Hattemerbroek graves fit in the existing picture?
- Regional differentiation, or: to which regional group of or groups do the graves belong.
- External influences: to what extent can external/foreign influences be detected; is that about the exchange of ideas or goods, or are the immigrants interred themselves, including grave gifts?

Late Neolithic A graves

Three graves have a clear Late Neolithic A date: Bedrijventerrein 1 and 3, and Hanzelijn 2. The latter consisted of a relatively small pit⁴⁷⁹ in which no skeleton or body silhouette was discovered (Fig. 7.80). It did contain a small complete undecorated SGC Beaker of type 1f (Fig. 7.80).⁴⁸⁰ The pit did not contain any other finds. A comparison of this pit with similarly sized burial pits suggests that it could have been used for the inhumation of a child.⁴⁸¹

⁴⁷⁴ Bourgeois 2011, 265.

⁴⁷⁵ Drenth, Meurkens & van Gijn 2011.

⁴⁷⁶ Drenth & Meurkens 2011.

⁴⁷⁷ Hamburg, Lohof & Quadflieg 2011.

⁴⁷⁸ Drenth & Meurkens 2011, 198.

⁴⁷⁹ 70 x 90 cm at the lowest level (level 4).

⁴⁸⁰ Drenth & Meurkens 2011, 223, 224.

⁴⁸¹ Drenth & Meurkens 2011, 224.

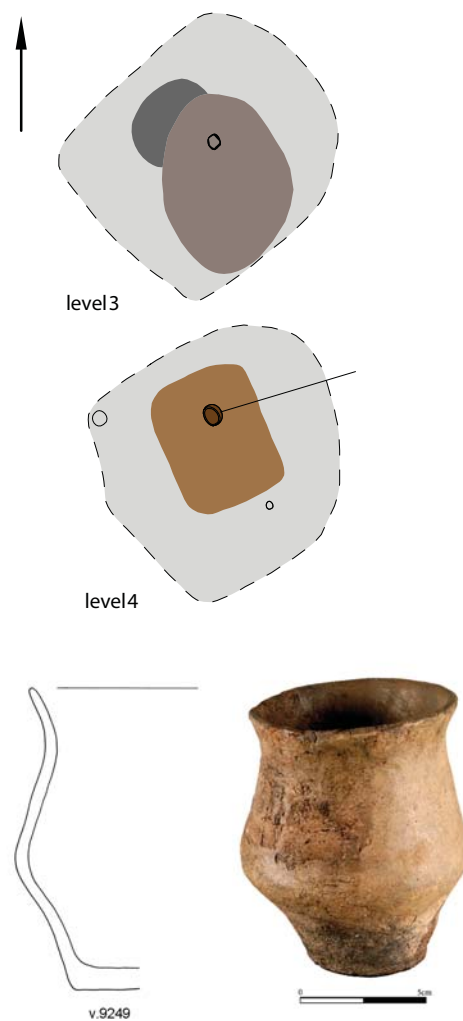


Figure 7.80 Hanzelijn grave 1, pottery scale 1:3, flint tools scale 1:3, beads scale 1:4 (compiled after Drenth & Meurkens 2011, 215, 217, 218).

At Bedrijventerrein-Zuid, two graves from The Late Neolithic A were found within c. 25 meters from each other.⁴⁸² The first of these graves⁴⁸³ contained a possible body silhouette with a 1b SGC beaker as a grave gift (Fig. 7.81). The body silhouette was in fact difficult to interpret, as is demonstrated by the two different presentations in the consecutive versions of its publication.⁴⁸⁴ We have left these interpretations out in figure 7.64 since both are disputable in our view both are disputable. Beneath the SGC beaker two flint artefacts were deposited: a flake and a blade.

A second grave (Bedrijventerrein-Zuid 2) contained two beakers and several other objects (a 1d/1e and a ZZ beaker, a flint axe, four flint flakes and a large flint blade, indicated as a

‘pseudo Grand-Pressigny dagger’ (Fig. 7.82).⁴⁸⁵

The grave was about 60 cm deep below the first excavation level, and 2.20 x 1.80 m in size, with a more or less round shape. The authors of the excavation report discuss the possibility of a double grave (given the two beakers), but in our view that hypothesis is not supported by any of the data. Moreover, the presence of more than one beaker in a grave occurs more often especially in the late phase of the SGC, especially in AOO-contexts, the presence of more than one beaker in a grave occurs more often.⁴⁸⁶

Interestingly, in the top layers of the pit yield several Bell Beaker sherds were found (Fig. 7.76 top left). These sherds probably belonged to a complete pot buried at this location at a later point in time, which was either accompanied by a BBC grave or was deposited as a solitary beaker.⁴⁸⁷ The occurrence of this Veluwe-type pot indicates that the location of the SGC graves may have been marked, possibly by a barrow.

Late Neolithic B graves

Several graves can be dated to the Bell Beaker period. One of these, Hanzelijn 1, was discovered at the Hanzelijn site, in a relatively high point in the landscape. This grave was found within a more or less rectangular enclosure fenced off with regularly placed posts. Although the grave is not placed centrally within the enclosure, the excavators suggest the post-setting might be regarded as contemporaneous to the grave (Fig. 7.83). The grave-pit itself was somewhat disturbed, but several grave goods were discovered, and a body silhouette could still be recognised. The pit appeared to have had wooden planks placed against the pit walls. These planks could still be recognised, and one of these had been preserved adequately enough for an analysis, indicating the plank was made of oak.⁴⁸⁸ The grave itself contained a Bell Beaker, 16 amber beads and a small flint knife (Fig. 7.83).⁴⁸⁹ Eleven of these beads had probably been part of some kind of headpiece, as they were found across where the head of the deceased is thought to have been. A small triangular amber pendant along with two of the 16 amber beads were found at the location of the waist, and a button with a V-shaped punctuation puncture was found near the back of the deceased. One

⁴⁸² Hamburg, Lohof & Quadflieg 2011, 224-255; graves 1 and 3.

⁴⁸³ Bedrijventerrein-Zuid grave 1.

⁴⁸⁴ Drenth, Meurkens & Van Gijn 2011, 238; Drenth & Meurkens 2011, 227.

⁴⁸⁵ Drenth & Meurkens 2011, 247-258.

⁴⁸⁶ Cf. Lanting & Van der Waals 1976.

⁴⁸⁷ Cf. Bourgeois 2011, 265-266.

⁴⁸⁸ Kooistra 2011, 213.

⁴⁸⁹ Drenth & Meurkens 2011, 202.



Figure 7.81 Bedrijventerrein-Zuid Grave 1 pottery scale 1:3 (compiled after Drenth & Meurkens 2011, 227, 228, 229).

more bead was found when during the sieving of the soil extracted from the grave-pit. The wooden lining of the grave-pit was dated to 3830 ± 30 BP, meaning that a date between 2351-2198 cal BC is most likely (Table 7.7). This places the grave in the middle of the Late Neolithic B.

At Bedrijventerrein-Zuid, three more BBC graves were found: Bedrijventerrein 2, 4 and 5. Grave 2 was found in between two earlier Late Neolithic A graves. Grave Bedrijventerrein 2 is an inhumation grave, 4 and 5 are cremation graves. The two cremations graves were found very isolated from other archaeological remains.⁴⁹⁰ The Bell Beaker inhumation grave 2 is the best preserved grave between of the two sites (Fig. 7.84, 7.85). This clearly defined grave was found inside of a circular ditch, which had been used as a foundation trench for a post-circle. It is a possibility that a barrow was erected over the post circle. However, in this case the barrow would already have disappeared in the Late Bronze Age, because as a house plan from this period was built over what would have been the barrow.

The grave pit belonging to grave Bedrijventerrein 2 was lined with wooden planks in a similar fashion as was described for the

Hanzelijn 1 grave, but a body silhouette was more clearly visible and part of the skull was even still preserved as bone. As was the case at Hanzelijn 1, amber beads were found placed on top of the skull. Other beads were found next to the face, which indicates they could have been part of an earring. It is of interest that some of the beads appeared to have been worn and used regularly, whilst others seemed new. This implies that the beads were collected over a longer period, rather than having been produced and added to the headdress at the same time.⁴⁹¹ The wooden planks lining the grave were dated to 3875 ± 30 BP, which is in line with the expected date on the basis of grave structure and grave gifts (2466-2281 cal BC; Table 7.7).

Pollen analysis showed that the grave pit contained a high percentage (14%) of pollen from *Filipendula ulmaria* (meadow sweet),⁴⁹² which gives a nice smell and, but is also used to sweeten beer and wine nowadays. This indicates that the grave was furnished with meadowsweet, possibly as a dedication grave good or to give it nice incense.

The final two graves encountered at Bedrijventerrein-Zuid were found quite far removed from the other graves.⁴⁹³ In contrast

⁴⁹⁰ Hamburg, Lohof & Quadflieg 2011, 197.

⁴⁹¹ Van Gijn 2011, 242.

⁴⁹² Van Haaster 2011, 243.

⁴⁹³ Drenth & Meurkens 2011, 256-261.

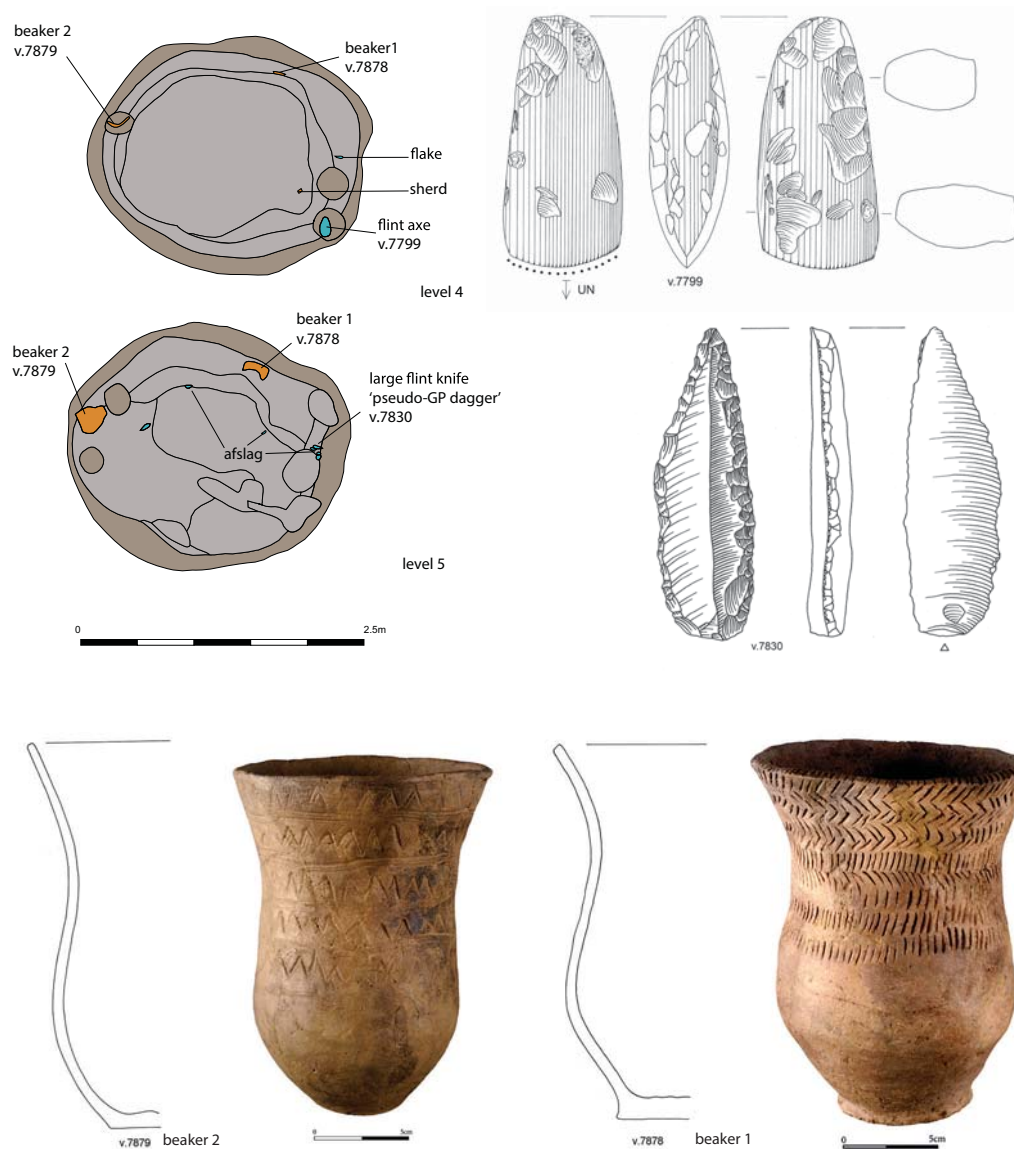


Figure 7.82 Bedrijventerrein-Zuid Grave 3, pottery scale 1:3 (compiled after Drenth & Meurkens 2011, 223, 224).

to the above-mentioned graves, both of these graves contained cremations burials. The first of these cremations, found in the southern part of the excavated terrain, is accompanied by a Veluwe type Bell Beaker (Fig. 7.86). This burial only contains a small amount of cremation remains of which the age and sex could not be determined.⁴⁹⁴ However, the second cremation was ¹⁴C dated. This grave dates to 3670 ± 30 BP, which places the grave in the last part of the Late Neolithic.⁴⁹⁵ This second cremation burial (Bedrijventerrein 5) probably contained the cremated remains of an infant around the age of six months old.⁴⁹⁶ The cremation remains

were deposited in a small pit without any grave goods that were able to withstand the test of time.

⁴⁹⁴ Hamburg, Lohof & Quadflieg 2011, 258.

⁴⁹⁵ Cal BC 2138-1958 (calibrated at 2 sigma, median probability: 2056 cal BC).

⁴⁹⁶ Hamburg, Lohof & Quadflieg 2011, 259.

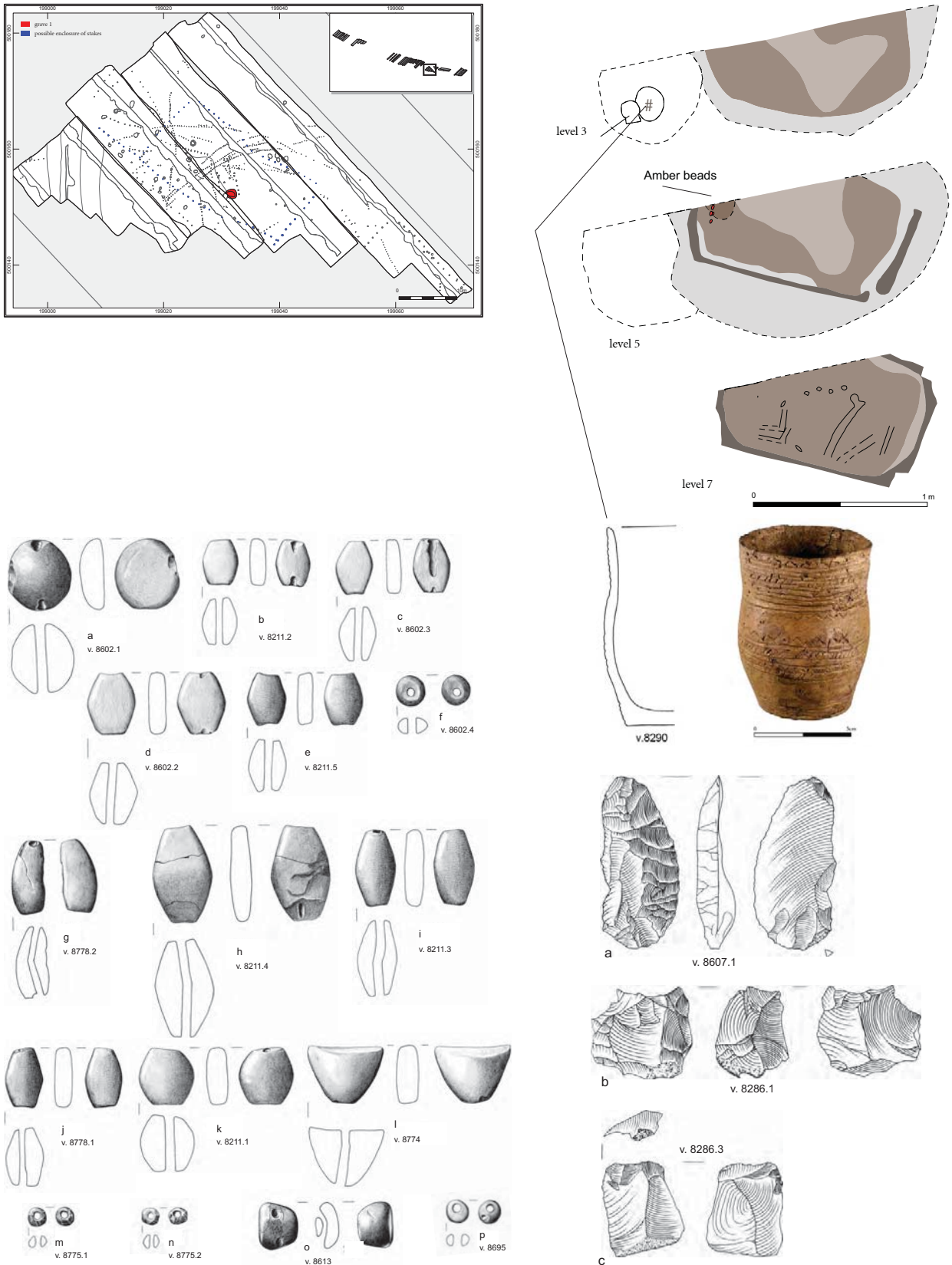


Figure 7.83 Bell Beaker Culture grave 1 from the Hanzelijn. The grave is possibly surrounded by a rectangular post setting. Scale as indicated, of the flint artefacts and the beads scale 1:4 (compiled after Drenth & Meurkens 2011, 212-218).

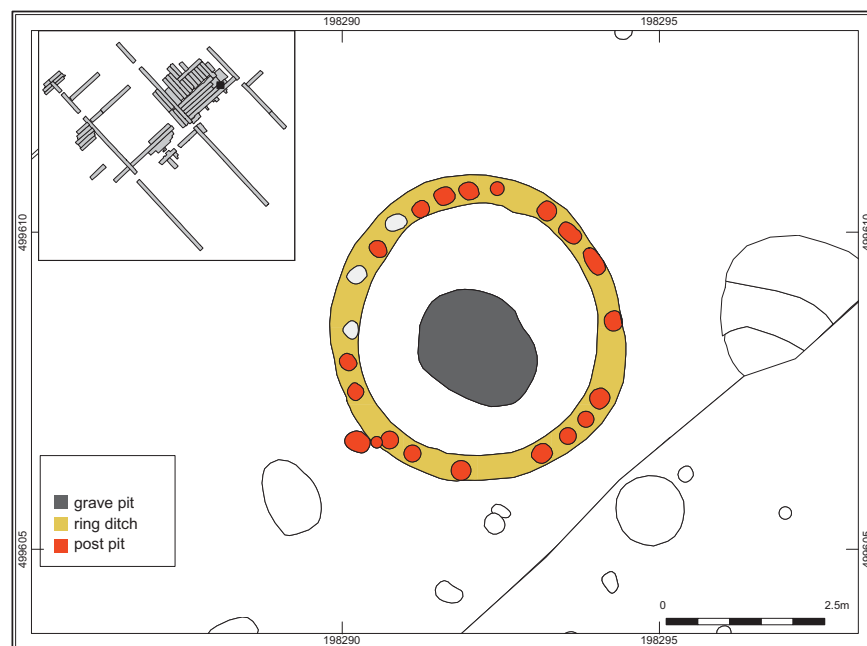


Figure 7.84 The post circle of BBC grave Bedrijventerrein 2 (compiled after Drenth & Meurkens 2011, 231).



Figure 7.85 The contents and lay-out of BBC grave Bedrijventerrein 2. Scale of the beads: 1:4 (compiled after Drenth & Meurkens 2011, 235, 238).



Figure 7.86 Bell Beaker cremation grave Bedrijventerein 4 (compiled after Drenth & Meurkens 2011, 257-258).

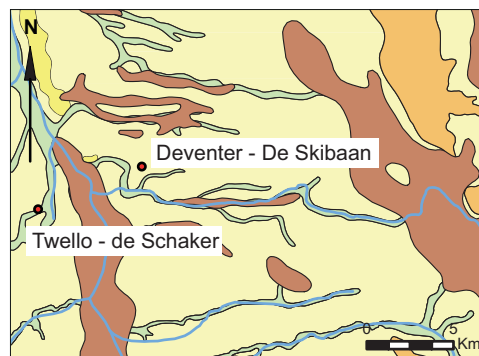


Figure 7.87 Location of the sites of Deventer, Twello and Lochem on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

7.11.3 Comments

The Hattemerbroek sites show once more that people were living on the fringes of the higher grounds in the Late Neolithic and during the Early Bronze Age. It also demonstrates that people were focussed much more on the wetlands than we have realised so far. The lure of these types of sites likely also arises from the local possibilities for transport. From Hattemerbroek, it would easily be possible to follow the river Vecht to West Frisia and further towards the coast. The site also demonstrates, just like at Schokland-P14, that there is continuity of use of in this area, which is epitomised in the small cemeteries with repeated burials in the same places. Lastly, the site Hattemerbroek also serves to emphasises the enormous potential of this particular area, even if the preservation for organic material at these sites was not very good.

7.12 Deventer-Colmschate-De Skibaan

This site is located on the north-western flanks of a coversand ridge in a Pleistocene dune landscape some 14 km east of the present river IJssel (Fig. 7.87).⁴⁹⁷

7.12.1 Research history

In advance of the development of the Deventer Entertainment Centre (DCE) an area with middle to high expectations for archaeological remains was excavated at Deventer Colmschate between 2002 and 2004 by the excavation unit of the Municipality of Deventer.⁴⁹⁸ The area is very rich in sites and several larger areas had already been excavated in the nineteen eighties and nineties. Based on previous results a settlement area dating to the Roman Period was expected.

7.12.2 Excavation results

The excavated area measured about 2 ha. Within this area, remains from the Late

⁴⁹⁷ Hermesen 2007, 14

⁴⁹⁸ Hermesen 2007, 5.

Neolithic, the Late Bronze Age, the Iron Age, and indeed a settlement from the Roman Period were discovered. In one of the trenches an isolated pit was found measuring 300 x 270 cm with Iron Age or Bronze Age sherds. When this was excavated, a second feature was discovered that had been cut by this large pit. This is a round feature of about 50 cm deep, with a round bottom and a light fill with charcoal fragments. The pit contained large fragments of a SGC pot with short-wave moulding (Fig. 7.88). Originally the pot may have been complete, but it was probably disturbed by Iron Age digging activities.⁴⁹⁹

7.12.3 Comments

The vessel remains an isolated find, but it is one of the few of its kind that attests of SGC habitation also in the eastern Netherlands. Typical for this type of fingertip impressed ware with short-wave moulding are the scraped belly sherds. The same features are also found on the Steenendam pottery and other SGC pots.⁵⁰⁰

7.13 Twello-De Schaker

Twello is located between Deventer and Apeldoorn, somewhat to the west of the river IJssel. During the Late Neolithic and Bronze Age, the IJssel did not yet have a connection with the Rhine. Instead, the river valley drained streams from the Veluwe to the west and Salland to the east. The site is located between two of these streams (Fig. 7.87). Nevertheless, the river valley constituted an important part of Twello's local landscape.

7.13.1 Research history

In advance of the development of a housing estate, the municipality of Voorst asked Archol bv to survey and excavate sites within the planning area of 32 ha. In order to establish archaeological values in this area, first, a survey with test trenches was conducted, resulting in

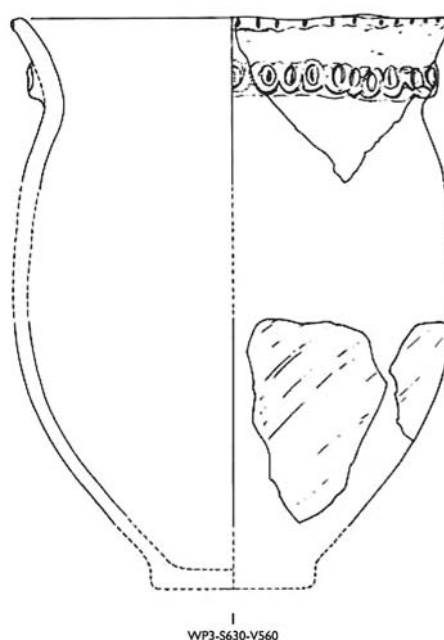


Figure 7.88 The SGC pot of Colmschate-Skibaan, scale 1:3 (after Hermesen 2007, 109).

the demarcation of eleven sites of which nine were selected for excavation (Fig. 7.89).

7.13.2 Excavation results

The site we describe here is site 3: a Late Bronze Age and Iron Age urnfield. A Corded Ware Culture burial was discovered in this urnfield.⁵⁰¹ The mound that was erected over the grave itself could no longer be investigated as it had been previously levelled. The remains of the barrow were only visible as a ring ditch of c. 10 m in diameter, surrounding a grave located slightly off the centre of the ditch.⁵⁰² Pollen samples indicated that the barrow was most likely constructed in an open area dominated by heathland. An oak forest was probably located c. 100 m from the barrow.⁵⁰³ Charcoal from the grave pit dated the barrow to 4000 ± 40 BP, which equals a calibrated date range of 2831–2356 cal BC.⁵⁰⁴ As could be expected, that date spans the entire range of the Single Grave Culture.

Because of the local soil conditions, the grave found within the barrow no longer contained bone material. However, the body of the deceased was still visible as a body silhouette in

⁴⁹⁹ Hermesen 2007, 26.

⁵⁰⁰ Cf. Section 7.9.

⁵⁰¹ Meurkens 2014, 75.

⁵⁰² Meurkens 2014, 75.

⁵⁰³ Doorenbosch 2014, 95.

⁵⁰⁴ Poz-63268, calibrated at 2 sigma; Meurkens 2014, 97.

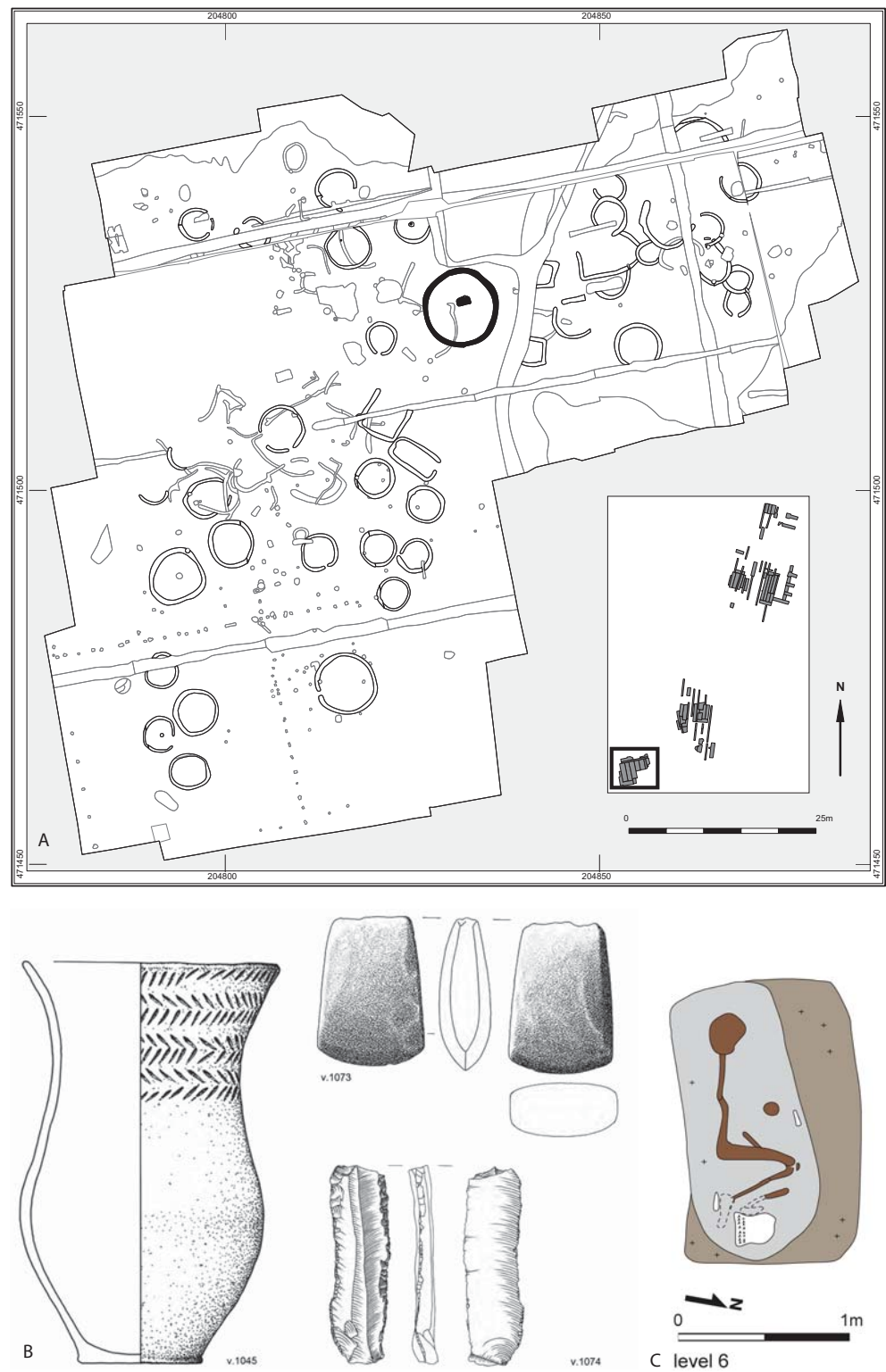


Figure 7.89 A: Plan of the urnfield at Twello, with the Corded Ware Culture burial indicated in black; B: The finds from the grave, scale 1:3; C: body silhouette in the grave and the location of the finds (after Meurkens 2014, 77, 80, 84, 85).

the underlying ground (Fig. 7.89C). The deceased had been buried in a crouched position on his or her left side.

Three objects were found within the grave pit: a Corded Ware Culture Beaker of type 1d, a stone axe and a flint flake.⁵⁰⁵ The axe, made of a volcanic stone, was likely used for chopping wood and was re-sharpened before it was deposited in the grave.⁵⁰⁶ The flint flake is made from Belgian grey flint. It shows signs of heavy usage; most likely these traces were acquired through relatively normal usage of the flake as a knife.⁵⁰⁷

Furthermore, sherds from the beaker in the grave were analysed for residue. Lipids proved to be present on both the outside and the inside of the beaker. The residues were attributed to animal fats from ruminants. These lipids were also present on the inside of the sherd, but occurred in combination with phytosterols typical of organic oils. Charring is absent on the outside of the vessel, arguing against the use of the vessel as a cooking pot. Following a suggestion of prof. C. Bakels, it is suggested instead that the outside of the beaker might have been smeared with a dairy product in order to waterproof the vessel.⁵⁰⁸ This interpretation would argue against the analysed ruminant lipids as belonging to foodstuffs contained by the beaker. A pollen sample from the inside of the beaker contained high amounts of grains, possibly indicating a beer-like fermented beverage.⁵⁰⁹

7.13.3 Comments

The grave itself fits the known pattern of burials from the Late Neolithic. It is not clear whether the barrow was already levelled when the urnfield was built, but possibly it still existed. If so, this urnfield is one of the many from the Urnfield period that shows explicit links to a much older barrow.

This unexpected chance find was in the end excavated and analysed with utmost care and expertise. The grave was carefully cleaned until a body silhouette became visible. Next the grave was lifted in its entirety. The beaker was lifted as a whole and carefully cleaned in the lab. Pollen samples were taken of different locations in the grave, residu-analysis was performed on

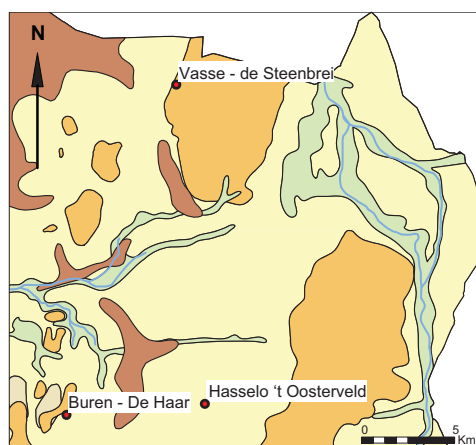


Figure 7.90 The location of Buren-De Haar on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

the beaker and use-wear analysis on the knife. The senior archaeologists, Meurkens, should be given credit for mobilising many experts soon after the discovery and asking them how to excavate and sample in the best way. Though the report is written in Dutch, an English language account of the find appeared in 2015.⁵¹⁰

7.14 Buren-De Haar

The village of Buren is located just northwest of Hengelo, in Twente in the Eastern Netherlands (Fig. 7.90). The greater area is rather varied in terms of geomorphology, as it is home to cover-sand ridges, streams, glacial moraine sediments, iced-pushed ridges and peat bogs.⁵¹¹ The site itself is found on top of a small cover-sand ridge running on a south-west to north-east axis.

7.14.1 Research history

The site of Buren-De Haar was to be excavated prior to the digging of the trench for a gas pipeline. This pipeline would cut across several areas of a high archaeological expectation, including a cover-sand ridge just northwest of Hengelo. A small segment of this ridge was selected for excavation (Fig. 7.91).

The prospective phase of research consisted of an auguring campaign. Along the route of

⁵⁰⁵ Meurkens 2014, 83.

⁵⁰⁶ Verbaas, 2014 86.

⁵⁰⁷ Verbaas 2014, 89.

⁵⁰⁸ Spiteri & Meirsmann 2014, 90-92.

⁵⁰⁹ Doorenbosch 2014, 96-97.

⁵¹⁰ Meurkens *et al.* 2015.

⁵¹¹ Bouman, Bos & Van Beek 2013, 10.

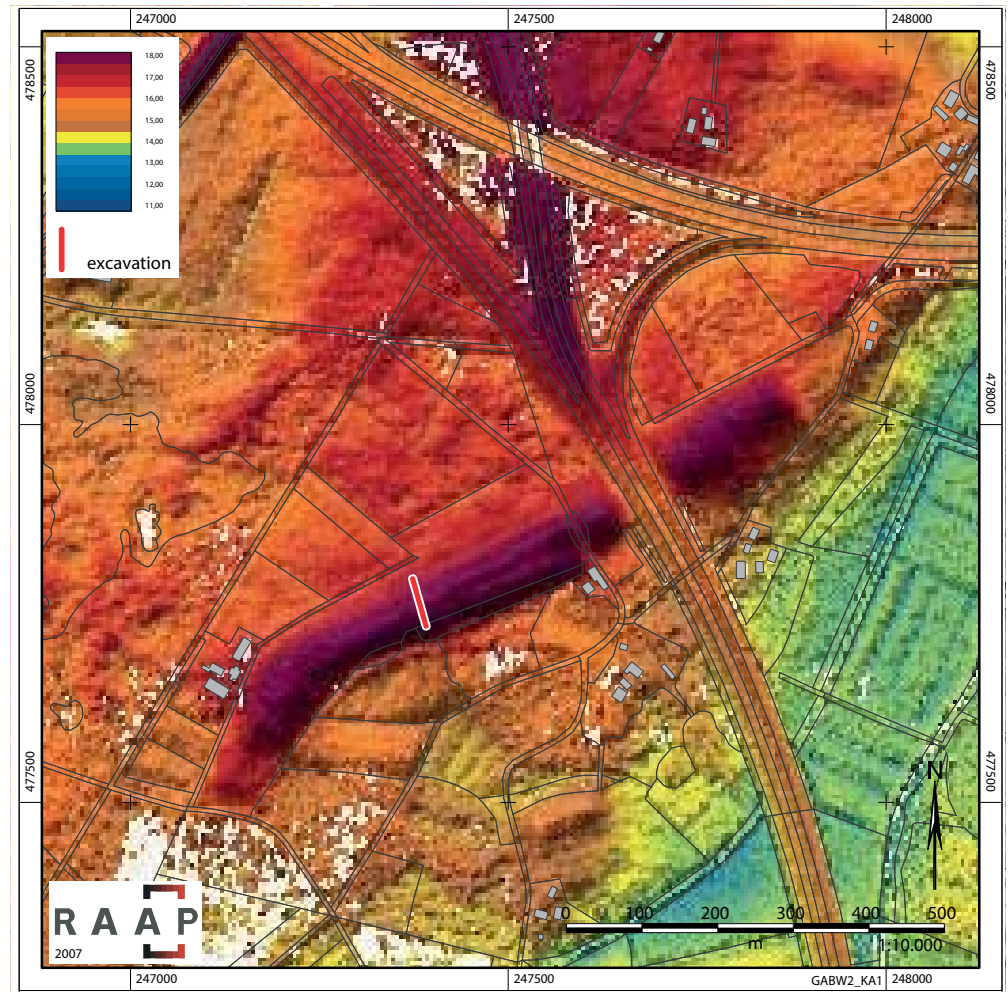


Figure 7.91 The excavation trench located on a cover-sand ridge (compiled after Scholte Lubberink 2007, 100).

the pipeline Bornerbroek-Enschede, a total of 445 augurings were made.⁵¹² Eleven of these yielded archaeological finds. These included flint, pottery and stone finds. The finds did not allow for a date more precise than Neolithic to Iron Age.⁵¹³ Despite this imprecise initial date, the expected date of settlement remains at the site was refined to the period spanning from the Neolithic to the Early Bronze Age.⁵¹⁴ It is not explained why the expected date of the site was refined, although finds from the later excavation would prove this correction right. Nevertheless, the written scheme of investigation had no specific research questions for the Late Neolithic, the Early Bronze Age or the Middle bronze Age A. Therefore the period was not targeted as such.

7.14.2 Excavation results

The pipeline was to cross the cover-sand ridge at almost a 90 degree angle. This meant that only a small section of the ridge would be disturbed by the construction works. Therefore, the excavation only had to cover a 66×1.8 m area.⁵¹⁵ For the purpose of this excavation, the sod layer covering the ridge was dug away, uncovering a fossil arable layer. At the level of this layer, an area measuring 50×50 cm was excavated in 10 cm spits at every 2.5 meters of the total surface. The removed soil was also sieved. This methodology allowed the excavators to identify an area of 48 m^2 within the trench that was rich in finds. These 48 square meters were then completely excavated in 50×50 squares

⁵¹² Scholte Lubberink 2007, 19.

⁵¹³ Scholte Lubberink 2007, 46.

⁵¹⁴ Scholte Lubberink 2007, 51.

⁵¹⁵ Scholte Lubberink 2007, 97-98.

and 10 cm spits, until the C-horizon where features could be identified was reached. Again, all removed soil was sieved. The excavation surface was then documented and the features excavated. A third level was excavated 20 cm below the last mentioned level in order to make sure that no new features were present further below. Despite the detailed methodology, only five features were identified. One feature contained flint finds dating to the Mesolithic whilst another contained a flint find that was cautiously dated to the Early Bronze Age.⁵¹⁶ The exact location of these features is unknown, since an excavation plan is not included in the main publication.

The amount of finds that were made by sieving the soil is in strong contrast with those from the features. A total of 4528 artefacts were encountered within the 48 meter stretch of cover-sand ridge. These finds included material from both the Middle to Late Mesolithic and finds from the Early Bronze Age. Besides pottery and flint, charcoal, burnt bone and stone were found. Most of these finds were located in the fossil arable layer, although a considerable amounts of finds was uncovered directly underneath this layer. Many of the finds were fragmented (81%), and would not have been made should the soil not have been sieved.⁵¹⁷ The fragmented nature of the finds reduced their diagnostic potential, but not beyond a level where no knowledge could be gained. The pottery contained sherds with clear barbed wire stamps and the rim types were reported to be of a comparable nature to Late Neolithic and Bronze Age finds made within the Dutch river area (Fig. 7.92).⁵¹⁸ Mesolithic flint is reported to be present, but the assumption is made that a considerable amount of flint artefacts must also be associated with Early Bronze Age habitation. This assumption probably derives from the presence of large amounts of pottery from this period, but cannot be substantiated with finds showing characteristics that are typical of the Early Bronze Age.

7.14.3 Comments

The knowledge generated by the excavation at Buren-de Haar is mostly informative for the kind of methodologies that can be used for the

excavation of Late Neolithic to Middle Bronze Age A sites. As is shown by many of the other site reports presented in this work, remains dating to this period are often limited to several sherds found during the digging of trenches, and sometimes within features. Such finds and features are often interpreted using the rather non-committal term ‘off-site activities’. However, as demonstrated here, the amount of finds encountered could radically differ when more care is taken to excavate the soil above the feature layer. Situations such as at Buren-De Haar, where stratigraphically separated find and feature layers can be expected, are often adequately worked out for partially or completely intact soils in Holocene areas, but are rarely exploited to the fullest potential on Pleistocene soils. The present example only concerns a small scale excavation where the finds could not be linked to clusters of features, but should the same analytical rigor in connecting find clustering to feature clustering be applied to larger excavation surfaces, as was done at Hattemerbroek,⁵¹⁹ there is no reason to suspect that comparable gains in knowledge cannot be made, allowing for a greater understanding of both on-site and off-site activities on Pleistocene soils.

7.15 Vasse-De Steenbrei

Vasse is located in Twente in the Eastern Netherlands on the western side of the ice-pushed ridge ‘the Kuiperberg’ (Fig. 7.90). Since the site was located in an area with raised Medieval *plaggen* soils, the expectation for good preservation of archaeological features is by definition high according to the Indicative Map of Archaeological Values (*Indicative Kaart van Archeologische Waarden: IKAW*). Therefore, this area was intensively studied in advance of building activities.

7.15.1 Research history

In May 2001, an auguring campaign performed implemented by RAAP showed a ‘thin spread’ of pottery and flint artefacts at the site. The pottery dated from the Neolithic through to the Iron



Figure 7.92 BWBC pottery from Buren-De Haar, scale 1:3 (after Scholte Lubberink 2007, 108).

⁵¹⁶ Scholte Lubberink 2007, 103.

⁵¹⁷ Scholte Lubberink 2007, 105.

⁵¹⁸ Scholte Lubberink 2007, 106-107.

⁵¹⁹ Cf. Section 7.11.

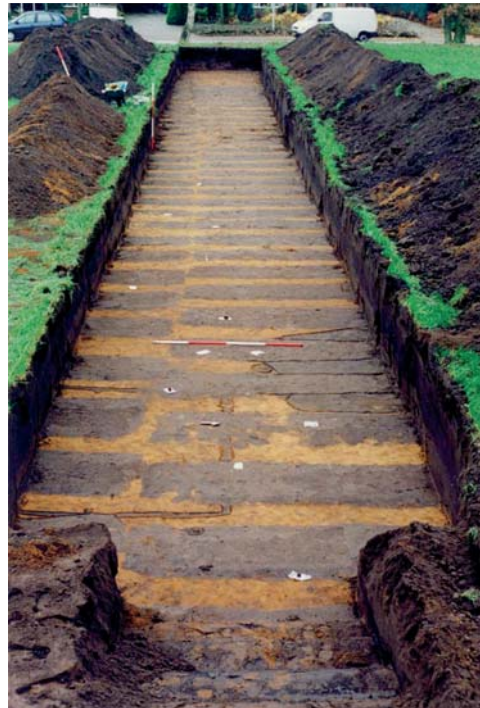


Figure 7.93 Test trench research showed barely visible features in between reclamation ditches (from Niekus 2002, 5).

Age. Throughout the area, three concentrations of archaeological remains were indicated.⁵²⁰ Therefore, from December 3rd to December 6th in 2001, two trial trenches of 50 x 4 m, placed 40 m apart, were excavated by ARC BV. The finds and features that were recovered mainly dated to the Late Neolithic and the Early Bronze Age. One shallow ditch was suspected to have been part of a house plan, but the date of this ditch was unsure because it lacked finds.⁵²¹ The very small potsherds recovered elsewhere at the site were attributed to the Late Neolithic and the Early Bronze Age.⁵²²

The prospective research made it clear that the a plaggensoil was absent and that the subsoil of the area was heavily disturbed. The heath in this area had been converted into arable land by means of reclamation ditches. In this type of land reclamation, narrow trenches of a few decimetres deep are dug into the subsoil in order to remove hard layers of the B-horizon and mix them with the subsoil.⁵²³ Consequently, these ditches improve the fertility of the soils, but destroy archaeological contexts. At Vasse, features were only were visible in between these

reclamation ditches (Fig. 7.93). Underneath the ditches they were gone.

7.15.2 Excavation results

Despite the bad preservation conditions, it was decided that an excavation had to take place to verify the presence of a house plan discovered during prospection. Between 10 June and 4 July 2002, the archaeological company ARC carried out the excavation of the 3500 m² large area (Fig. 7.94). Finds were collected in 2 x 2 m squares, but those from the reclamation ditches were collected separately.⁵²⁴ Where possible, two levels were excavated.

According to the excavators, three house plans were discovered. House 1 and 2 possibly dated to the Late Bronze Age or Early Iron Age, whereas house 3 was considered to be even older (Fig. 7.95).⁵²⁵ Clear evidence for the age of dating the structures is lacking. The plan indicated as house 4 was already recognised during the excavation of the trial trenches in 2001. It appears to have had a rectangular form, but is not considered to have been a real house plan attributed to the TRB-culture in the final excavation report, contrary to the initial expectations.⁵²⁶ A pit that was located within its limits proved to have been a Mesolithic hearth. Only two of the pits that were excavated had material that may have been Neolithic, possibly these finds are TRB or SGC material.⁵²⁷ In general, pottery recovered from the excavation (34 fragments in total) shows that BBC (pot beaker) material. BWB pottery is present; the latter only very fragmented (Fig. 7.96).⁵²⁸

7.15.3 Comments

To conclude, the Vasse-de Steenbrei site has provided no new data with respect to the Late Neolithic or Early Bronze Age period. It is clear that there was some settlement debris present at the site, but the presence of a house plan could not be substantiated during intensive excavation. This is in line with what the excavators themselves concluded. In general, the quality of the report is far below average. The possible house plans were presented only

⁵²⁰ Scholte Lubberink 2001.

⁵²¹ Cf. Niekus 2002, 5.

⁵²² Ufkes 2002, 14.

⁵²³ Spek 2004, 835.

⁵²⁴ De Wit 2002, 7.

⁵²⁵ De Wit 2002, 11.

⁵²⁶ De Wit 2002, 15.

⁵²⁷ De Wit 2002, 17.

⁵²⁸ Ufkes 2002, 26-27.



Figure 7.94 Plan of all features and projected structures (after De Wit 2002, 8).

in passing and there are no discussions, and no section drawings of any of the features at the site. Furthermore, there were no photographs relating to the excavation. Several experts have discussed the find material (pottery, flint, stone,

macro remains), but the prospective phase of research already demonstrated that such analyses were completely unnecessary. The features that yielded these finds could not be dated, the observed structures are ambiguous



Figure 7.96 Barbed Wire Beaker sherd with beaker style decoration motive. The scale of the drawing is not indicated in the original publication (after Ufkes 2002, 27).

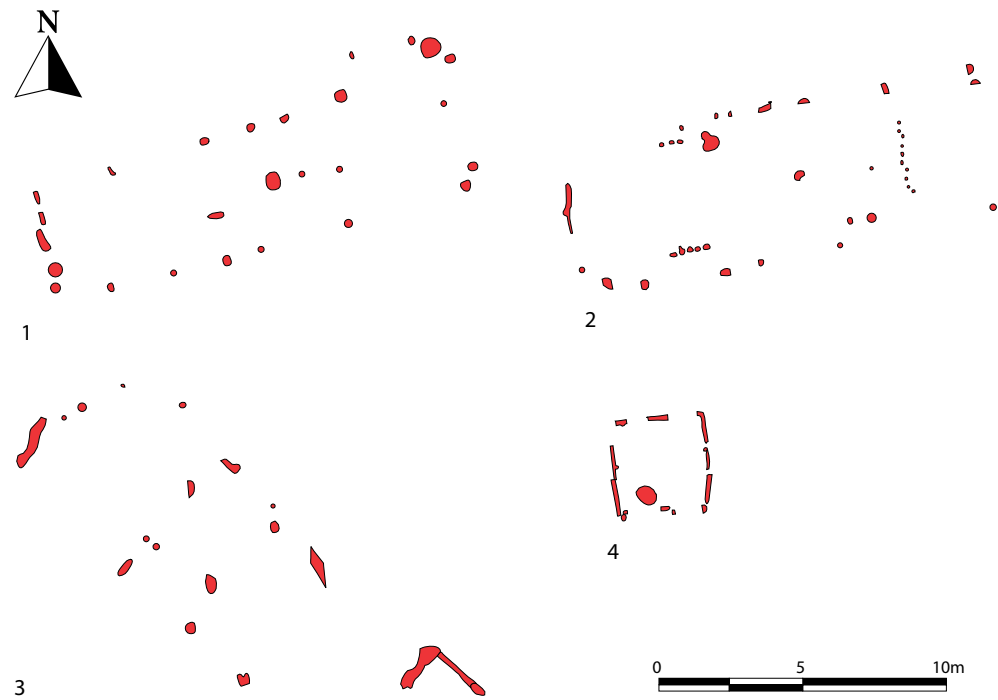


Figure 7.95. House plans recognised at Vasse Steenbrei (compiled after De Wit 2002, 10).

and the subsoil is heavily disturbed. We have presented this site nevertheless because it is one of the few that had a written scheme of investigation that actually targeted the Late Neolithic.

7.16 Hasselo-’t Oosterveld

The site Hasselo-’t Oosterveld is situated in a relatively hilly landscape (for Dutch standards) on a sand ridge at the western side of the ice-pushed ridge of Oldenzaal (Fig. 7.90). Since Late Medieval times, plaggen soils have been used to fertilise local arable fields, which also resulted in the area being artificially raised. The thick layer of plaggen soils covering the site effectively preserved the prehistoric subsoil relatively well in large areas until its excavation. The area was destined for the development of business park ‘t Oosterveld, therefore archaeological prospection had to take place in advance of prior to the building activities in compliance with heritage legislation.

7.16.1 Research history

The prospection phase for Hasselo-’t Oosterveld consisted of a desk-based study, followed by an exploratory and surveying auguring campaign in early 2008.⁵²⁹ The auguring campaign consisted of six augurings per hectare, in a staggered 30 × 40 m grid for a total of 63 augurings in 23 hectares. These procedures did not yield any finds or sites, nor did the desk-based study. The soil was thought to be relatively undisturbed on top of the sand ridge.⁵³⁰

Since the ridge seemed relatively undisturbed, the auguring results were checked by a test trial trench campaign. The test trenches of 4 x 25 m wide and about 25 m long were dug on top of the ridge and totalled covered a total surface of 973 m².⁵³¹ An intact soil profile was registered in all of these trenches. Some features contained pottery and flint artefacts. Most finds were located in a single trench that was dug on the flank of the ridge. Originally, the pottery was attributed to the Middle Neolithic Swifterbant period and to the Late Neolithic SGC period,⁵³² but this date was later changed to the Late Neolithic B Bell Beaker period.⁵³³

⁵²⁹ Koeman 2008.

⁵³⁰ Koeman 2008, 23.

⁵³¹ Scholte Lubberink 2008.

⁵³² Scholte Lubberink 2008, 23-24.

⁵³³ Scholte Lubberink 2011, 26.

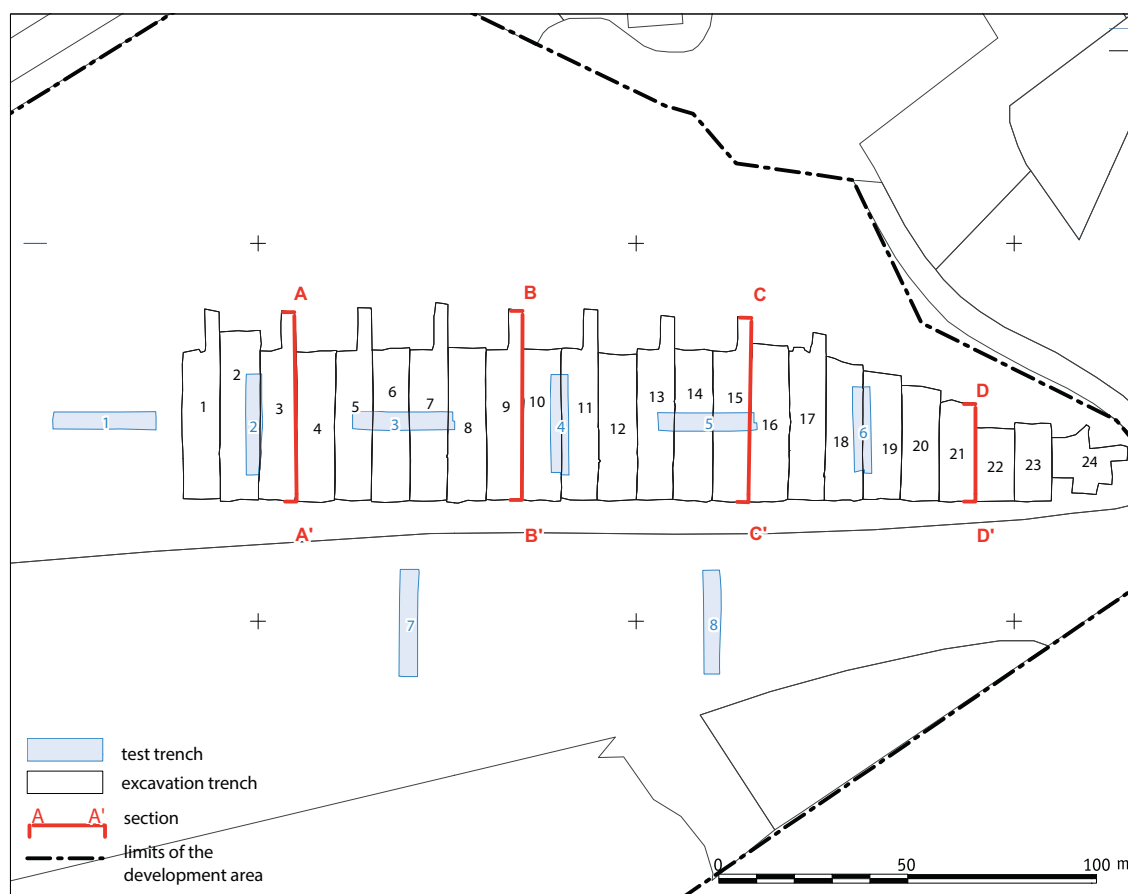


Figure 7.97 Plan of excavated (test) trenches (modified after Scholte Lubberink 2011, 14)

7.16.2 Excavation results

Given that Middle and Late Neolithic sites are rare, the site Hasselo-‘t Oosterveld was selected for excavation. An area of 9045 m² was excavated from late September to mid November 2008 (Fig. 7.97). The research questions were focussed on dating the site, determining the ‘nature’ of the site, detecting any houses and determining the distribution of finds and activity areas.⁵³⁴ The trenches were mechanically excavated to the level depth where at which features became visible. During this process, finds were collected in 4 × 5 m units. The original plan was to record finds individually, but the large number of finds proved to be so many that this strategy was deemed unrealistic within the available time and budget set for the excavation.⁵³⁵ The trenches were mostly located on top of and on the flanks of the sand ridge.

Most of the excavated features date to the Late Neolithic or the Middle Bronze Age A, although two Middle to Late Bronze Age cremation graves were also encountered at the site.

Following the excavation, two possible structures were proposed, both dating to the Early Bronze Age or the Middle Bronze Age A. The excavators admit that these structures are characterised by a diffuse post-setting, few datable finds in the associated features and are not supported by conclusive ¹⁴C dating.⁵³⁶ Structure 12, which is thought to date to the Early Bronze Age, was excavated in four separate trenches. The ‘house’ was interpreted to be partially two and partially four aisled, and classified as type Hesel B (Fig. 7.98).⁵³⁷ However, we do not see sufficient evidence to interpret the cluster of features as a structure. The dimensions (36 × 8 m as reconstructed) are far too large for prehistoric houses without any proper roof support between the wall and the central row of posts. The central row itself offers very little roof support unless

⁵³⁴ Scholte Lubberink 2011, 13.

⁵³⁵ Scholte Lubberink 2011, 16.

⁵³⁶ Scholte Lubberink 2011 37.

⁵³⁷ Our critique of type Hesel B as proposed by Waterbolk (2009) can be read in Chapter 6.

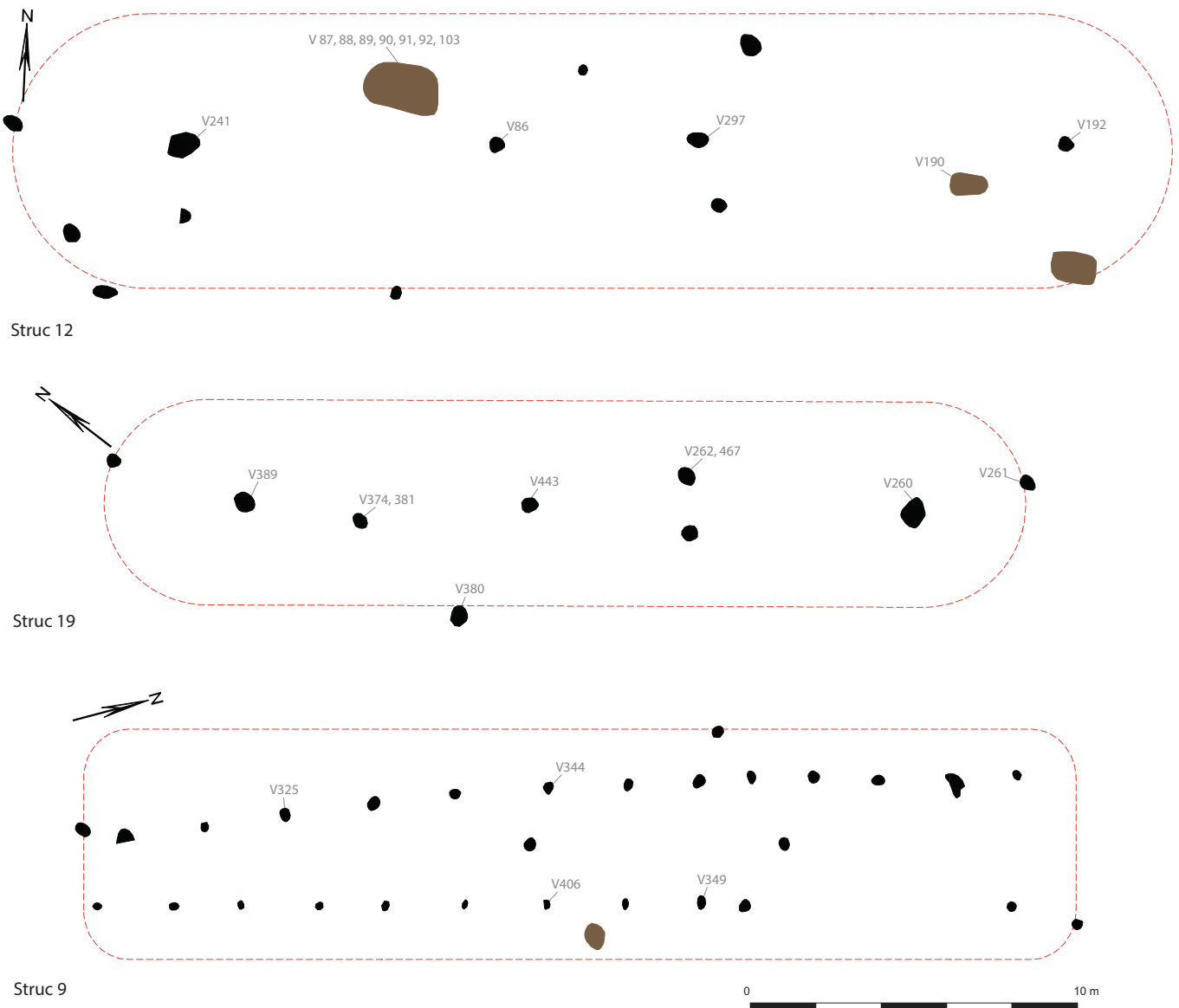


Figure 7.98 Structure 12, 19 and 9 as interpreted by the excavator (compiled after Scholte Lubberink 2011, 36, 40, 42)

tie beams were attached to support wall plates. However, there are not enough central posts for such a construction, and the positioning of the three features that could represent central posts is too irregular and too far apart to form a sturdy roof support. Suffice to say that rather than a house, we appear to be dealing with a cluster of pits or postholes, of which the contemporaneity is not evident and where any structure appears to be absent.

Structure 18 shows exhibits the same kind of problems. This structure has been interpreted as a type Hesel A house,⁵³⁸ but again we see very little to support this hypothesis. The cluster

of features is 27 x 6 m as (re-)constructed (Fig. 7.98), but notwithstanding the fact that the central line of posts is a little more regular than that of structure 12, there is not enough to go on. Without posts to support the roof half-way, there are not enough structural features to call this a substantial house. Finds from the features associated with the structure itself only give a probable date in the Early Bronze Age or the Middle Bronze Age A. Several features found nearby the structure were ¹⁴C-dated using charcoal. These features date to the Early Bronze Age, but are not necessarily associated with the supposed structure.

⁵³⁸ Waterbolk 2009, 44.

The last structure to discuss is structure 9 (Fig. 7.98). Although Late Neolithic or Early Middle Bronze Age pottery was present in a few post pits, the excavators attributed the house to the Middle or Late Bronze Age on account of the absence of typologically comparable houses from earlier periods.

Relevant finds at the site include flint, pottery and stone. The flint artefacts (n=281) are poorly datable. A single find attributable to the Late Palaeolithic Federmesser group indicates that these finds date to a much wider time range than the discussed structures would suggest.⁵³⁹ A small flint knife from one of the postholes of structure 9 reminds of the knives found in Late Neolithic BBC burials, but it could also be of a much older date.⁵⁴⁰ A small stone axe could potentially be of Late Neolithic date as well.

It was found near structure 9 in the medieval plaggen soil, like most of the finds (Fig. 7.99).⁵⁴¹

About 100 sherds were found in features at the site, the remainder of the 235 Neolithic or Bronze Age sherds was found in the medieval plaggen soil. Since the soil from the *plaggen* was not sieved, the find density can hardly be expected to be representative of the original situation.⁵⁴² Within the assemblage of prehistoric pottery, Late Neolithic, Early Bronze Age and Middle Bronze Age material was recognised (Fig. 7.99). The Late Neolithic pottery consists of two cord decorated sherds of SGC or AOO beakers, and a fragment of a beaker with short wave- moulding.⁵⁴³ Several of the sherds had decoration types that can be attributed to the Late Neolithic B or the Early Bronze Age. Furthermore, several sherds showed exhibit impressions of fingertips, fingernails or spatula impression, which are characteristic for pot beakers. Most of these ceramic types had already been encountered during the test trench phase of the project. Several fragments of spatula impressed Bell Beakers were also present, some found together with pot beaker sherds in a pit excavated during the test-trench

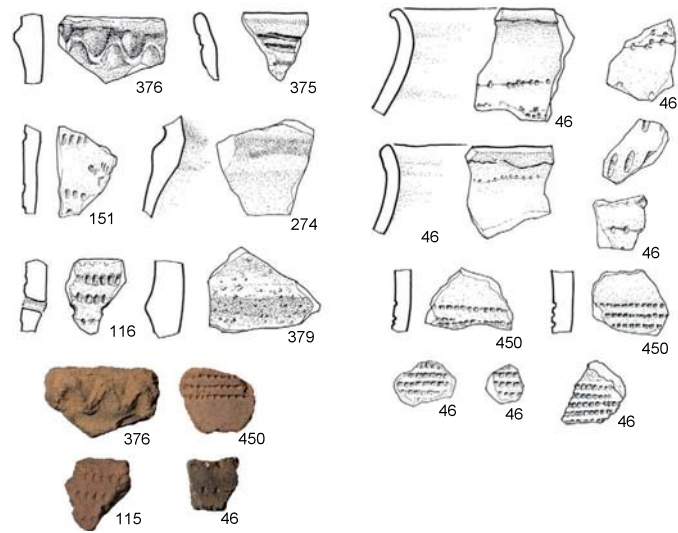


Figure 7.99 Pottery from Hasselo-‘t Oosterveld, scale 1:3 (compiled after Scholte Lubberink 2011, 74, 77).

phase together with pot beaker sherds.⁵⁴⁴

On account of typical Barbed Wire stamp decoration, only five sherds were attributed to the Early Bronze Age.⁵⁴⁵ But given assemblages like at Barendrecht-Carnisselande and VleuGel 20, the pot beaker material could be part of the same horizon as the Barbed Wire material, dating to the Late Neolithic or Early Bronze Age transition, c. 2200-1900 cal BC. Some of the BWBC sherds present here display typical Bell Beaker decoration motives, which also suggests the pot beaker and BWBC material might be contemporaneous. The few fragments of beakers with a short wave- moulding probably do not belong to this phase of habitation but to an earlier SGC phase of the site between 2900 and 2500 cal BC.

A survey of the ¹⁴C-dates only shows two Early Bronze Age dates, whereas the Late Neolithic is not present in the dated material (Table 7.8). The list of dates also demonstrates that charcoal from post pits is unreliable when used to date features, because it is obvious that at least a few pits contained charcoal that dated

Table 7.8 ¹⁴C dates from Hasselo-‘t Oosterveld (from Scholte Lubberink 2011, 17).

| Lab code | Date BP | Context | Material | Calibrated range BC (2 sigma) |
|-----------|--------------|-------------|------------|-------------------------------|
| GrN-32467 | 3515 ± 30 BP | hearth (M6) | charcoal | 1920-1750 |
| GrA-45747 | 3495 ± 35 BP | pit (M15) | charcoal | 1920-1690 |
| GrA-45841 | 3245 ± 35 BP | pit (V436) | burnt bone | 1610-1430 |

⁵³⁹ Scholte Lubberink 2011, 63.

⁵⁴⁰ Scholte Lubberink 2011, 66.

⁵⁴¹ Scholte Lubberink 2011, 67.

⁵⁴² Scholte Lubberink 2011, 70-71.

⁵⁴³ Scholte Lubberink 2011, 73-74.

⁵⁴⁴ Scholte Lubberink 2011, 76.

⁵⁴⁵ Scholte Lubberink 2011, 73.

to the Mesolithic, even if the pits proper may have been dug much later. A number of these belonged to the MBA structure 9, and were expected to date to the Middle Bronze Age A.⁵⁴⁶

7.16.3 Comments

The excavations at Hasselo-'t Oosterveld show that also in the Eastern Netherlands settlement complexes from the Late Neolithic and the Early Bronze Age were present, but that structures are just as elusive as in other parts of the country. Decorative motives and techniques do not include Early Hilversum elements like in sites of the western and central Netherlands. The location of the site at on a sand ridge near a fossil stream valley fits the pattern that we see elsewhere for this period. Even though a detailed discussion of the landscape is absent in the report, due because of to the absence of relevant samples, we may expect a situation in a diverse landscape enabling the exploitation of several ecological zones with farming, hunting and gathering practices.

7.17 Zutphen-Looërenk

The site is situated on a river dune bordering lower areas east of the IJssel valley (Fig. 7.100).⁵⁴⁷

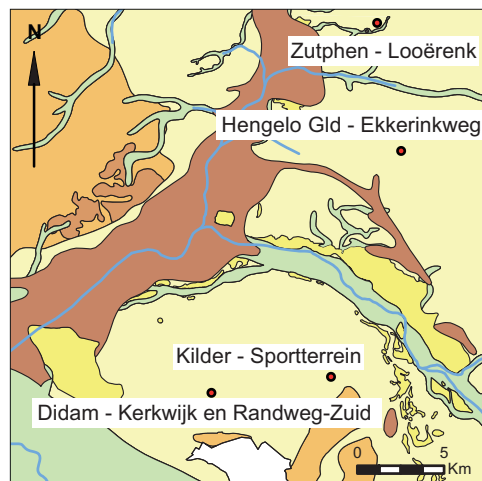


Figure 7.100 Location of Zutphen-Looërenk on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

7.17.1 Research history

An area of 12 hectares was developed as a housing estate southeast of the town of Zutphen. In several stages the area was prospected and excavated. First a desk based assessment and prospection by field walking and auguring was carried out. In this phase a low lying area was considered to contain no sites (auguring) in contrast to the higher parts of the dune, which were considered potential locations for Late Neolithic to Roman Period settlements. The ridges were singled out for a next prospective phase with test trenches (in 2000).⁵⁴⁸ Then between 2000 and 2004 the whole western side of the dune was excavated. The excavation strategy aimed at the habitation history through the prehistoric period down to the modern era. To that end the entire area was stripped in trenches of 10 x 30 m (Fig. 7.101).

7.17.2 Excavation results

Dispersed over the excavated area quite a few Bell Beaker sherds, potbeaker potsherds, and two or three cremation burials were found (Fig. 7.101). A substantial amount of flint artefacts were also found. These also occurred in pits with Barbed Wire decorated pottery. However, the original context of these flint finds was not always clear. Mesolithic flint could have entered into these pits as well. The excavators illustrate this by referring to charcoal from a pit with BWB pottery and flint, which was dated to a Mesolithic date of 9120 ± 50 BP.⁵⁴⁹

The cremation burials found at the site were found packed together in a tight bundle. This probably indicates that they were originally deposited in an organic container.⁵⁵⁰ The southernmost grave-pit contained two clusters of cremation remains found close together. Interestingly, the cremations appear to be of more than one individual in two of the burials. One burial contained at least two individuals (both 25-30 years). A cremated individual who had died between 27 and 60 years old was found without cremation remains of others having been included in the pit. The third cluster of cremation remains contained at

⁵⁴⁶ Scholte Lubberink 2008, 42.

⁵⁴⁷ Langeveld & Fermin 2008, 31.

⁵⁴⁸ Bouwmeester, Fermin & Groothedde 2008, 12.

⁵⁴⁹ Fermin 2008, 56.

⁵⁵⁰ Fermin 2008, 76.



Figure 7.101 Layout of the excavated area, including test trenches, with beaker pottery and cremations indicated (after Fermin 2008, 76).

least two individuals of 12-15 and 27-34 years old and maybe even a third.⁵⁵¹ No pottery or flint was found in the burials, but a ^{14}C date or the southern grave indicates a Bell Beaker date.⁵⁵² One piece of bone had a green stain. Because it was suspected that this could indicate

contact with a copper object on the pyre, this fragment of a diaphysis was analysed at TNO-NITG at Utrecht University by means of CP-MS analysis.⁵⁵³ This led to the conclusion that this bone indeed had been in contact with copper on the pyre.⁵⁵⁴

⁵⁵¹ Cuijpers 2008, 77, 78.

⁵⁵² Fermin 2008, 76: 3940 ± 45 BP: 2569-2515 (15.2%), 2501-2295 (84.8%), calibrated at 2 sigma.

⁵⁵³ Huisman 2008, 79.

⁵⁵⁴ Huisman 2008, 81.

An interesting find is a series of post holes and post pits that were associated with a possible structure (Fig. 7.102). The authors called this a house of type Leesten 1, dating to the Early Bronze Age on the basis of a comparison with houses at Noordwijk and Vasse. However, we seriously doubt the validity of this configuration as a structure, on the basis of a lack of consistency in position, size and structure of the post pits. There is no coherence as a roof-bearing structure.⁵⁵⁵ The pits contained no finds, but a prehistoric tree-fall to the west of the structure (indicated as garbage pit in Fig. 7.102) contained a large number of BWB sherds. This is used to support a date in the Early Bronze Age.⁵⁵⁶ This pottery complex is very fragmented, so none of it could be drawn. Just as was the case with the Bell Beaker pottery, the BWB pottery was found dispersed throughout the excavated area and could not be linked to clear structures.

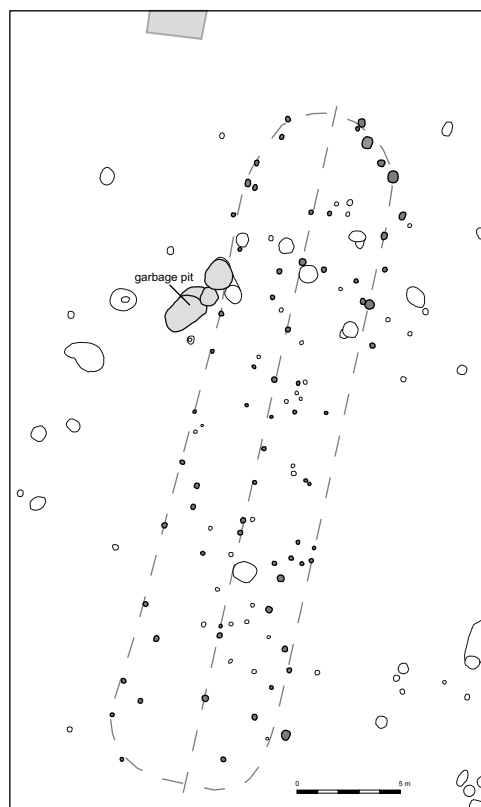


Figure 7.102 Claimed house plan of type Leesten 1 (after Fermin 2008, 109).

7.17.3 Comments

The site Zutphen-Looërenk is important because throughout the 10 ha excavated area, Late Neolithic and Early Bronze Age features are present, but dispersed and difficult to date and to characterise. The site is in our view exemplary of the low visibility of such Bell Beaker and BWB settlements.

7.18 Hengelo-Ekkerinkweg

The site is situated on the coversand landscape east of the valley of the present river IJssel (Fig. 7.100).

7.18.1 Research history

For the development of a new town hall in the municipality of Hengelo (Gld), an area of 1.07 ha was excavated. A prospection campaign had produced remains from the Late Bronze Age or the Iron Age, therefore a settlement from that period was expected.⁵⁵⁷

7.18.2 Excavation results

The excavation indeed yielded settlement remains (houses, granaries, wells) from the Middle and possibly the Late Iron Age. No features from older periods were found but for one pit (S35). The feature had uncertain dimensions, probably was 180 x 160 cm and still 15 cm deep. In the field only one feature was recognised, but later it was argued that there were in fact two pits, one of which, the one containing the finds, had been dug into the older one containing charcoal.⁵⁵⁸ The charcoal was dated to 2290-2030 cal BC (95,4%).⁵⁵⁹ In the fill of the pit twenty three stone objects were found (Fig. 7.103). The finds probably had been laid down, deposited, in the pit. They were maybe not carefully arranged, but on account of their even distribution throughout the pit it is thought that these finds had certainly not been

⁵⁵⁵ Cf. Chapter 6.

⁵⁵⁶ Fermin 2008, 114.

⁵⁵⁷ Williams 2009, 5.

⁵⁵⁸ Williams 2009,

⁵⁵⁹ Ua-36482: 3755 ± 40 BP, calibrated at 2 sigma.



Figure 7.103 A selection of stone tools from the pit found at Hengelo (after Drenth, Freudenberg & Harz 2011, 45, 47, 49, 51).



Figure 7.104 The stone objects during two stages of excavation (from Drenth, Freudenberg & Harz 2011, 82).

thrown in as garbage either (Fig. 7.104). The following objects were found:⁵⁶⁰

- A stone axe with a rectangular cross-section made of amphibolite (nr. 3)
- A (hammer) stone with two polished rounded ends (nr. 19)
- Three hammer stones (nr. 6, 7, 12)
- Two cushion stones (nr. 1, 2)
- Two arrow shaft polishers (nr. 4, 5)
- Six or seven polishing stones (nr. 8, 9, 18, 20, 22, 23)
- One or two polishing stones (nr. 10, 15)
- Unused pieces of stone and flint

All objects are made from material that can be found in boulder clay outcrops or Rhine-Meuse gravels.⁵⁶¹ The authors interpreted

this deposition as a possible hoard of smith's tools.⁵⁶² Whether or not all tools originally had a function is this respect, is not certain, but at least the cushion stones were possibly associated with copper and gold.⁵⁶³ All stone objects were first studied with a stereomicroscope, but most objects showed a negative result for metal traces.⁵⁶⁴ Three objects, an amphibolite axe, a cushion stone, and a polishing stone (1, 3 and 9) showed some traces and were subjected to a Neutron Activation Analysis in the TRIGA reactor in the Institut für Kernchemie in Mainz. The search was only for copper and gold, which turned out to be present in very high concentration in the samples scraped from the surface.⁵⁶⁵ The subsequent study with the raster

⁵⁶⁰ Drenth, Freudenberg & Harz 2009, 44; the numbers refer to Figure 7.104.

⁵⁶¹ Drenth, Freudenberg & Harz 2009, 44.

⁵⁶² Drenth, Freudenberg & Harz 2009, 53.

⁵⁶³ Pernicka 2009,

⁵⁶⁴ Pernicka 2009, 84.

⁵⁶⁵ Pernicka 2009, 85.

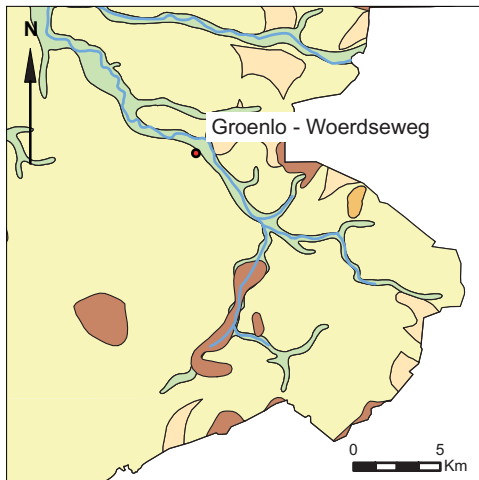


Figure 7.105 Location of Groenlo on the palaeo-geographic map of 2750 cal BC (based on Vos & De Vries 2013).



Figure 7.106 The inventory of the Groenlo grave: a hammer axe, two flint blades and a Zigzag Beaker (after Drenth 2011, 56, 57).

electron microscope, however, had no result and was abandoned after analysis of number 3 and 9. The conclusion was that the objects were used as hammering or polishing metal objects.⁵⁶⁶

7.18.3 Comments

The find complex found at Hengelo-Ekkerinkweg is unique and very important. In their last phase of use, the deposited objects possibly were used for hammering metals, although it is possible that they had been used for other purposes at an earlier stage. The NAA analysis appears to have proven beyond doubt that metal traces were present. That is in fact one of the first times that this has been corroborated for suspected metal working tools found in the Netherlands.

7.19 Groenlo

The site is located on the flanks of a coversand plateau (Fig. 7.105), but presently the area is covered by stream valley deposits (peat and clay) of a stream that cross-cut the area during the Iron Age and later periods.⁵⁶⁷

7.19.1 Research history

North of Groenlo, the municipality was developing a park and a housing estate. In the first stage of research, in 2010, test trenches were dug, which resulted in the discovery of late Neolithic grave. Therefore a larger was excavated, but only further Medieval features were found belonging to a settlement from the Early Middle Ages.⁵⁶⁸

7.19.2 Excavation results

During the prospection phase of the site, a Late Neolithic grave was discovered. Initially there was no indication that a grave was present: the feature was oval, 180 x 90 cm, and still 20 cm deep. Because of the find complex found within the pit it interpreted as a grave. This pit contained a SGC zigzag beaker, two flint blades and a hammer axe (Fig. 7.106). No samples were taken, so only the finds are left.

⁵⁶⁶ Pernicka 2009, 87, 88.

⁵⁶⁷ Huizer & Williams-Kodde 2012, 21.

⁵⁶⁸ Williams-Kodde 2012, 5.

7.19.3 Comments

The site was chosen to be included in this chapter because it is one of several sites that contained a Single Grave Culture burial in the region. In his comments on the burial Drenth urges archaeologists to take phosphate samples of these graves because they may indicate the position of the inhumation.⁵⁶⁹ We share this suggestion entirely.

7.20 Kilder-sportterrein

The site is situated on the northern flanks of the ice-pushed ridges of Montferland south of the valley of the present river IJssel (Fig. 7.100).

7.20.1 Research history

In the area a housing estate was developed. The prospective phase of the excavated area consisted of a desk-based study, an auguring campaign and a test trench campaign in 2009. As a result settlement remains and an urnfield from the Late Iron Age or the Roman Period were expected. Therefore an area of nearly 1 ha was excavated by Archol bv.⁵⁷⁰ All research questions were focussed on the urnfield and the settlement remains.

7.20.2 Excavation results

The excavation yielded only 14 features, a.o. two cremation burials from the Middle Bronze Age A, according to the ¹⁴C dates. Some posts pits that had been amongst the scarce features encountered contained pottery from the Late Bronze Age or Early Iron Age, but the five cremation burials that were discovered in the test trenches turned out to be older. According to Van der Linde, these five graves turned out to only contain tiny fragments of cremation remains that had probably been displaced from the original grave, now indicated as grave 2.⁵⁷¹ During subsequent excavation a

second cremation burial (grave 1) was found at 11 m distance from the first, also without pottery or other finds.⁵⁷² The grave was barely visible as a feature, and would probably have gone unnoticed if the cremation remains had not been present.⁵⁷³ The fill of the grave was homogenised by bioturbation. No charcoal remains were found. The cremated remains weighed 238 (grave 1) and 169 grams (grave 2), and probably were of adults, grave 1 possibly of a woman.⁵⁷⁴ All parts of the skeletons appear to have been represented.

The calibrated dates range between 1680–1520 cal BC (3320 ± 30 BP) for grave 1, and 1740–1610 cal BC (3340 ± 40 BP) for grave 2. If both burials were more or less contemporary, a date between 1680 and 1610 cal BC is considered most likely.⁵⁷⁵

7.20.3 Comments

Cremation burials for this period are relatively common in the southern Netherlands,⁵⁷⁶ but less common in the eastern Netherlands. This small cluster of graves could easily have been gone unnoticed, especially since only few cremation remains were present. We should consider such small clusters probably much more common practice than so far has been assumed on the basis of barrow evidence.

7.21 Didam-Kerkwijk and Randwijk-Zuid

Didam is situated on the coversand ridges south of the Montferland ice-pushed ridges, just north of the river Rhine and east of the IJssel (Fig. 7.100).

7.21.1 Research history

In the area the municipality of Montferland was developing the residential areas Kerkwijk and Randweg-Zuid. The prospective phase of research was conducted using auguring and test-trenches. Together with the subsequent final phase of research it yielded the remains of Iron Age settlements in several locations, along

⁵⁶⁹ Drenth 2012c, 69.

⁵⁷⁰ Van der Linde 2013, 5.

⁵⁷¹ Van der Linde 2013, 15.

⁵⁷² Van der Linde 2013, 29.

⁵⁷³ Van der Linde 2013, 27.

⁵⁷⁴ Lemmers 2013, 36–40.

⁵⁷⁵ Van der Linde 2013, 27.

⁵⁷⁶ Cf. Theunissen 1999.



Figure 7.107 Pot beaker found lying on its side (after Van der Veken & Prangmsma 2011, 74).

with a small cremation burial from the Middle or Late Bronze Age. However, a Late Neolithic pit was also amongst the excavated material.

7.21.2 Excavation results

In between settlement remains dating to the Iron Age, one pit was discovered with 421 sherds of one pot beaker lying on its side (Fig. 7.107). Even though it was lying on its side, and the pot was very well preserved according to excavators, its bottom was missing.⁵⁷⁷ Therefore it was probably deposited without its bottom.

7.21.3 Comments

The site was chosen for a summary as yet another example of an almost complete pot beaker 'deposition'. These are discussed further in Chapter 8 (see section 8.6.3).

7.22 Warmond-Park Klinkenberg

The site Warmond-Park Klinkenberg is located just north of the Rhine (Fig. 7.108). Just like the site The Hague Bronovo (Par 7.24), it was situated on beach barriers that had formed during the Late Neolithic.

7.22.1 Research history

The site Warmond-Park Klinkenberg was investigated by RAAP BV prior to building activities in the area. First an auguring campaign was conducted, in order to prospect for sites.⁵⁷⁸ It turned out that this part of Warmond is situated on a former beach barrier, of which the deposits are present between 100 and 175 cm below the surface.⁵⁷⁹ On the basis of the auguring results, trial trenches were excavated in three different locations. One of those trial trenches (trench 3: RAAP WP3 on Fig. 7.109) yielded Late Neolithic features and pottery. On the basis of these results of the test trenches, an area of c. 30 x 60 m was fully excavated.

7.22.2 Excavation results

In total, 52 features were encountered at the site. The majority of these feature dates to Medieval times and no structures are present. Of the few Late Neolithic features two were interpreted as a water pits, 'because the fill was layered',⁵⁸⁰ and because of their location on the flank of the dune which would be well suited for extracting water. However, in our view this interpretation is unlikely because such pits immediately fill-up after being dug below the ground water table if no lining of some kind is inserted.

In total, 571 potsherds were found at the site. About one third of this number was found

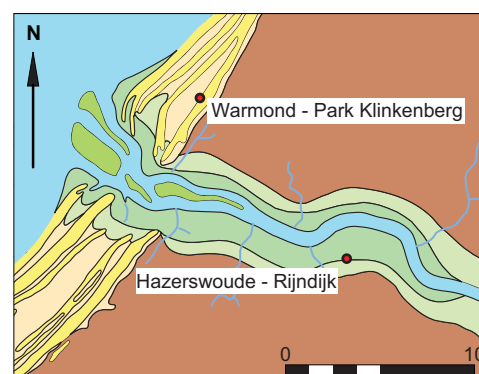


Figure 7.108 The site of Warmond-Park Klinkenberg against the palaeogeographic map of 2750 cal BC (after Vos & De Vries 2013).

⁵⁷⁷ Van der Veken & Prangmsma 2011, 127.

⁵⁷⁸ Kruidhof 2004.

⁵⁷⁹ Bink 2006, 7.

⁵⁸⁰ Bink 2006, 20.

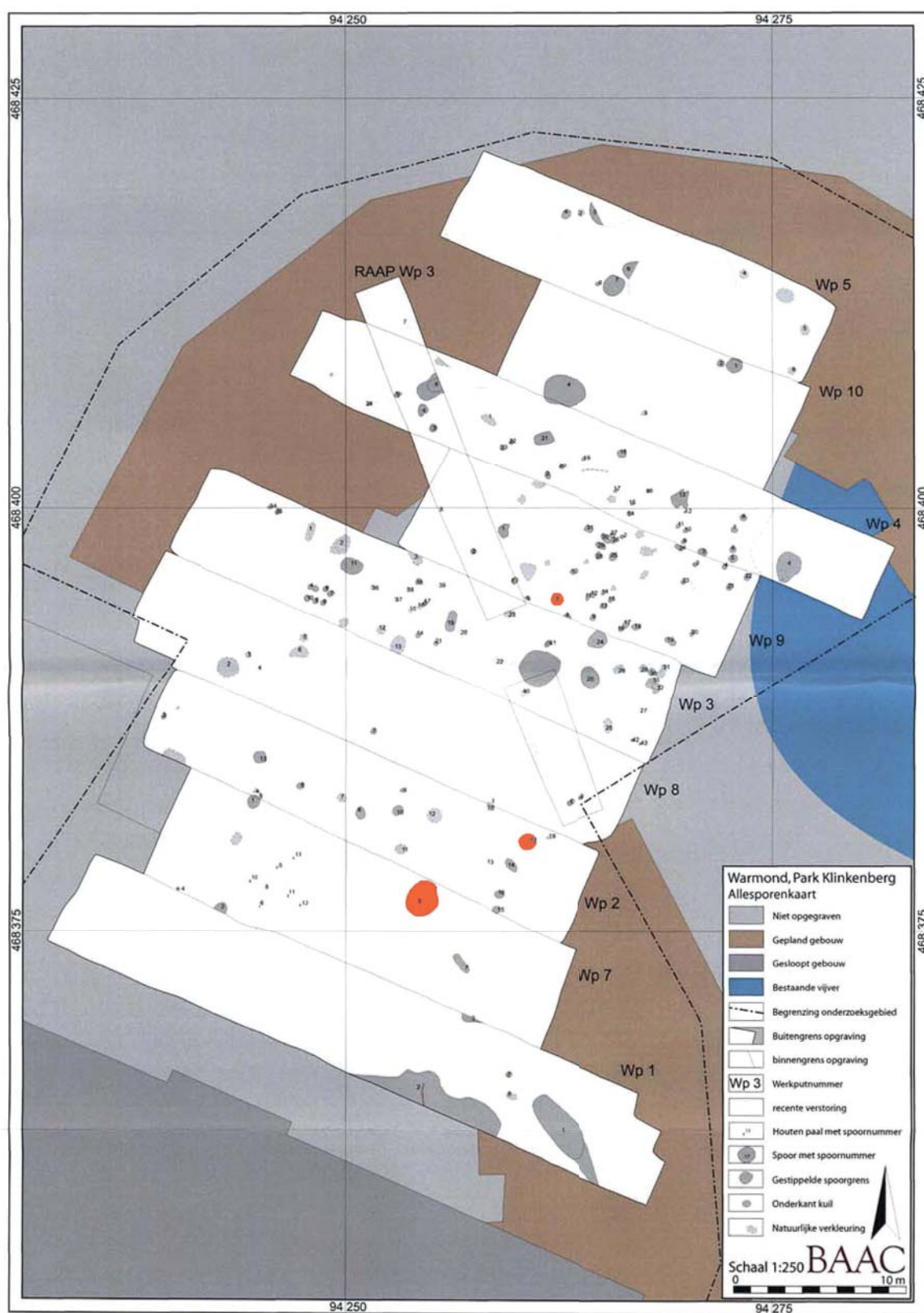


Figure 7.109 Plan of all features. Note that roughly half of the indicated features are natural. Features that date to the Late Neolithic are indicated in orange (after Bink 2006, 83).



Figure 7.110 Selection of decorated Late Neolithic A sherds from Warmond-Park Klinkenberg. Scale is 1:3 (compiled after Bink 2006, 36, 28).

through sieving the excavated sediments.⁵⁸¹ The same is true for other find categories: the majority of the finds were also found during sieving activities. Sadly, this implies that much of the material that was originally present at the site has not been recovered by the excavators, because they only sieved 57 out of 1448 squares. More than 50% of the potsherds were small fragments and only c. 10% of the remainder was decorated. The most frequent decoration was made by making grooves in a herring bone motive (Fig. 7.110). Some sherds have fingernail or fingertip impressions. It is possible that these sherds derive from beakers with short wave moulding.⁵⁸² All kinds of descriptive statistics have been carried out on the material regarding thickness and temper, but the sample is in fact too small and incoherent to yield significant statistical results. In typological terms, the complex features AOO beakers, ZZ beakers, Late SGC beakers, pot beakers and possibly also

maritime Bell Beakers.⁵⁸³ VLC ceramics may be hidden in the undecorated material, but this remains unclear in the analysis.

Mooren dates this complex in Phase 4 (2550–2400 cal BC) of the SGC.⁵⁸⁴ In Chapter 8 we comment on this periodisation in more detail, but suffice to say such a precise date cannot be achieved through ceramic typology. Most of the flint is locally picked-up beach flint. In all, almost 200 artefacts were recovered. Most of these are classified as tools and the majority of these tools are scrapers (Fig. 7.111).⁵⁸⁵ A few flakes of polished flint axes were found, one from Rijckholt flint.

The animal remains were very fragmented (sieve residue) and therefore impossible to attribute to specific species.⁵⁸⁶ The plant remains show a similar picture. Consequently, the potential for a coherent environmental analysis was low.⁵⁸⁷ Interestingly, most of the plant species found have been gathered rather than farmed. The

⁵⁸¹ Bink 2006, 25.

⁵⁸² Mooren 2006, 28.

⁵⁸³ Mooren 2006, 32.

⁵⁸⁴ Mooren 2006, 32.

⁵⁸⁵ Peters 2006, 49.

⁵⁸⁶ Peters 2006, 49.

⁵⁸⁷ Van Beurden 2006, 50.

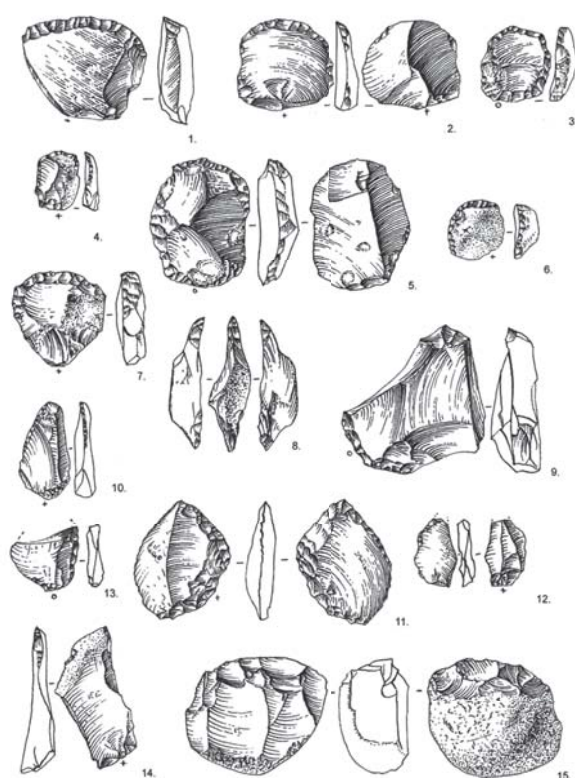


Figure 7.111 Selection of flint tools from Warmond-Park Klinkenberg, scale 1:1 (from Bink 2006, 36, 28).

idea is that Warmond-Park Klinkenberg is an 'off-site' and that therefore the sample may not be representative.⁵⁸⁸

The pollen samples of the peat layer in the low area yielded interesting information about the vegetation on these beach barriers. They show a dense undergrowth with some higher trees. The vegetation consisted of hazel, maple, ash, poly podgy and buckthorn. The peat vegetation indicates a fresh water environment. Grain pollen (barley) indicates that arable land must have been located nearby.⁵⁸⁹

7.22.3 Comments

Warmond-Park Klinkenberg is a small site, possibly situated at the margins of a settlement. This site demonstrates that at such locations find material is present in abundance (taking the small sieved sample into consideration) and also plant material and some bone material is preserved. These Late VLC-Late SGC sites were situated in landscapes that allowed for a combination of

farming with hunting, gathering and fishing.

The ^{14}C dates obtained from charcoal from the pits at this site illustrate the difficulties involved in dating material from this period (Fig. 7.10).

The date of pit 2 has the smallest range and the youngest date, but there is no guarantee that all pits were contemporary. The best guess is that the site dates somewhere around 2500 cal BC.

7.23 Den Haag-Bronovo

The Den Haag-Bronovo site is located on beach barriers that had formed during the Late Neolithic between 2500 and 2000 cal BC (Fig. 7.112).⁵⁹⁰ The beach barrier provides a *terminus post quem* for habitation of the site. The site was situated between the North Sea to the north and a slowly drowning peat landscape in the south. The dune landscape was characterised by both peat-rich depressions and small forests (consisting of oak, ash, maple and beech).⁵⁹¹ The excavation trenches were located on the flanks of the dunes where wind-erosion is less prevalent. Hence, archaeological remains have been preserved *in situ*.⁵⁹²

7.23.1 Research history

The site of Den Haag-Bronovo was excavated a long time before development-led archaeology came into effect. The first prospective phases of

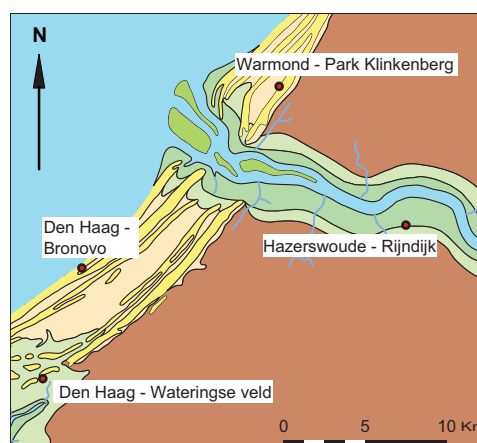


Figure 7.112 The situation of Den Haag-Bronovo and surrounding sites on the palaeogeographic map of 2750 cal BC (after Vos & de Vries 2013).

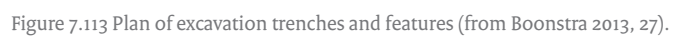
⁵⁸⁸ Van Beurden 2006, 50.

⁵⁸⁹ Van Beurden 2006, 56.

⁵⁹⁰ Rieffe 2013, 18.

⁵⁹¹ Rieffe 2013, 19.

⁵⁹² Rieffe 2013, 23-24.



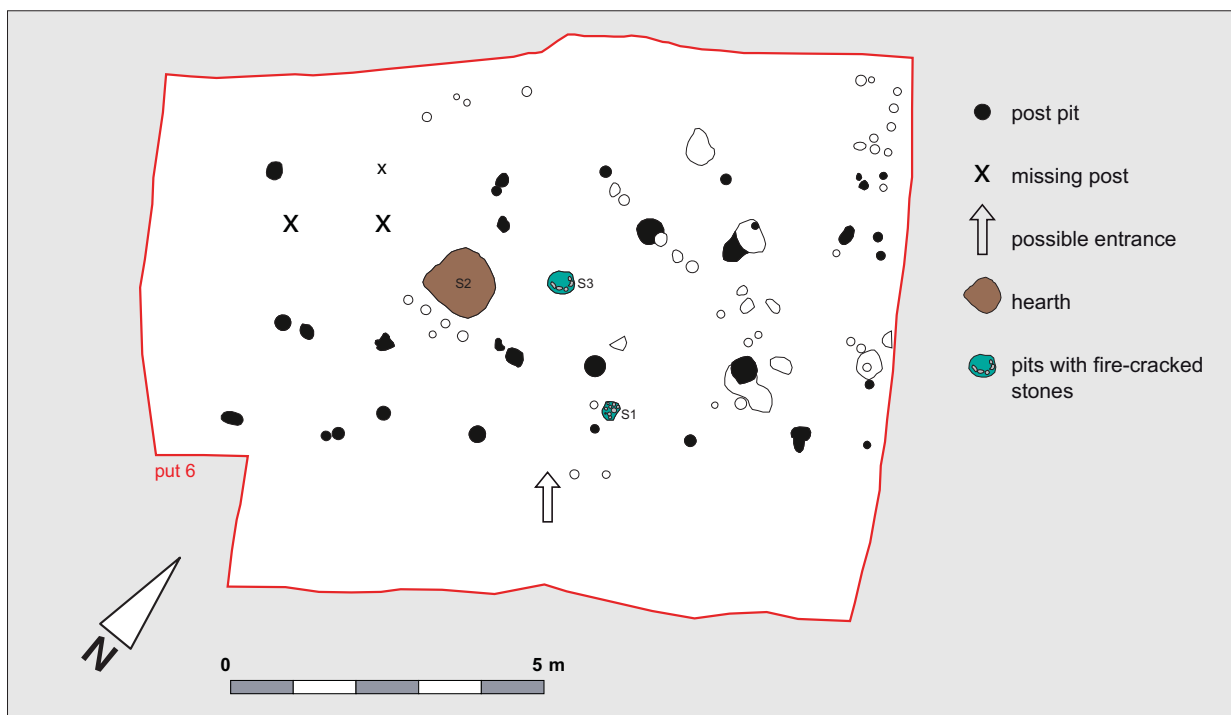


Figure 7.114 The Middle Bronze Age-A house plan excavated at Den Haag Bronovo (after Boonstra 2013, 30).



Figure 7.115 Pit with fire-cracked stones (from Boonstra 2013, 38).

research started in 1985 and the last excavation was concluded in 1991. However, as with many sites excavated during this period, initially no funds were available for the post-excavation analysis and publication of the site. Following the coming into force of development-led archaeology, the municipality of Den Haag made

funds available for the analysis of the site in 2005, leading to the publication of a high quality site report including contributions by many period specialists in 2013.⁵⁹³

The site was discovered during the early stages of building activities that preceded the construction of a new wing for the adjacent hospital. These construction activities were closely monitored by municipal archaeologists. Finds and features found during this period were associated to the Middle Bronze Age Hilversum Culture. These early finds led to the eventual excavation of several trenches between 1990 and 1991, which studied a surface of roughly 2500 m². The excavation involved the systematic collection of finds from the find layer in a 2 x 2 m grid and according to the stratigraphy. After the find layer had been removed, the excavation focused on the features that became visible underneath.

7.23.2 Excavation results

Between April 1990 and April 1991, fourteen trenches were excavated in an area of c. 40 x 60 m (Fig. 7.113). In these approximately 10 x 10

⁵⁹³ Bulten & Boonstra 2013.

m trenches, many ard marks were found and at least one cluster of features (trench 6). During fieldwork, no structures were identified, but during post-excavation analysis a structure was recognised that is interpreted as a house plan (Fig. 7.114).⁵⁹⁴ The house plan consists of several pits that were selected within a cluster of post pits and that form more or less regular lines. The authors of the report are convinced that this was a house and lay down many arguments for this classification. Nevertheless, we find the classification unconvincing. As a structure, i.e. a roof bearing structure, the proposed house plan is rather irregular, especially because the posts are of very unequal size and because several posts are 'missing'. The structure is hypothesised to measure 4.5 x 10 meter, which is rather small. The excavators state that a north-eastern part of the house was possibly unexcavated, but from the overview maps of all the trenches it is clear that it does not continue into the next trench (Fig. 7.114). Therefore, the house could not have been longer than 13–14 m, despite the excavators' claim of a possible length of 17–18 m. Furthermore, 'missing' posts are always doubtful. In this case, two of those could have been present underneath a recent disturbance that is not indicated on the plan. An entrance is proposed in the southern wall of the house, but there is in fact no evidence to suspect why an entrance would be located here. In order to place the structure in a larger context, the excavators discuss comparisons to Middle Bronze Age B farmsteads from West Frisia.⁵⁹⁵ However, West Frisian structures are characterised by two perfectly straight rows of directly opposed roof-bearing posts of equal size. There is no exception to this rule in West Frisia.⁵⁹⁶ In contrast, the proposed structure from Den Haag-Bronovo does not confer to this pattern.

Given the presence of two pits with fire-cracked stones and a pit with 'some' charcoal on the bottom (Fig. 7.115; interpreted as a hearth)⁵⁹⁷ we may think of a special activity area with shelter, rather than of farm that existed for a longer period of time. Therefore, our conclusion deviates from that of the authors of the report: we do not think that the site presents the remains of a permanent farmhouse.⁵⁹⁸ Not far from the projected house plan, sets of two parallel ditches (trench 3 and trench 1) and

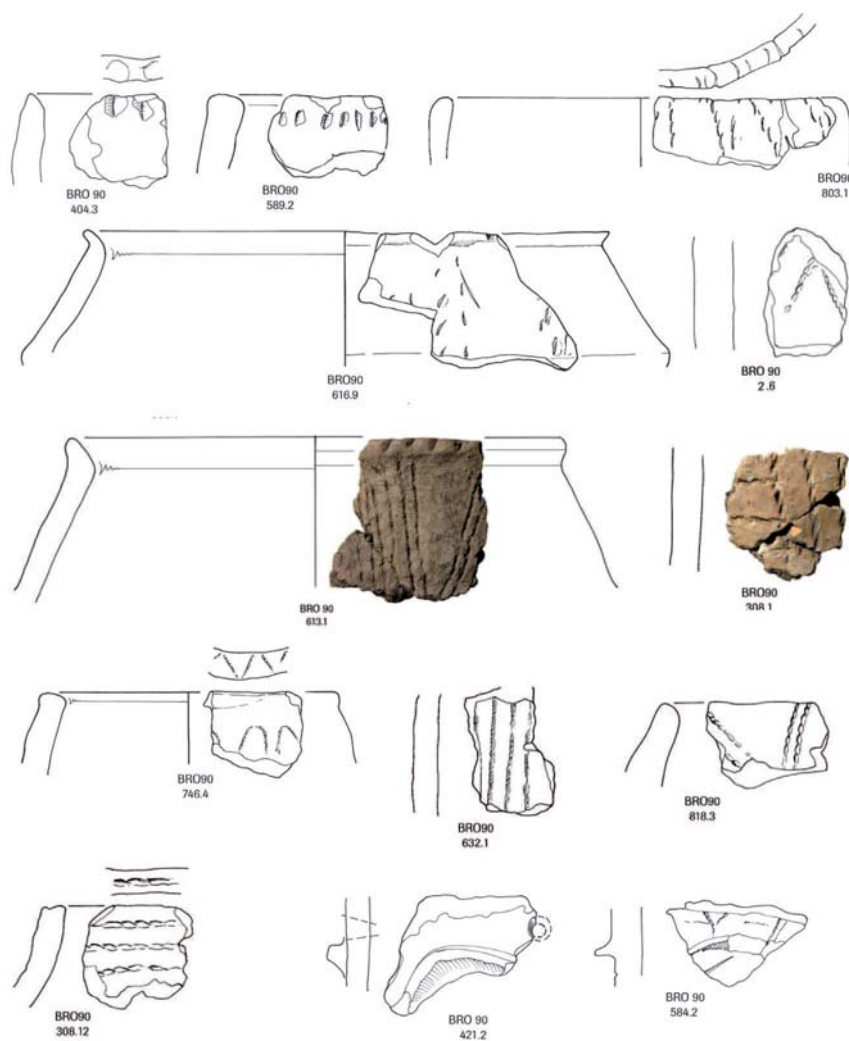


Figure 7.116 A selection of the pottery showing different kinds of fingernail, fingertip and cord decoration found at Den Haag-Bronovo. No's 421.2 and 584.2 are horseshoe-shaped appliques, scale 1:3 (after Bloo 2013, 60, 62).

ard marks are associated with the Middle Bronze Age A features. The ditches are only 40 cm wide and 45 cm deep. They all contain Bronze Age potsherds, though none of these sherds are diagnostic. One of the ditches also contained a faience bead.⁵⁹⁹ The ard marks are dated to the Middle Bronze Age A as well. Interestingly different phases in the use of this plot of land have been attested, because some ard marks were cut by the Middle Bronze Age A ditches, while one of the ditches in trench 5 that is attributed to the Middle Bronze Age A as well, was overlain by ard-marks.

⁵⁹⁴ Bulten & Boonstra 2013, 29–36.

⁵⁹⁵ Boonstra 2013, 33–35.

⁵⁹⁶ Arnoldussen 2008; Roessingh *in prep.*

⁵⁹⁷ Boonstra 2013, 37.

⁵⁹⁸ This is also the conclusion drawn by Arnoldussen (2008, 180).

⁵⁹⁹ Cf. Fig. 7.134; Boonstra 2013, 41.

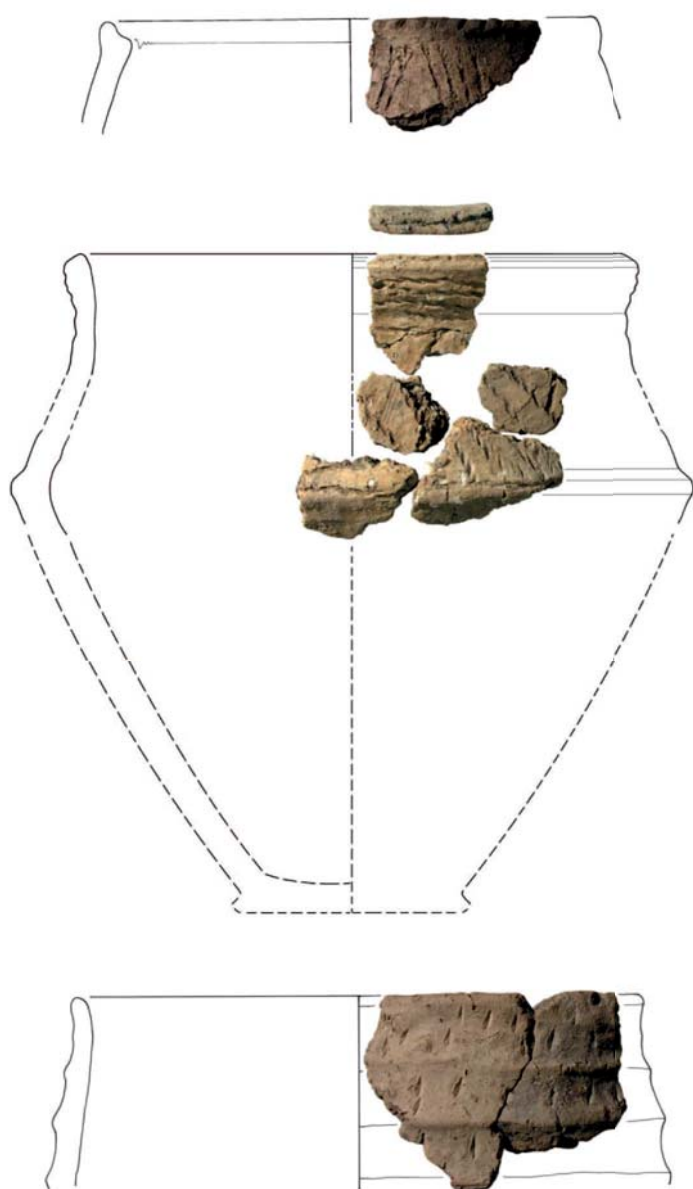


Figure 7.117 A selection of the pottery showing different kinds of fingernail and cord decoration found in Den Haag-Bronovo, scale 1:3 (after Bloo 2013, 60, 63).

Finds

The Bronze Age pottery recovered from Den Haag-Bronovo amounted to c. 10 kg of material.⁶⁰⁰ Most of this material was collected from the sieved find layer. Roughly half of the pottery was decorated, often with cordons. Horseshoe shaped appliques were present as well, which is commonly seen as an indication for a relatively early date. Barbed wire decoration did not occur. Cord decorations were frequent and were mostly found on the shoulder

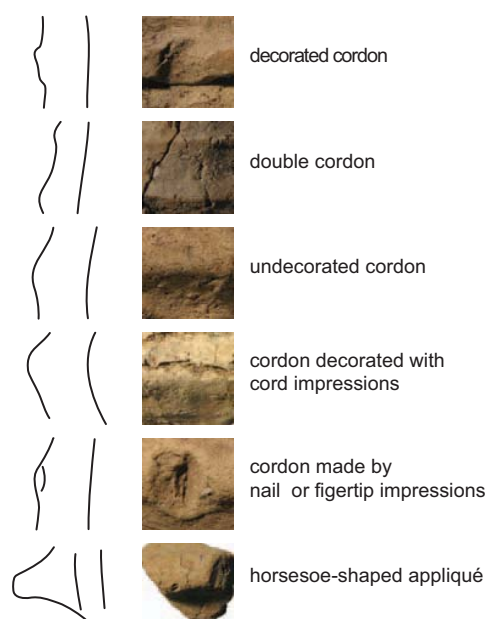


Figure 7.118 Different kinds of decorated cordons recognised by Bloo (after Bloo 2013, 63).

of the pots (Fig. 7.116, 117). Other decorations were made using finger or nail impressions and included grooved lines and scratched lines. The occurrence of horseshoe appliques and the absence of barbed wire decorations lead the specialist responsible for the analysis of the pottery to argue for a date between 1800 cal BC and 1600 cal BC.⁶⁰¹ In our view, the absence of barbed wire decoration on the one hand, and the presence of early Hilversum elements on the other, indicates a slightly later date, between 1700 and 1600 cal BC. The best parallel for this complex is the site Vogelensang.⁶⁰² We would like to add that the decorations S. Bloo calls *staftanden* (cordons; Fig. 7.117, 118) are different from the Middle Bronze Age B type of cordons. They Early Hilversum cordons are raised zones of the shoulder and collar of pots, sometimes decorated with nail, fingertip or cord impressions, whereas the Middle Bronze Age B cordons generally are appliques.

Apart from the pottery, a considerable amount of flint (576) and stones (5109) was found at the site. Considering the location of the site on top of a beach barrier landscape that formed during the Late Neolithic, it can be assumed that all finds date to this period at the earliest. Houkes states that none of the material weighing more than 5 grams was acquired at the site, although

⁶⁰⁰ Bloo 2013, 51–81.

⁶⁰¹ Bloo 2013.

⁶⁰² Ten Anscher 1990.

material originating from the beaches of South Holland, Zeeland and Vlaanderen is present.⁶⁰³ Almost all of the material was acquired when excavating the find layer, which implies that the material is not associated with specific features. Most of the flint did not show signs of use or modification. Only 46 pieces of flint were used, whilst the remainder is classified as debitage. The modified artefacts include scrapers, retouched flakes and arrowheads. Of the 5000 stone finds, only 45 were modified. This number includes a red sandstone pendant (Fig. 7.119). The pendant features use-wear at its bottom, which is deemed inconsistent with normal use. It is hypothesised that the stone could have been used to make drawings or markings.⁶⁰⁴ The arrows heads are of a tanged and barbed type that is considered typical for a Late Neolithic and Early Bronze Age (Barbed Wire Beaker Culture), rather than for an early Hilversum Culture contexts (Fig. 7.119). Especially the straight skewed barbs are more often seen in Early Bronze Age context. The find layer also gave indications for the subsistence basis at the site, even if we have to realise that the layer may have accumulated over a longer period of time. In total 3,831 g of zoological remains were analysed. With an average weight of 0.8 g per object the assemblage is highly fragmented, which complicates the analysis. Regardless, the presence of skeletal remains of both small and large mammals is attested by the material. Apart from the remains of oxen, sheep or goat and pigs, three worked fragments of antler were found and a fragment of a whale bone. Neither the exact species of whale, nor the type of bone could be identified.⁶⁰⁵ Fish remains and one bird bone were part of the assemblage as well. The fish remains belonged solely to cod, which would have resided close to shore during autumn and winter. Although none of these bones were ¹⁴C dated, the location of zoological material on the southern flanks of the beach wall, where most of the Bronze Age features were found, does argue for a contemporaneous date of the bones. Lastly, the site yielded several small metal objects. These ranged from a single bronze end product, probably an awl or a needle, to several finds that are probably associated with the production of bronze objects. These production related finds concern bronze drops

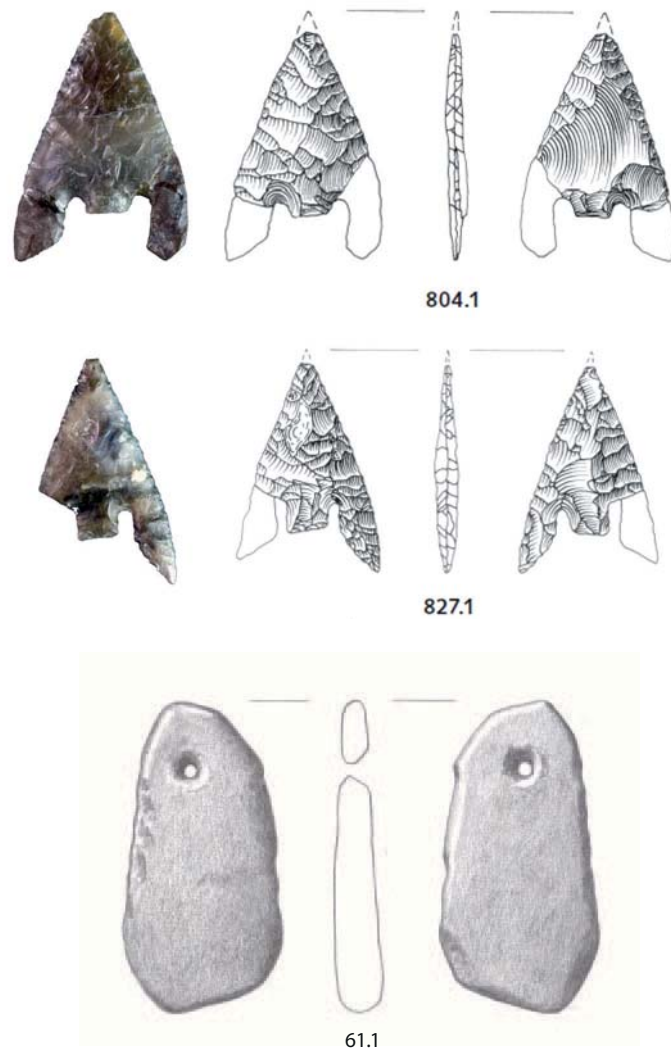


Figure 7.119 Flint and stone finds from Den Haag-Bronovo. Pictured are two tanged and barbed arrowheads and the red sandstone pendant, scale 1:1 (after Bulten & Boonstra 2013, 3; Houkes 2013, 94, 101).

with differing copper to tin ratios, which would probably have splashed away during the process of pouring molten metal. XRF analysis of the objects highlighted the relatively large amounts of tin that made up the alloys. Several pieces of burnt clay infused with metal oxides also point towards the production of bronze objects at the site, although it is unclear whether these concern parts of a tuyère, crucible or mould. Both the high occurrence of tin within the objects and the indications of on-site metal production are very rare for the Netherlands. Such indications are not unknown from contexts that were sieved, for instance at Geldermalsen-Eigenblok.⁶⁰⁶

⁶⁰³ Houkes 2013, 82-85.

⁶⁰⁴ Houkes 2013, 100.

⁶⁰⁵ Bulten & Boonstra 2013, 135.

⁶⁰⁶ Cf. Section 7.36.

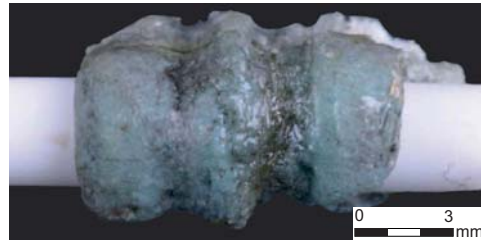


Figure 7.120 Faience bead found at Den Haag-Bronovo, scale 1:2 (from Bulten 2013, 163).

However, one of the pieces of burnt clay from Den Haag-Bronovo was dated to 780–220 cal BC by means of OSL, which is far younger than expected on account of the Middle Bronze Age A pottery. Therefore it is not impossible that Iron Age production debris was mixed into the find layer. After all, a substantial amount of Iron Age features was found on the site as well. A final intriguing find is a faience bead (Fig. 7.120). It is not a unique find, but they are not common either. Sheridan has studied the find and compares it with famous Exloo necklace.⁶⁰⁷ In her view, the beads from the Exloo necklace have been produced in Wessex, implying that they probably have been exchanged within the networks that existed between the Low Countries and Great Britain during Late Prehistory.⁶⁰⁸

7.23.3 Comments

To sum up, Den Haag-Bronovo is an important site because it is one of the very few Early Hilversum settlement sites known in the country. It shows that, even if a regular house plan may not be present, the general invisibility of the material is not due to the absence of features or of find material. Rather, we should be aware that sites like this are present on locations that we might not expect, because they are not perfect locations for farmers. We may consider a situation like this one, which is close to the sea and marshes and which may have been subjected to flooding events, as very marginal for farming. However, it is a location that enables hunting and fishing in combination with mixed farming. As becomes more and more clear, this might have been the normal situation for the Early Bronze Age, meaning that Den

Haag-Bronovo might exemplify the choice of location in EBA sites not for its optimal farming possibilities, but for the broad spectrum of subsistence strategies that could be employed alongside farming. The excavation is also important, because it demonstrates the need to sieve find layers.

7.24 Den Haag-Wateringseveld

The excavations showed that Middle Neolithic remains were situated on former beach barriers (the Rijswijk-Voorschoten barrier) that developed during the Middle Neolithic and are presently situated quite far inland (Fig. 7.121).⁶⁰⁹ During the Late Neolithic, between 3400 and 2200 cal BC the coast moved west and a new beach barrier was formed.⁶¹⁰ The marshes and beach flats between the two barrier systems developed into a fresh water swamp. Clay sediments deposited by the river Gantel in the south and by floods from the sea covered the sites, protecting the archaeological remains. Therefore, not only pottery and stone artefacts were preserved at Wateringseveld, but also bone and sub-fossil plant remains.

7.24.1 Research history

The site Den Haag-Wateringseveld, or Wateringseveld for short, is a large area destined for the construction of housing located southwest of the centre of The Hague. Archaeological remains in the area date to the Late Neolithic, the Iron Age and more recent periods. Although Wateringseveld is referred to and published as a single site,⁶¹¹ it actually consists of many excavations conducted between 1996 and 2007 throughout a large area. All excavations were carried out by the *Afdeling Archeologie Dienst Stadsbeheer Gemeente Den Haag*. The report is written by a team under direction of Hazenberg consultancy. Auguring campaigns and chance finds had made clear that low dunes were to be expected in the area around Wateringseveld and that during the Neolithic these dunes might have been good places for settlement. Expectations were high, but the auguring campaign did not predict

⁶⁰⁷ Haveman & Sheridan 2006, 121–123.

⁶⁰⁸ Haveman & Sheridan 2006, 130.

⁶⁰⁹ Kooistra 2014, 27.

⁶¹⁰ The Hague barrier.

⁶¹¹ Siemons & Bulten 2014.

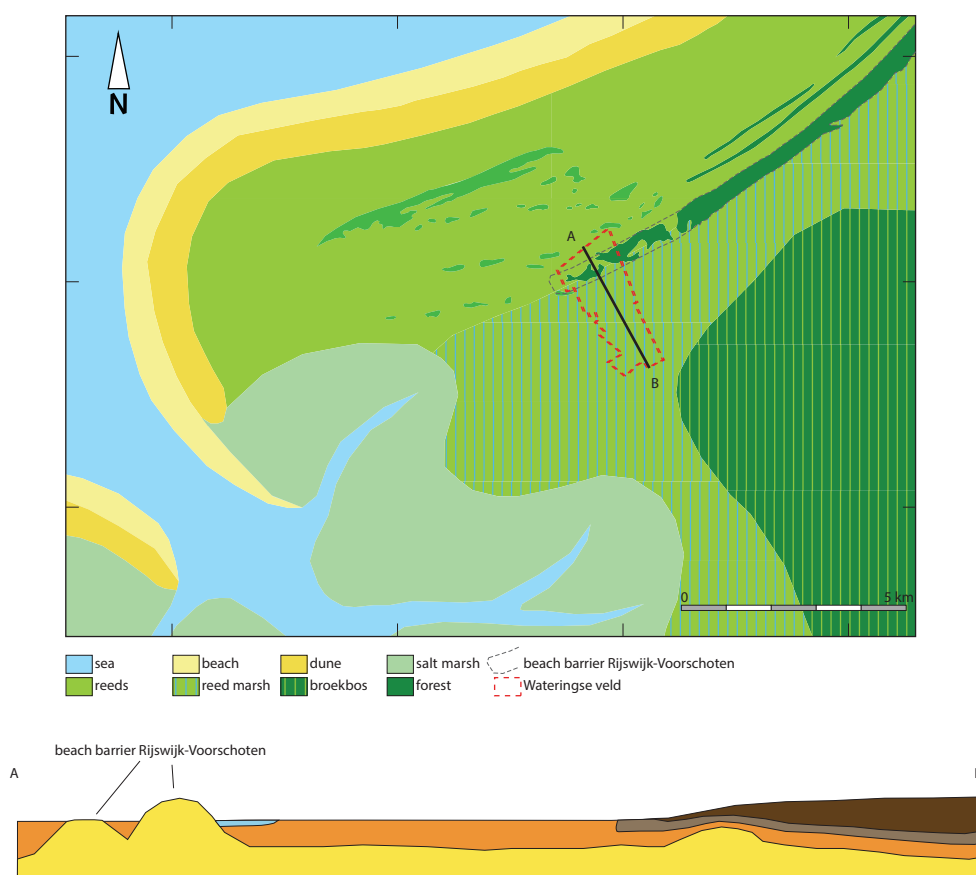


Figure 7.121 Palaeogeographic situation around 2200 cal BC. Rijswijk-Voorschoten barrier to the right. Compiled after Kooistra 2014, 25 (section) and Jongste 2014, 177 (palaeogeographic map).

where exactly archaeological remains could be expected.⁶¹² Therefore, test trenches were excavated, which did define the site locations. As such, Wateringseveld is an example one of the more advanced prospection procedures that pre-dates the start of development-led archaeology started.

7.24.2 Excavation results

The Late Neolithic remains at Wateringseveld are concentrated in a single zone and can be treated as a one site. These remains are indicated as projects RHYoo, GSCoo and JONoo (Fig. 7.122). Since the site Wateringseveld was situated in a dynamic landscape with sedimentation by the river and by the sea, the site consisted of find layers which were stratigraphically separated from each other. The find layers were sieved and analysed separately and attempts were

made to link these finds to clusters of features found underneath them.⁶¹³ However, there is very little control over the contemporaneity of finds, features and material from these layers. Unfortunately, such control was only possible for lower lying areas where finds had been conserved in-situ, whilst higher areas with richer in features had also witnessed more perturbation.

Clusters of features were found throughout an area of roughly 300 × 150 m (Fig. 7.122). These features included a large ditch, pits, ard marks and a configuration of posts. Features were attributed to the Late Neolithic (indicated in the report as the period between 2650 and 2300 cal BC) in different parts of the excavated area.⁶¹⁴ Most striking is a configuration of posts with total length 33 m (Fig. 7.123). The excavators suggest the post configuration might have been a cattle pen, but it might also have been a house. The possibility of a ritual gathering place is also mentioned.⁶¹⁵ The Late Neolithic date of this

⁶¹² Siemons & Bulten 2014, 13.

⁶¹³ Bloo 2014, 79-95.

⁶¹⁴ Lanzing & Siemons 2014, 55.

⁶¹⁵ Lanzing & Siemons 2014, 62.

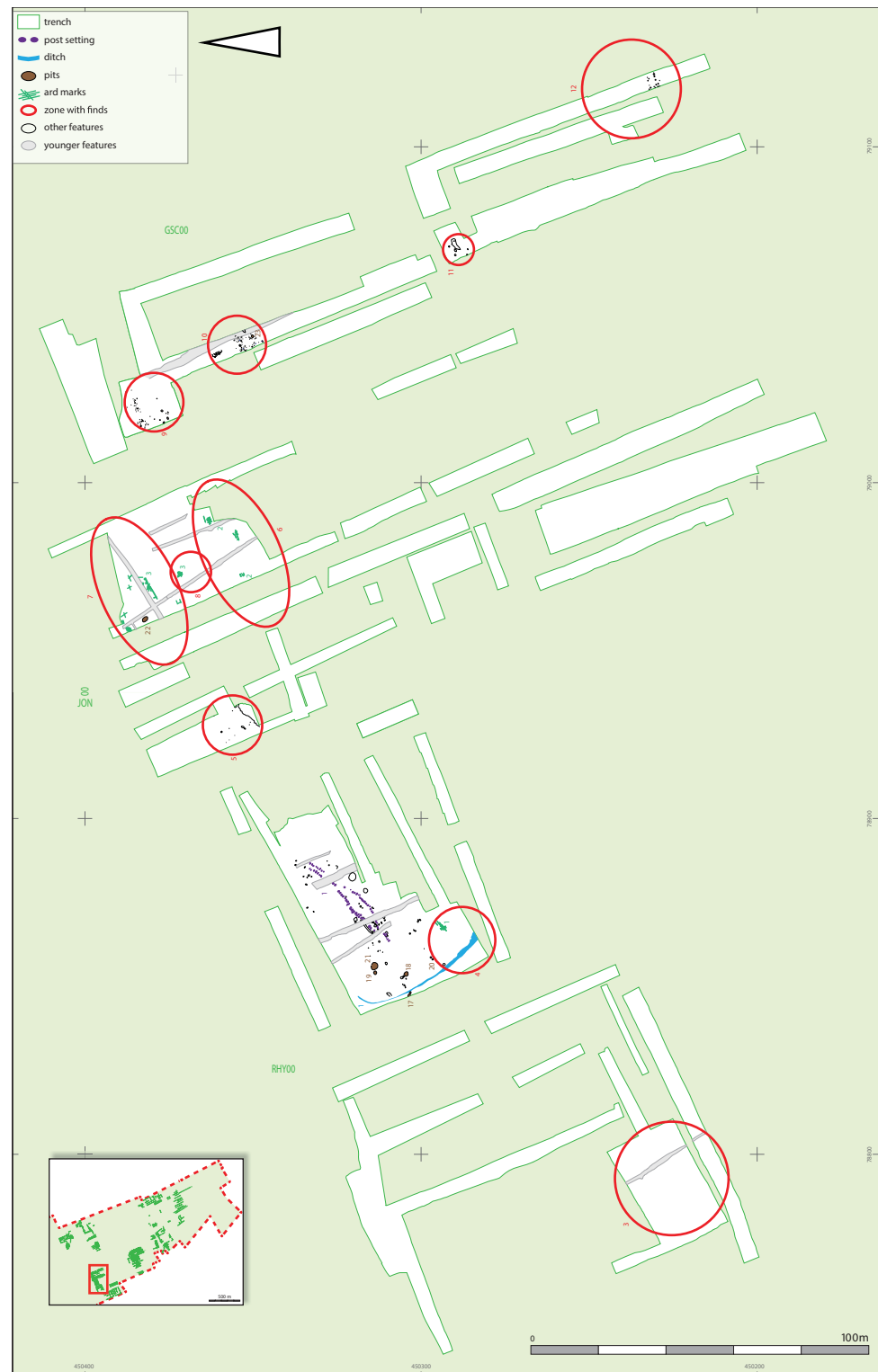


Figure 7.122 Part of the excavation plan marking the most important Late Neolithic features (after Lanzing & Siemons 2014, 56-57).

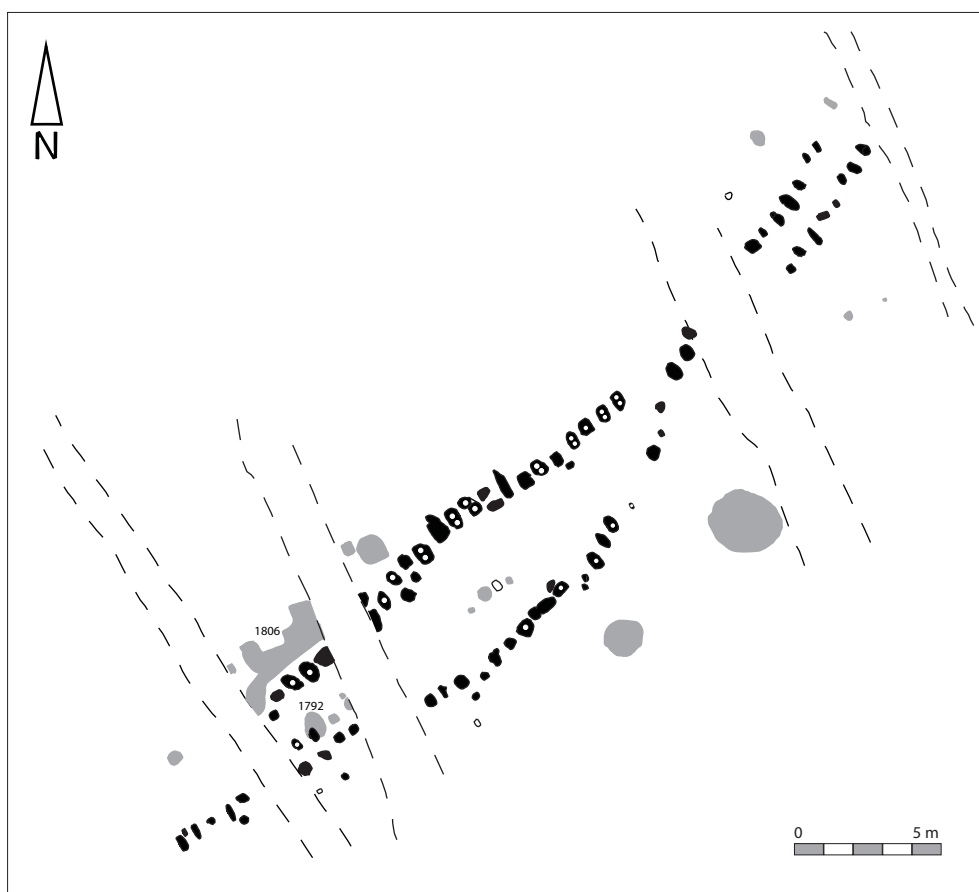


Figure 7.123 Post configuration attributed to the late Neolithic (after Bloo 2014, 77).

structure is not attested by finds in the post pits; this date is based on the proximity of features with Late Neolithic material. One of these Late Neolithic features is a ditch of unknown function which seems to fence-off the structure on the west side (Fig. 7.123).

In our opinion, the interpretation of the above-mentioned structure as a house is ambiguous, as there are considerable differences between the individual post holes in the configuration. Moreover, the northern side of the post configuration clearly consists of a double post setting with *in situ* post pipes whilst these are lacking on the southern side. The overall structure does not confer with, for example, the houses at Veldhoven or Zeewijk-Oost from the same period. The authors point at Den Haag Wateringse Binnentuinen for comparable structures (cf. Fig. 124),⁶¹⁶ which they call ‘type Den Haag’, but in our view none of these houses stand up to a critical discussion of how a roof would be supported.⁶¹⁷ Jongste draws a parallel

with the Early Bronze Age plan of Noordwijk-Bronsgest,⁶¹⁸ but that house has a clear inner structure that can support a roof.⁶¹⁹ In contrast, the structure at Wateringseveld did not have any inner posts. That would mean that the roof would be supported by only the outer row of very irregularly placed wall posts. These consist of paired posts set in a pit, and are consistently structured, but we cannot imagine a stable structure for a house on this basis. The authors retain this interpretation as a possibility, but on the other hand keep their reservations (Fig. 7.125). As an alternative explanation of the post cluster they offer a ritual structure or an animal pen.⁶²⁰ A kind of (ritual) road, or a border palisade controlling the access to the hinterland have also been offered as an interpretation of the cluster.⁶²¹ It is clear the authors were at a loss here, and did not find the interpretation of a house very logical either.

Some 100 m east of the post-configuration, several collections of ard marks were uncovered.

⁶¹⁶ Siemens & Bulten 2014, 174.

⁶¹⁷ Cf. Chapter 6.

⁶¹⁸ Van Heeringen, Van der Velde & Van Amen 1998.

⁶¹⁹ Jongste *et al.* 2001.

⁶²⁰ Lanzing 2014, 62.

⁶²¹ Jongste 2014, 178.

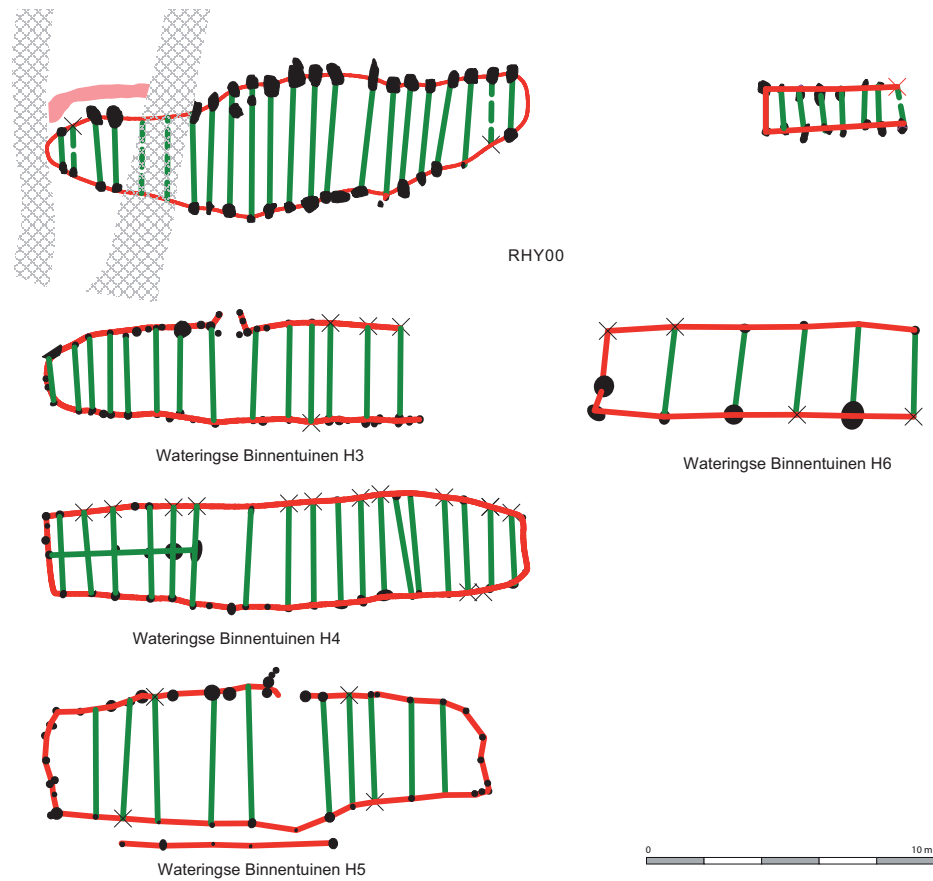


Figure 7.124 Post structure at Wateringseveld interpreted as a house of type Den Haag (top). Below other examples of the type (from Jongste 2014, 175).



Figure 7.125 Post structure visualised as a house and the remaining posts as a large granary (from Bulten & Siemons 2014, 550; drawing R. Jonkers).

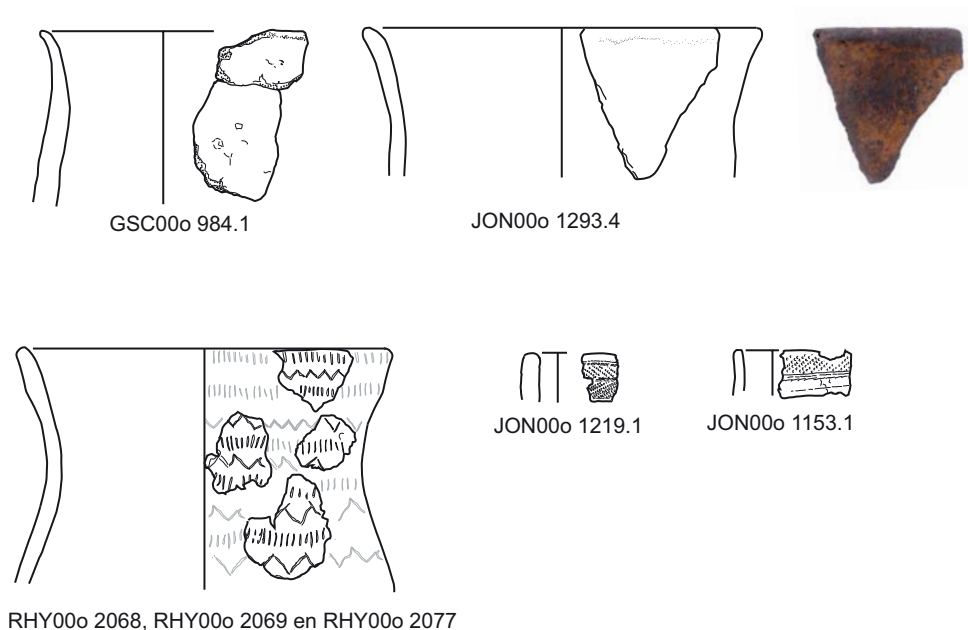


Figure 7.126 Late Neolithic pottery found in different contexts in the excavated area, scale 1:3 (after Bloo 2014, 79).

A small pattern of ard marks was also visible just to the south of this structure.⁶²² The ard marks to the east of the post configuration were all found within the same c. 60 × 50 m area. The directions are all roughly the same and they seem to be the result of cross ploughing. Several other ard marks have a slight offset in positioning and orientation which indicates multiple phases of ploughing. A Late Neolithic date of this arable field is possible, but not undisputed, as the find layers excavated above the feature level yielded both Late Neolithic and Iron Age material. The find layer situated above the ard marks just south of the post configuration mostly yielded VLC pottery, although Iron Age and Roman material was present here as well.⁶²³

Analysis of the pottery focusses on the find-rich depressions and on finds from the above-mentioned pits and ditch.⁶²⁴ The imagery of pottery in the publication is limited, because the material was rather fragmented and mostly undecorated. These circumstances make beaker material stand out (because it is usually decorated), but masks VLC pottery. Only a limited number of features contained more than a few sherds.

The assembly is characterised by VLC pottery and Corded Ware Culture (including AOO) pottery. These sherds co-occur with fragments of maritime Bell Beakers. In conclusion, the complex probably dates between 2650 and 2450

cal BC, the last part of the Late Neolithic A (Fig. 7.126).

Flint artefacts were found in different features and zones. A total of 3,054 finds was registered from the Late Neolithic clusters. 171 of these finds are registered as tools and six as arrowheads (Fig. 7.127). Most of these arrowheads have a tree-shape and short barbs. These forms are typical for Late Neolithic (Cord Ware Culture) contexts. The transversal arrowheads that are typical for older VLC contexts are absent.⁶²⁵ The triangular arrowhead generally fits a Late Neolithic B-Early Bronze Age context (Fig. 7.127 centre right). However, typical BBC barb and tang arrowheads are absent. A significant difference between the various find areas does appear to be present when looking at flakes of polished axes. These make up a greater portion of the total assemblage around the post configuration than elsewhere. It is suggested that these were produced at the post configuration, but used in the more eastern parts of the excavated area.⁶²⁶

The faunal remains from Wateringseveld encompass 304 bones from different species (Fig. 7.128). The complex shows that apart from cattle, pig and sheep or goat were also raised at the site. Apart from these domesticated animals, deer and roe deer were hunted, but in smaller numbers than in contemporary sites in the vicinity. However, this result may be due

⁶²² Lanzing & Siemons 2014, 65.

⁶²³ Lanzing & Siemons 2014, 65-68.

⁶²⁴ Bloo 2014, 75.

⁶²⁵ Houkes 2014, 108.

⁶²⁶ Houkes 2014, 124-125.

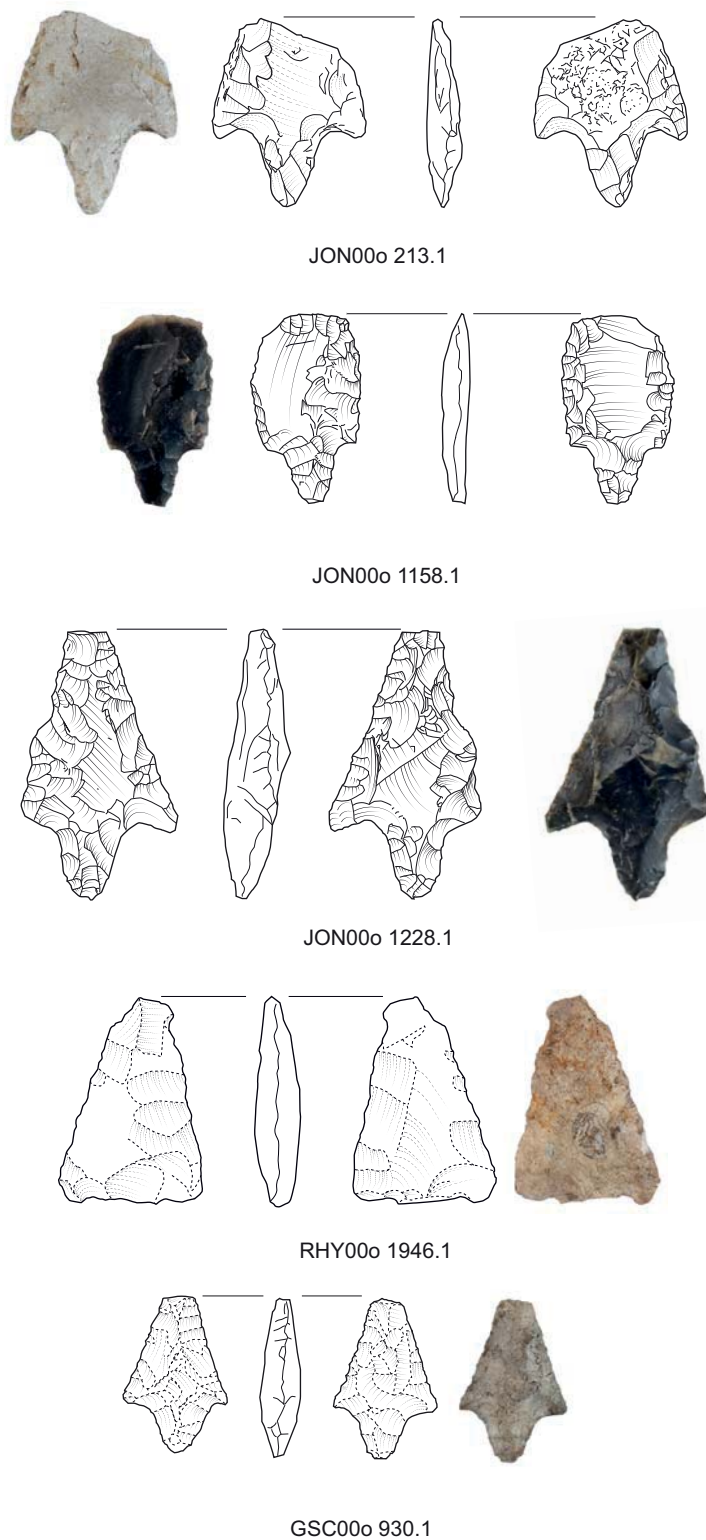


Figure 7.127 Late Neolithic arrowheads found at Wateringseveld, scale 1:1 (after Houkes 2014, 109.)

to sampling bias, because the skeletal material was mostly collected by hand and no systematic sieving took place. Hence, smaller bones, for example from fish, were not encountered. A number of plates of sturgeon were found, but these are easy to find if collecting is done by hand. Furthermore, a few shell fragments and a whale bone were found. It is very difficult to provide conclusions about this assemblage. The authors have tried to do this, but the results are disputable, because the sample is small and biased. The suggestions that at Wateringseveld only 3.9% of the animals was wild and that the cattle were used to produce offspring and traction power rather than meat (based on age at butchering) are therefore disputable.

7.24.3 Comments

The Wateringseveld sites are important for the characterisation of Late Neolithic settlements in the Netherlands. The spectrum of activities and the material culture is very much comparable to what the West Frisian sites from this period. Furthermore, the periodisation of the site is identical to the West Frisian sites. S.M. Beckerman has demonstrated that the West Frisian sites show a mix of VLC, SGC, AOO and BBC elements that is also present at Wateringseveld.⁶²⁷ The faunal spectra from both areas are comparable as well, even though the wild species are relatively low in numbers. However, we have argued that this offset is a product of the sampling strategy rather than past activities. For the same reason, and because of the lack of good context material, the botanical data have little resolution.

7.25 Den Haag-Wateringse Binnentuinen

The site Den Haag-Wateringse Binnentuinen is situated on the oldest beach barrier in the region (Cf. Fig. 7.135). It is a Late Neolithic VLC site according to the excavators, but the final publication is not ready as yet. Therefore, we cannot use the data from this excavation. However, the house plans have already been published by one of the excavators.⁶²⁸ In total, seven house plans have been recognised and

⁶²⁷ Beckerman 2015.

⁶²⁸ Stokkel 2014.

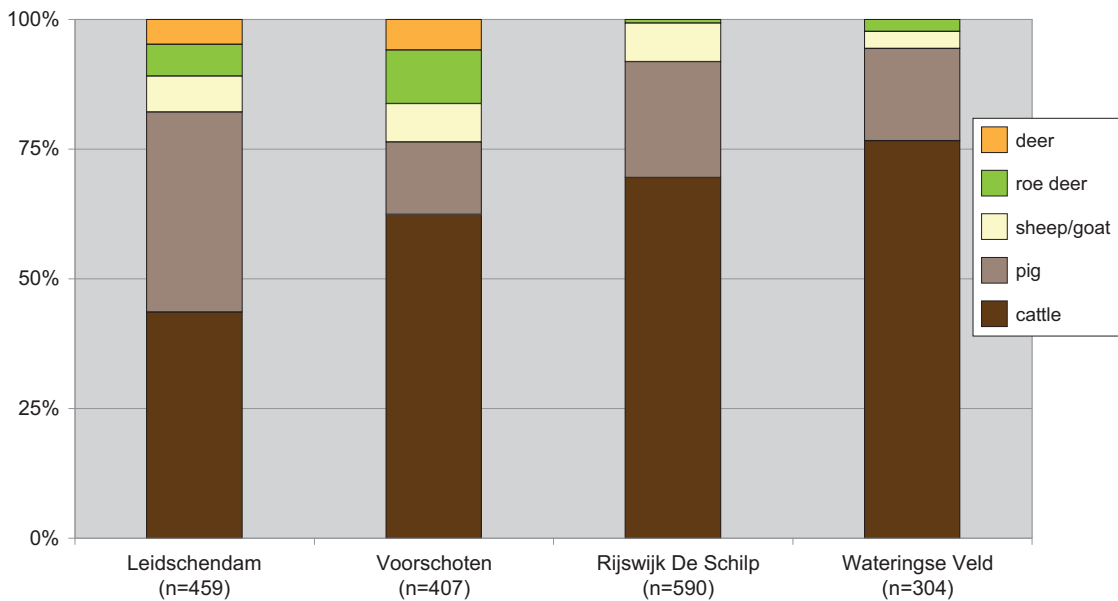


Figure 7.128 Comparison of faunal assemblages in Late Neolithic sites in the coastal zone (after Van Dijk & Beerenhout 2014, 169).

classified as ‘type Den Haag’.⁶²⁹ We briefly discuss these house plans, because of the claim that these houses represent a standardised version of the houses from the VLC. Indeed, presented as they are with lines connecting walls and posts, crosses indicating missing posts, and without all features in the vicinity, these plans give the impression of a house constructed using a regular post-setting (Fig. 7.129). However, in our view the Den Haag type does not show any kind of standardisation.

One of the problems with these structures is that they have all been recognised during the post-excavation analyses amongst large clusters of pits of all kinds of sizes (Fig. 7.129). Within these thick swarms of features, houses were plotted where several nearby features show relatively clear lines or right angles. However, a more critical inspection shows no clear roof support structure. An inner structure is absent, even if some structures are more than 7 m wide. No house plan of such widths can be conceived without an indication of how the rafters were supported. Moreover, a wall plate would have been difficult to attach to the walls, because the form of these walls is completely irregular. The claim that this is typical for the Den Haag type ignores the fact that these house plans lack the necessary structure for a house.

We suggest that the lines that are used to indicate connections between walls and posts,

which are reminiscent of the style used by Waterbolk,⁶³⁰ along with crosses indicating ‘missing’ posts, do not make the houses more plausible; rather they obfuscate the structural integrity of the house. We would propose to use a different style for the presentation of data at the least (Fig. 7.130). In that way, the readers of a report can judge the plausibility of the structures.

Even though not all structures may have been present as they were recognised by the excavators, Den Haag-Wateringse Binnentuinen will prove to be a valuable addition to our knowledge of VLC sites, especially because so many pits were dug by the occupants, and because the site was sealed and not mixed with later occupation.

7.26 Hazerswoude-Rijndijk Windturbinepark

The site Hazerswoude- Rijndijk Windturbinepark is situated on a crevasse splay of the (old) Rhine, at the transition of brackish to fresh water. Figure 7.131 shows that it was not far from the sea (12 km) and could stand in direct contact with the sites on the beach barriers around The Hague.

⁶²⁹ Drenth et al. 2014, 75.

⁶³⁰ Cf. Chapter 6.

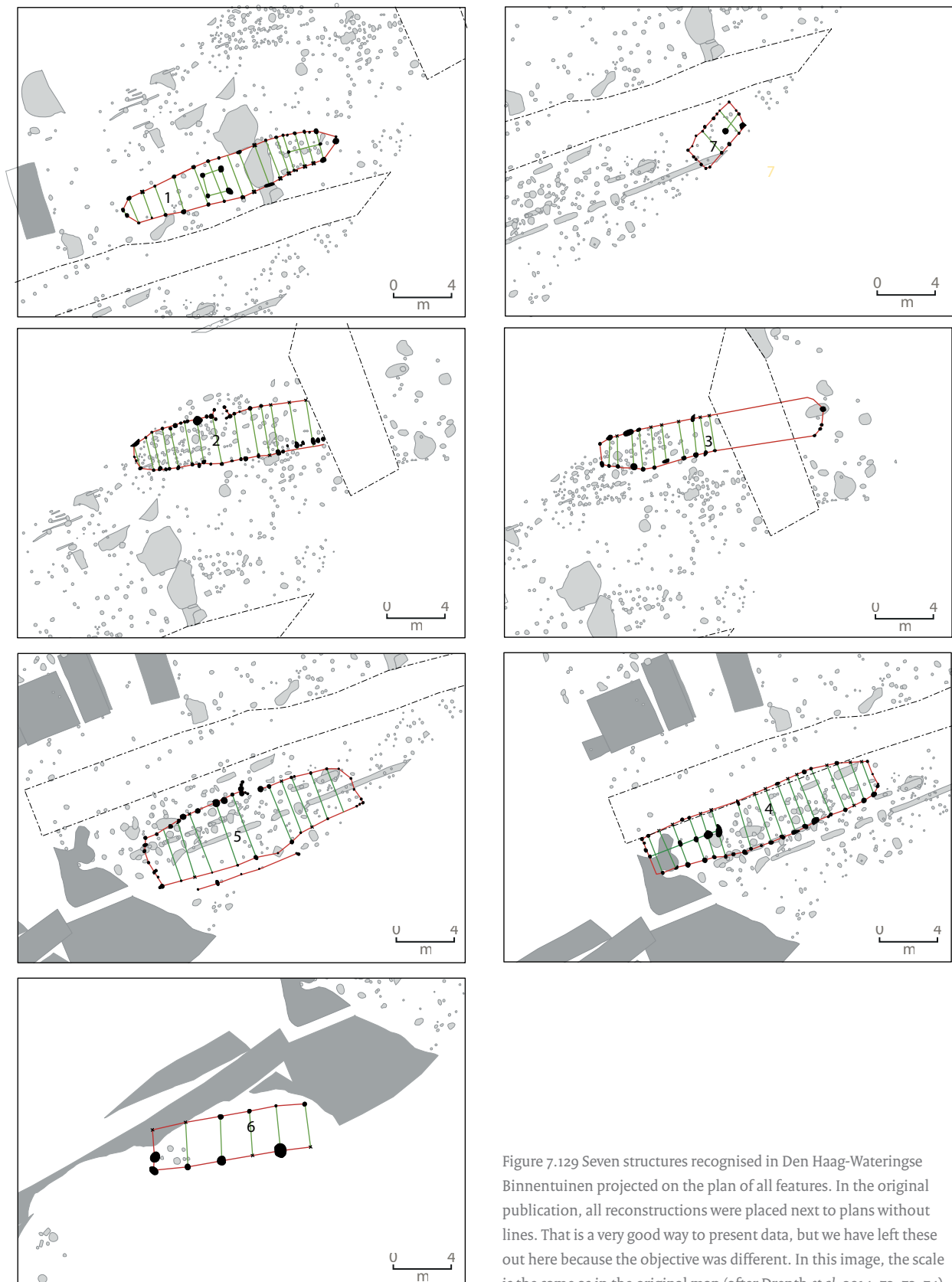


Figure 7.129 Seven structures recognised in Den Haag-Wateringse Binnentuinen projected on the plan of all features. In the original publication, all reconstructions were placed next to plans without lines. That is a very good way to present data, but we have left these out here because the objective was different. In this image, the scale is the same as in the original map (after Drenth *et al.* 2014, 72, 73, 74).



Figure 7.130 The same structures as in Figure 7.143, but without the Waterbolk-lines.

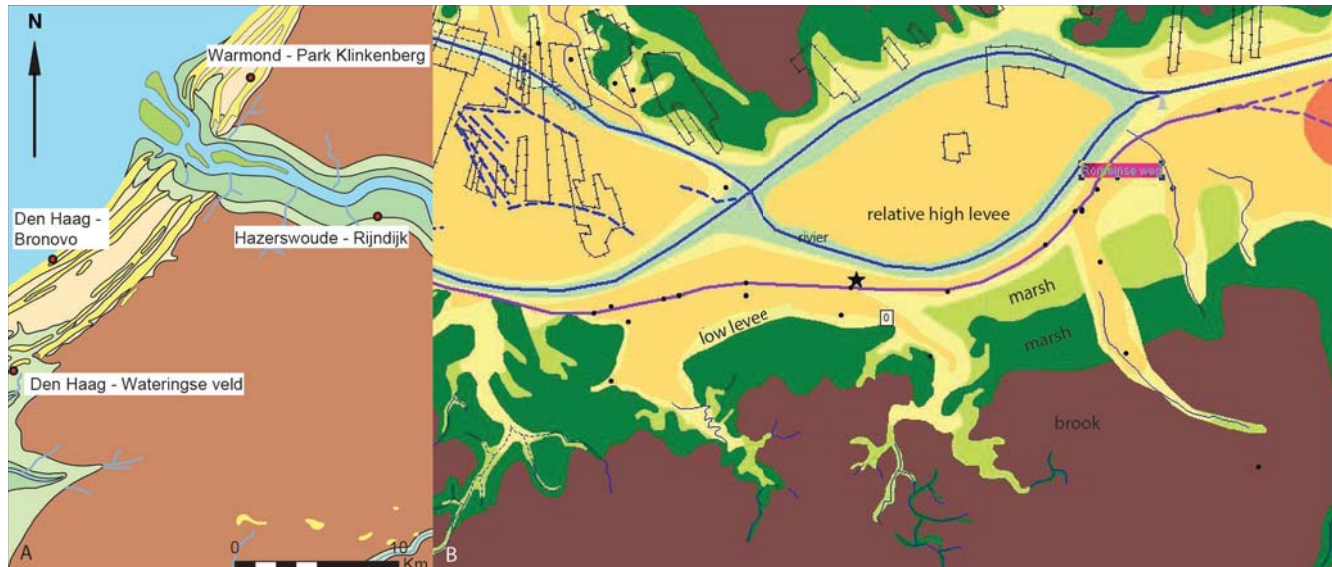


Figure 7.131 A: palaeogeographic map of the The Hague-Leiden region around 2750 cal BC with contemporaneous sites on the beach barriers (Archis data plotted on the map of Vos & De Vries 2013). B: section of the palaeogeographic map of the Old Rhine (after Van Dinter 2013, cited by Van Zijverden 2010, 61).

7.26.1 Research history

The site Hazerswoude-Rijndijk Windturbine park was discovered during a prospection that preceded the construction of a series of wind turbines parallel to the N11 motorway near Hazerswoude-Rijndijk. The first phase of the prospection consisted of an auguring campaign, during which 90 corings were placed along a 600 m trajectory. The interval between individual corings was narrowed at places where archaeological indicators were found. These corings allowed the demarcation of three areas where charcoal and remains of fish and charred plants were discovered. One of these areas, area 2, was located on a relatively high point in the landscape. This area was interpreted as a crevasse splay deposit.⁶³¹

According to the prospectors, the archaeological remains found in the corings dated to the Roman period, because the site is located in the direct vicinity of the *Limes*.⁶³² This interpretation guided the methodology of the trial trenches that were to be dug at two of the sites. One of those, area 2, was supposed to have *in situ* remains from the Roman period. Soon after the excavation had started (trench 3), digging activities were ceased because Late Neolithic

remains were discovered. It was then realised that the methodology proposed in the WSI was inadequate for the excavation of this site.⁶³³

It became clear that in an area of 5 x 15 m, an *in-situ* find-layer was present on a sandy crevasse splay deposit. Finds recovered during this phase of research included BBC pottery sherds and pottery dating to the Middle Iron Age. Moreover, the preservation of botanical and animal remains proved to be excellent in the habitation deposit.⁶³⁴ In order to investigate the site adequately, renewed excavations were to take place at a later moment. The WSI had to be adjusted to fit the research questions and methodology to the Late Neolithic character of the site. The trial trench research was to be transformed into a larger excavation aimed at establishing the date, extent and status of the site in order to designate the area as an archaeological monument.⁶³⁵

It was decided that a new test-trench should be dug in order to map the course of the crevasse splay deposits. This excavation revealed that a fossil stream gully cut through these deposits (Fig. 7.132), which offered extensive possibilities for studying the palaeoecological situation of the site. Several more corings were performed in order to map the limits of the crevasse splay deposit and to advise on a new location for the wind turbine. Ultimately, the turbines

⁶³¹ Diependaele 2010a, 17.

⁶³² Diependaele 2010a, 15.

⁶³³ Diependaele 2010b, 33.

⁶³⁴ Diependaele 2010b, 37–39.

⁶³⁵ Diependaele 2010b, 40–41.

Table 7.9 Proportions of ceramics from the Single Grave Culture (SGC) and Vlaardingen Culture (VLC) by layer at Hazerswoude –Rijndijk Windturbinepark (from Leivers 2010 table 8.3.1.4).

| Layer | Vlaardingen sherds (No) | Vlaardingen sherds (%) | Funnelbeaker sherds (No) | Single grave sherds (No) | Single grave sherds (%) |
|--------------|-------------------------|------------------------|--------------------------|--------------------------|-------------------------|
| 1 | 4 | 0.47 | - | 5 | 1.76 |
| 2 | 8 | 0.94 | - | 11 | 3.87 |
| 3 | 31 | 3.63 | - | 46 | 16.2 |
| 4 | 39 | 4.57 | - | 49 | 17.25 |
| 5 | 82 | 9.6 | - | 38 | 13.38 |
| 6 | 193 | 22.6 | - | 77 | 27.11 |
| 7 | 155 | 18.03 | 1 | 25 | 8.8 |
| 8 | 151 | 17.68 | - | 16 | 5.28 |
| 9 | 123 | 14.4 | - | 4 | 1.41 |
| 10 | 61 | 7.14 | - | 11 | 3.87 |
| 11 | - | - | - | 3 | 1.07 |
| 12 | 4 | 0.47 | - | - | - |
| 13 | 4 | 0.47 | - | - | - |
| Total | 855 | 100 | 1 | 285 | 100 |

were move to nearby clay soils with lower archaeological expectations for finds.⁶³⁶

7.26.2 Excavation results

For the purpose of answering newly formed research questions aimed at studying the nature of the Neolithic site work in trench 3 was resumed, but using a different methodology. The second phase of research included the sieving of soil recovered from the occupation layer. The soil was collected in 1 m × 1 m × 2.5 cm spits and sieved in a stacked sieve with a gradual decrease in mesh size. A problem in the report is that the excavators indicate the spits in which the separate squares were excavated as layers.⁶³⁷ Consequently, they state that the site was stratigraphically excavated, but *de facto* that was not the case: it was excavated in arbitrary spits that did follow the stratigraphy of the deposits only to some extent. The criss-cross distribution of potsherds from a variety of archaeological periods in all these layers further indicates the lack of a stratigraphical rigidity. (Table 7.9). Financial constraints did not allow for the excavation of the entire trench in the above-

mentioned manner: only a single transect of 26 x 1 m in a trench of c. 69 x 5 m was excavated in this manner (Fig. 7.132). The same constraints also meant that not all squares were sieved with the smallest mesh width of 0.2 cm. Furthermore, the sampling strategy was altered in the field to focus on areas and layers that yielded most find material.⁶³⁸ Nevertheless, it was concluded that the site contained a layer with mostly SGC material, a layer containing both SGC and VLC material in comparable amounts and a layer containing mostly VLC material (Fig. 7.133).

Features

One section of the excavation trench was completely excavated to the feature level. This appears to have been placed right on top of a cluster of features that was interpreted as a house plan, but features were also be recorded in the find layers above that level. The features recorded in the three find layers were all interpreted as hearths (Fig. 7.133). Each of these twelve features was founded on burnt clay and contained a layer of ash and charcoal. No hearths were found in the layers containing mostly SGC material, but they do occur both in the mixed layers and in the VLC layers. The depth and layering of the hearths was thought

⁶³⁶ Diependaele 2010b, 42.

⁶³⁷ The number of spits is not identical in all squares (Diependaele 2010, 46).

⁶³⁸ Diependaele 2010c, 48-52.

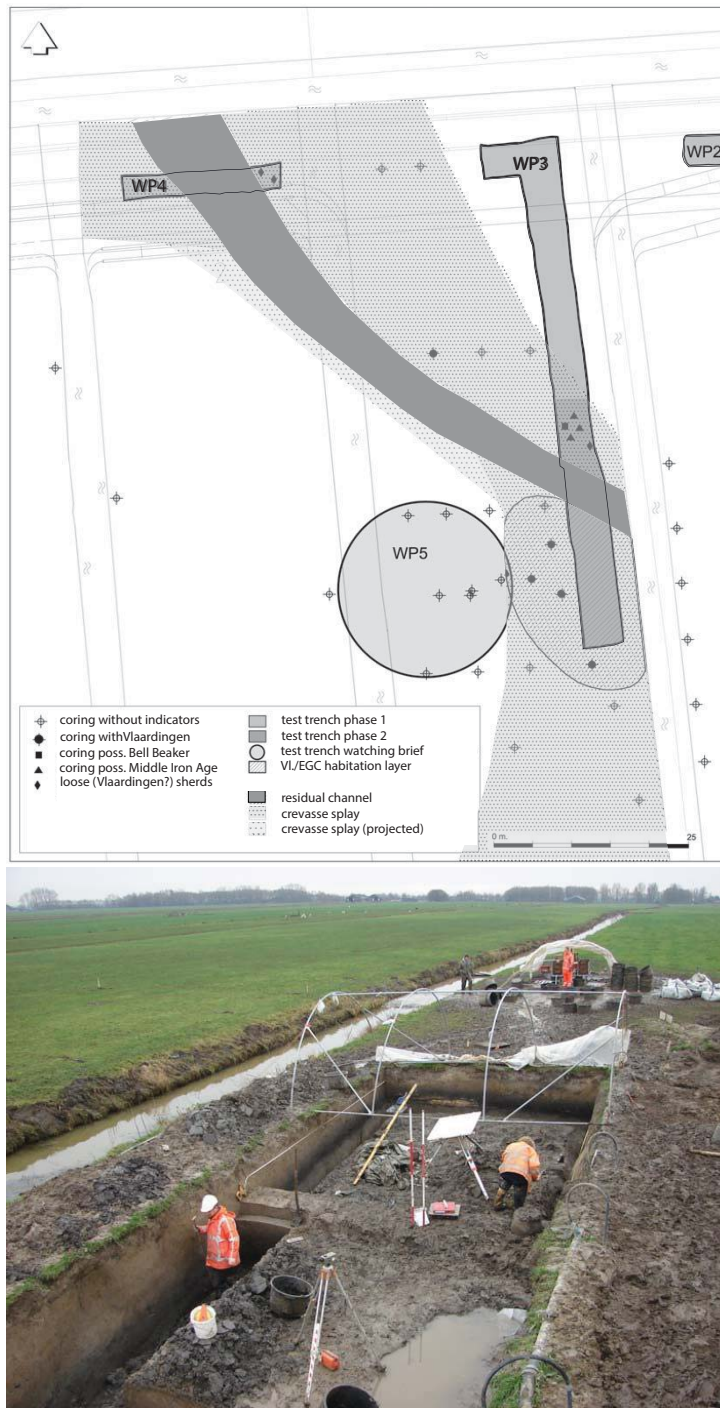


Figure 7.132 The projected course of the splay deposits and fossil stream gully in trenches 3 and 4 (compiled after Diependaele 2010c, 44, 51).

⁶³⁹ Diependaele 2010d, 87-97.

⁶⁴⁰ Diependaele 2010d, 105-106.

⁶⁴¹ 4100 ± 35 BP: 2865-2804 (22.9%), 2773-2770 (0.3%), 2764-2568 (74.6%), 2517-2500 (02%) cal BC, calibrated at 2 sigma.

⁶⁴² Diependaele 2010e, 107.

⁶⁴³ Leivers 2010, 119.

⁶⁴⁴ Diependaele 2010d, 105-106.

to correspond to the duration of the use of the features. A number of features were recorded to have layers of ash and charcoal, meaning the hearths were re-used multiple times.⁶³⁹ The re-used hearths only appear to occur at the levels associated with VLC pottery.

A post-structure was excavated in the southern end of trench 3. This structure seems to consist of a row of posts that could have been part of the wall of a house (Fig. 7.133). Sadly, the trench was too narrow and not quite long enough to fully excavate this structure, meaning that a clear conclusion on whether this was a house or not cannot be provided. If a house was indeed present, probably its northern wall was encountered in the trench.⁶⁴⁰ The excavators propose that several features found c. 2 m from the wall represent a line of central posts. The features found along this line do resemble each other in section, but a clear structure lacks. With regard to the dating of the structure, some caution is necessary. The structure is said to have been found below a layer of supposed Middle Neolithic age. However, the stratigraphy at the site is far from clear. This is indicated by a ¹⁴C date of an alder post found on the same level in the north-eastern corner of the trench. According to this date, the post dates to 2764-2568 cal BC, implying it is a Late Neolithic post and fits the VLC - SGC horizon.⁶⁴¹ This is contradictory with the typological date to the Middle Neolithic.

Finds

Despite the small scale of the excavation, many finds were registered. This includes a total of 10,872 pottery sherds, 1,311 flint finds, 485 stone finds, 15 kg of animal remains and several human bones.⁶⁴² The pottery mostly consists of VLC and SGC ceramics, but five Funnel Beaker Culture sherds were also identified. Despite the excavation in spits of 2,5 cm, the exact relation between these pottery types is unclear. There is no doubt that SGC pottery mostly occurs in the upper spits, whereas the lower spits contain mainly VLC pottery, but there are also spits where these two pottery types occur in equal measure (Table 7.9).⁶⁴³ Furthermore, the excavators state that a small amount of SGC pottery found in the features in the lowest spits could be intrusive.⁶⁴⁴ This leads them to conclude that the stratigraphical spread of pottery is representative of a long period of use

during which a switch from VLC to SGC pottery can be recognised. The excavators think that *all* of the VLC pottery belongs to an older phase, and that the Late Neolithic VLC phase is absent on this site. This is in our opinion impossible to maintain in view of the unclear stratigraphy. The more in-depth analyses of the pottery do not help to clarify this problem for our understanding of the site chronology. In our view that is quite understandable, given the work of Beckerman which predicts that both Late VLC and SGC pottery should be part of one and the same assemblage.⁶⁴⁵

The excavators state that the VLC material can be attributed to the VLC phases 1a and 1b, whilst VLC phases 1c and 2 are absent. Meanwhile, the SGC material is attributed to phase 4 of the SGC.⁶⁴⁶ This indicates the possibility of a considerable chronological difference between two separate use-phases of the site. In our view, this position is difficult to maintain. This is exemplified by a single ZZ type Single Grave beaker from which sherds were found in spits 1,3,4,5 and 10: this clearly indicates the vertical movement of material at the site.⁶⁴⁷

Regarding the ceramic material itself, the VLC pottery mostly consists of pots with a gentle S-shaped profiles. Decoration takes the form of 'blunt' impressions and perforations directly below the rim. Other decorative techniques include impressions with sticks on the tops of rims, chevron-shaped incisions in the neck of vessels and fingertip impressions in rims of vessels (Fig. 7.6).⁶⁴⁸

The SGC vessels have the typical S-shapes of beakers and are decorated using various decorative techniques (Fig. 7.134).⁶⁴⁹ Stylistically, SGC vessels of types 1b, 1e, 2Ib and ZZ were identified. SGC pots of the *short-wave moulded ware* type were also present. Of the five TRB sherds, three are attributed to a necked bowl that typologically dates to c. 2900 cal BC; one sherd is dated to c. 3400-3000 cal BC based on its chevron or herringbone decoration and the last sherd cannot be dated.⁶⁵⁰

The flint assemblage from the site consists of 92 retouched tools and 1,192 pieces of debitage.⁶⁵¹ Most of the retouched tools are scrapers (n=24). The large amounts of awls and piercers that are otherwise typical for VLC flint assemblages are absent at Hazerswoude-Rijndijk.⁶⁵² It is unlikely that this can be attributed to the dominance of a SGC flint working tradition at the site, because

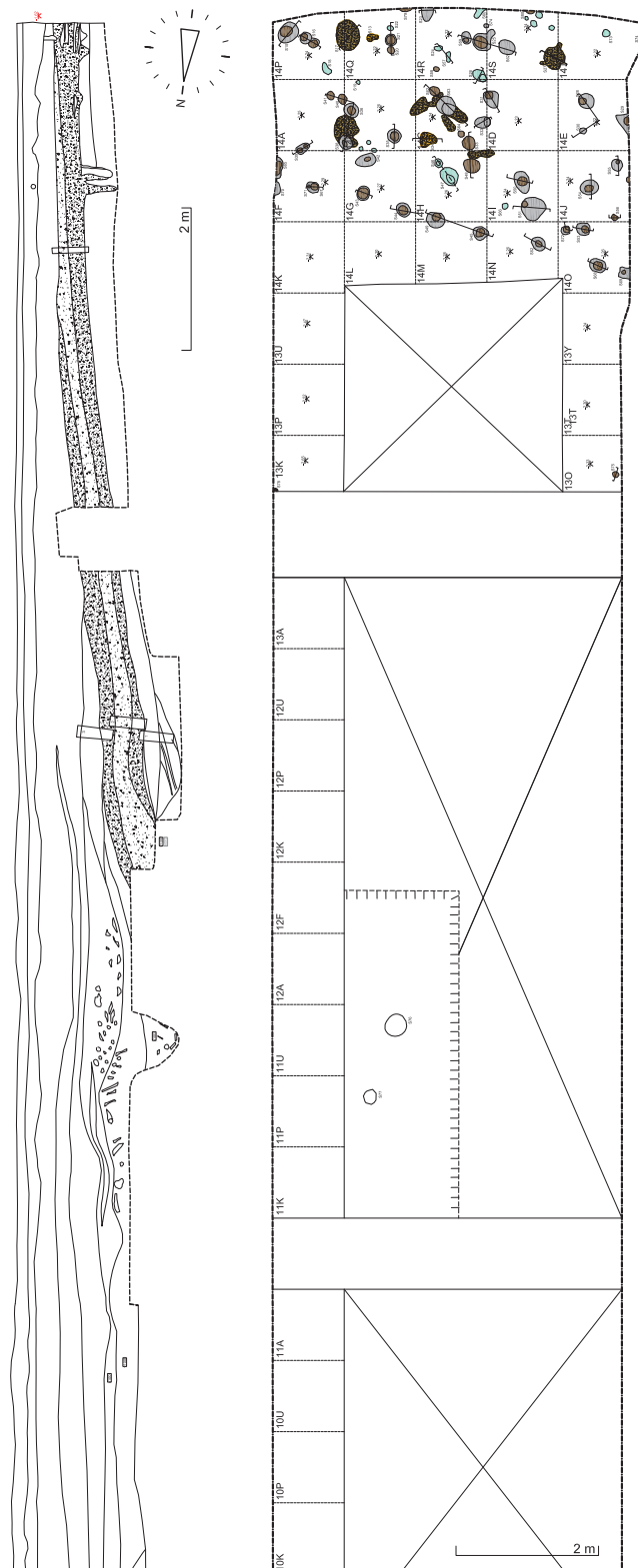


Figure 7.133 The excavation plan and section of trench 3.

Only the southernmost section of this trench was completely excavated to the feature level, whilst only a 1 m wide strip was excavated in other sections (after Diependale 2010c, 49).

⁶⁴⁵ Beckerman 2014.

⁶⁴⁶ Drenth 2010, 109.

⁶⁴⁷ Leivers 2010, 119.

⁶⁴⁸ Leivers 2010, 114-115.

⁶⁴⁹ Leivers 2010, 117.

⁶⁵⁰ Drenth 2010, 109.

⁶⁵¹ Leivers 2010, 201.

⁶⁵² Amkreutz et al. 2016, 174.



Figure 7.134 VLC and SGC pottery. A: VLC phase 1 pottery. B: SGC (short-wave molded ware) pottery. C: SGC pottery, scale 1:3 (compiled after Drenth 2010, 129, 142, 144, 145, 148, 149, 150).

VLC points and axes are present as well.⁶⁵³

Besides these diagnostic artefacts, a division between VLC and SGC material cannot be made; morphology, technology and metrical data of the flint assemblage that were analysed, point to a single flint working tradition throughout the layers.⁶⁵⁴

Out of 138 worked stones from the site, 66 are identified as debitage. The tools comprise

anvils, grinding stones, awls, hammer stones, whetstones and sharpening tools, a mortar and an amber bead. The occurrence of the debitage, sharpening tools and anvils is linked to the production and maintenance of tools. Use-wear analysis performed on a selection of 15 flint artefacts and 13 stone artefacts shows that the activities that were performed at the site include hide working, wood working and the working of

⁶⁵³ Leivers 2010, 202-204.

⁶⁵⁴ Leivers 2010, 206-207.

Table 7.10 Mammals and birds found at Hazerswoude-Rijndijk Windturbinepark (after Grimm 2010, 160).

| Mammals | Vlaardingen | Single Grave Culture |
|--|--------------------|-----------------------------|
| Beaver (<i>Castor fiber</i>) | x | x |
| Polecat (<i>Mustela putorius</i>) | x | x |
| Red deer (<i>Cervus elaphus</i>) | x | x |
| Grey Seal (<i>Halichoerus grypus</i>) | x | x |
| Deer (<i>Cervidae</i>) | x | x |
| Dog (<i>Canis familiaris</i>) | - | x |
| Human (<i>Homo sapiens</i>) | x | x |
| Auroch / Oxen (<i>Bos primigenius / taurus</i>) | x | x |
| Otter (<i>Lutra lutra</i>) | x | x |
| Roe (<i>Capreolus capreolus</i>) | x | x |
| Pig (<i>Sus domesticus</i>) | x | x |
| Fox (<i>Vulpes vulpes</i>) | x | - |
| Wild cat (<i>Felis sylvestris</i>) | x | x |
| Wild boar (<i>Sus scrofa</i>) | x | x |
| | | |
| Birds | | |
| Cormorant (<i>Phalacrocorax carbo</i>) | x | - |
| Shelduck (<i>Tadorna tadorna</i>) | - | x |
| Small passerine (<i>Passiformes</i>) | - | x |
| Red throated / pearl diver (<i>Gavia stellata/arctica</i>) | - | x |
| Tufted duck sized bird (<i>Anatidea</i>) | x | - |
| Golden eagle / sea eagle (<i>Aquila chrysaetos/Haliaeetus albicilla</i>) | - | x |
| Wild duck (<i>Anas platyrhynchos</i>) | x | - |

plant materials.⁶⁵⁵ Stone materials were used for grinding grains, stone and bone, as well as for the crushing various other materials.⁶⁵⁶ Among the skeletal remains of the site are five were identified as human bones.⁶⁵⁷ These include one right clavicle, four teeth belonging to an adult and one tooth belonging to a child. The clavicle was found in one of the upper fillings of the stream gully, whilst the teeth were found both in the gully and in the layers above the supposed house plan. The depositional processes leading up to the deposition of these finds are unknown, although it is proposed that the clavicle might be the result of a grave being washed away upstream from the site or the result of excarnation occurring nearby.⁶⁵⁸

Palaeoecological and zoo-archaeological analysis

The excellent preservation of the site allowed for a variety of ecological samples to be taken. Initially, the analyses of these samples were hampered by the same financial constraints that led to only a part of the trench being fully excavated. However, through the efforts of W. van Zijverden several specialists were found willing to analyse samples for little or no extra charge. The many types of samples analysed allow for a true multiproxy approach to the environment situation of the site. However, the stratigraphy of the site is a problematic aspect of this reconstruction. Therefore, the data presented in Table 7.10. cannot be read as a clear difference between VLC and SGC occupation. Consequently, it should not surprise us that the zoological assemblages attributed to VLC and

⁶⁵⁵ Verbaas 2010, 212.

⁶⁵⁶ Diependaele & Drenth 2010, 225.

⁶⁵⁷ Diependaele 2010f, 198-199.

⁶⁵⁸ Diependaele 2010f, 199.

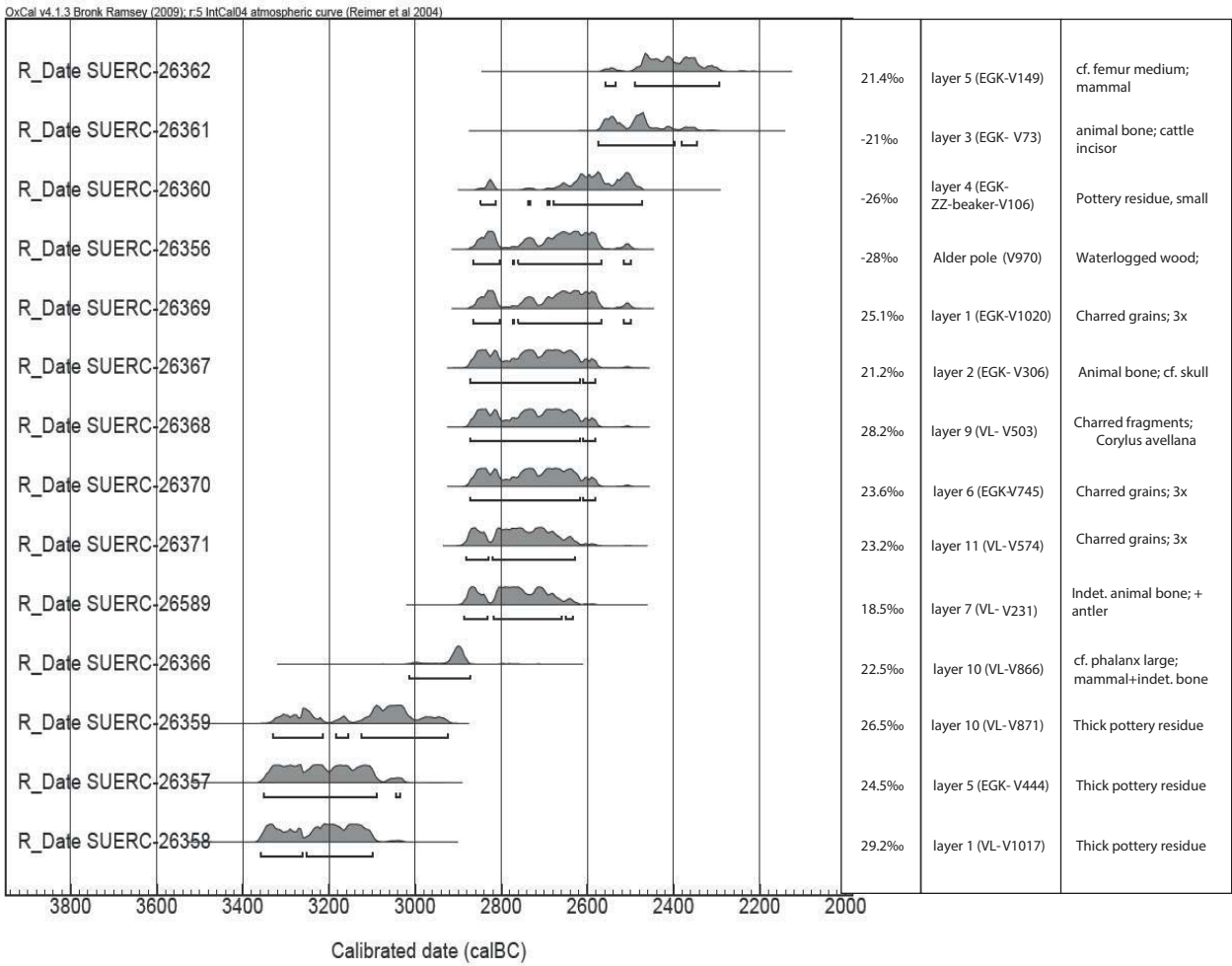


Figure 7.135 Survey of the ¹⁴C dates of Hazerswoude-Rijndijk Windturbinepark (compiled after Stevens 2010, 270, 271).

SGC layers are largely the same.⁶⁵⁹ With regard to archaeo-zoological material itself, 14% of the material could be determined to a species level (Table 7.10). Within this selection small mammals are thought to be underrepresented, because of the fragmentation of the material.⁶⁶⁰ Table 7.10 shows that non-domesticated animals constitute a large part of the archaeo-zoological assemblage. The domesticated species at the site are pig and cattle, but these specific bones could also belong to undomesticated boars and aurochs.⁶⁶¹ The high frequency of game animals in relation to domesticated animals is interpreted as a subsistence economy with a focus on hunting, whilst the occurrence of new-born red deer combined with cormorant, shelduck, red-throated divers and pearl divers suggest these activities occurred throughout the year.⁶⁶² The location of the site near water also makes fishing an likely addition to subsistence strategies, which

is substantiated by the occurrence of the remains of sturgeon, salmon, seatrout, whiting, flatfish, eel, bream, pike and perch. These remains are typical for an estuary environment.⁶⁶³ The botanical analyses demonstrate the presence of emmer wheat and barley at the site, indicating that -as the excavators phrase it- the hunting and fishing activities inferred from the remains described above were supplemented with agricultural activities.⁶⁶⁴ Micromorphological analysis seems to indicate that tillage did not occur at the site itself.⁶⁶⁵ This conclusion should not surprise us, since that is hardly to be expected on sites themselves. Wild plants remains occur in the form of hazelnut, blackthorn, rose, acorn and lesser celandine. The analyses described above lead to a synthesis in which the surrounding area of the site consists of a forested swamp area, while the site is located in a fresh water tidal environment.

⁶⁵⁹ Grimm 2010, 160.
⁶⁶⁰ Grimm 2010, 158-159.
⁶⁶¹ Grimm 2010, 174-175.
⁶⁶² Grimm 2010, 174-175.
⁶⁶³ Van Neer & Wouters 2010, 194-196.
⁶⁶⁴ Pelling 2010, 258-259.
⁶⁶⁵ Van Zijverden 2010, 75.

7.26.3 Comments

The report of the site Hazerswoude-Rijndijk Windturbinepark as a whole clearly demonstrates the fact that the research strategy was developed last minute, while specialist analyses were not scheduled. This is partly the result of methodical mistakes made during the prospection phase. A problem, in our view, is that the excavators have tried to find evidence for distinctive layers with *either* VLC or SGC pottery. The ^{14}C dates indeed show a cluster that pre-dates 3000 cal BC cluster, which then should be attributed to the VLC phase 1 component of the pottery. This is the pottery with perforations below the rim (Fig. 7.134 A) and which is associated with perforated clay disks. The five sherds that show close affinity with the youngest TRB phase should also belong to this oldest VLC layer. Interestingly, diatom analysis shows both sherds are probably manufactured from estuarine clays.⁶⁶⁶ The ^{14}C ranges seem to indicate that occupation in the early third millennium is lacking (Fig. 7.135). The next cluster of dates falls in Furholt's phases A-D and as such it is impossible to conclude the presence of the SGC specifically during the late phase of this archaeological culture.⁶⁶⁷

From the presented evidence, it is clear that the site Hazerswoude-Rijndijk Windturbinepark

was situated in an environment that was not much different from other sites dating to the same period. In temporal terms, at least the upper layers of the site are comparable to the sites near The Hague, Barendrecht and in West Frisia. Its potential for information about the Middle and Late Neolithic Vlaardingen phases, and the transition from Early to Late in the Vlaardingen horizon definitely is present at this site, given a carefully planned excavation and sampling strategy. Since it is now preserved as a monument, that potential can still be exploited in the future. This is very likely not the only site in this area with the same potential. Pro-active prospective research by auguring should be part of a future protection scheme.

7.27 Barendrecht-Carnisselande

The Barendrecht-Carnisselande site is situated near the former coast at a location that was probably almost identical to the situation of Hazerswoude-Windturbinepark,⁶⁶⁸ but on a levee of the old Meuse instead of the old Rhine (Fig. 7.136).

7.27.1 Research history

The area Barendrecht-Carnisselande was an almost 4 km² large area scheduled for the construction of houses, offices and recreational space. These construction activities took place between 1996 and 2011. Research in this area was carried out by various teams of BOOR, the *Bureau Oudheidkundig Onderzoek Rotterdam*. Several sites⁶⁶⁹ were discovered and subsequently (partially) excavated (Fig. 7.137).⁶⁷⁰ They are all situated on a levee of a gully connected directly to the river Meuse. Sites 1 through 4 consist of four stratigraphically separated levels of VLC, BBC, BWBC and Hilversum remains (Fig. 7.138; Table 7.11). They were excavated in an 8 x 21 m trench. Technically, this archaeological project started in 1997 and as such before the Malta-convention had officially come into force, but the project was finished and reported under Malta legislation.

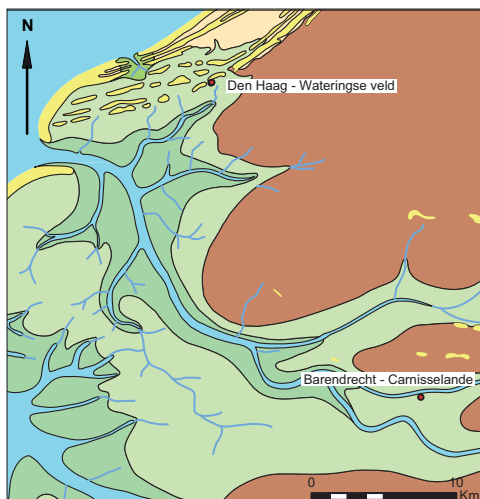


Figure 7.136 Location of Barendrecht-Carnisselande on the palaeogeographic map (after Moree *et al.* 2011, 21).

⁶⁶⁶ Demiddele 2010, 243.

⁶⁶⁷ Cf. Beckerman 2015, 187 for comments on these dates.

⁶⁶⁸ Cf. Section 7.26.

⁶⁶⁹ Barendrecht 1-6.

⁶⁷⁰ Moree *et al.* 2011, 17.

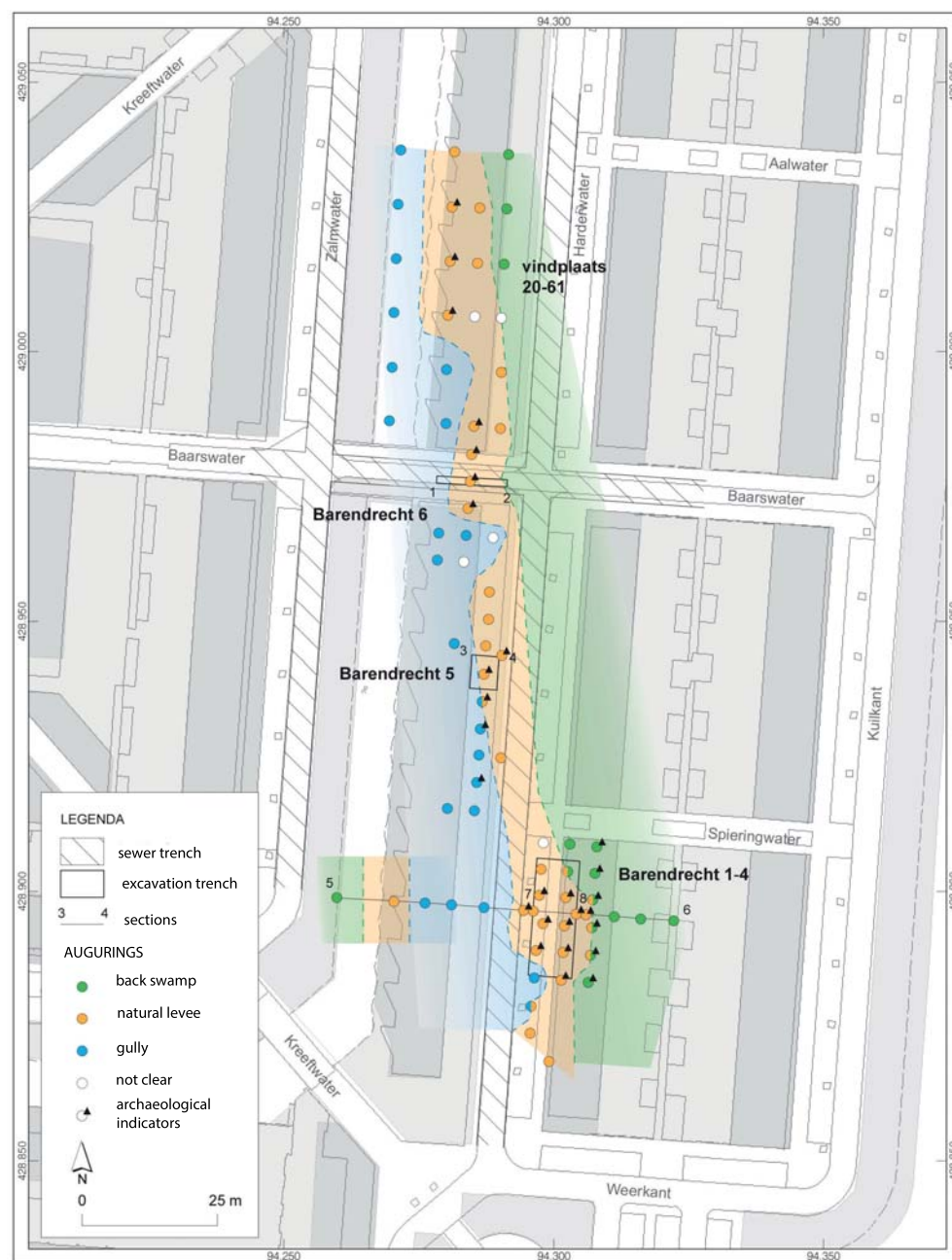


Figure 7.137 Plan of research areas at Barendrecht-Carnisselande based on auguring and on excavation. Site 20-61 (vindplaats 20-61) was only identified on the basis of auguring and dated to the Late Neolithic (after Moree *et al.* 2011, 26).

7.27.2 Barendrecht 1

Barendrecht 1 contains material that is identified as a late phase of the VLC on the basis of pottery and ^{14}C dates. Plant and fish remains from the site demonstrate that the site

was situated near a fresh-water gully during this period.⁶⁷¹ Salt water fish are lacking and the remains of sturgeon, cyprinids, catfish, pike and bream are frequent at the site. Animal remains include those of domesticated cattle, pig, and sheep or goat, but also wild animals, such as red deer, deer, wild pigs, beavers and otters.⁶⁷² Two organic artefacts were found:

⁶⁷¹ Moree *et al.* 2011, 32-36.

⁶⁷² Moree *et al.* 2011, 33.



Figure 7.138 The profile of Barendrecht-Carnisselande, showing stratigraphically separated find layers for various periods 1, 2, 3, 4 (from Moree *et al.* 2011, 46).

one made of antler, the other of the tibia of a pig.⁶⁷³ According to the excavators, the activities that are represented by the finds indicate that the site is a hunting-fishing camp that was used during several seasons per year. The domesticated animals are interpreted as meat on the hoof.⁶⁷⁴ Given the overall picture of Late Neolithic sites that has become apparent now⁶⁷⁵, we doubt whether the domesticated animals should be ignored as an indication for year-round permanent habitation, but that is difficult to decide on the basis of the small sample from Barendrecht 1.

The find layer at Barendrecht-Carnisselande contained a considerable amount of pot sherds (n=692), but half of these sherds are heavily fragmented. According to the pottery specialist who studied the material, the assemblage is typical for the late phase of the VLC (2800-2500 cal BC; Fig. 7.139).⁶⁷⁶ The flint assemblage was very small (14 artefacts) and these were only partially worked. Two of the four studied artefacts showed traces of working hide.⁶⁷⁷ Only eight stone artefacts were present: two fragments of axes, a polishing stone and a 'nut cracker'.

7.27.3 Barendrecht 2

The site Barendrecht 2 consisted of a thin layer a few isolated spots with charcoal, pottery, bone and fish remains. Stone artefacts were not present.⁶⁷⁸ The clusters with artefacts were about 2-3 cm in thickness. No features were discovered at this site. The pottery (13 fragments only) belongs to the BBC (Fig. 7.140).

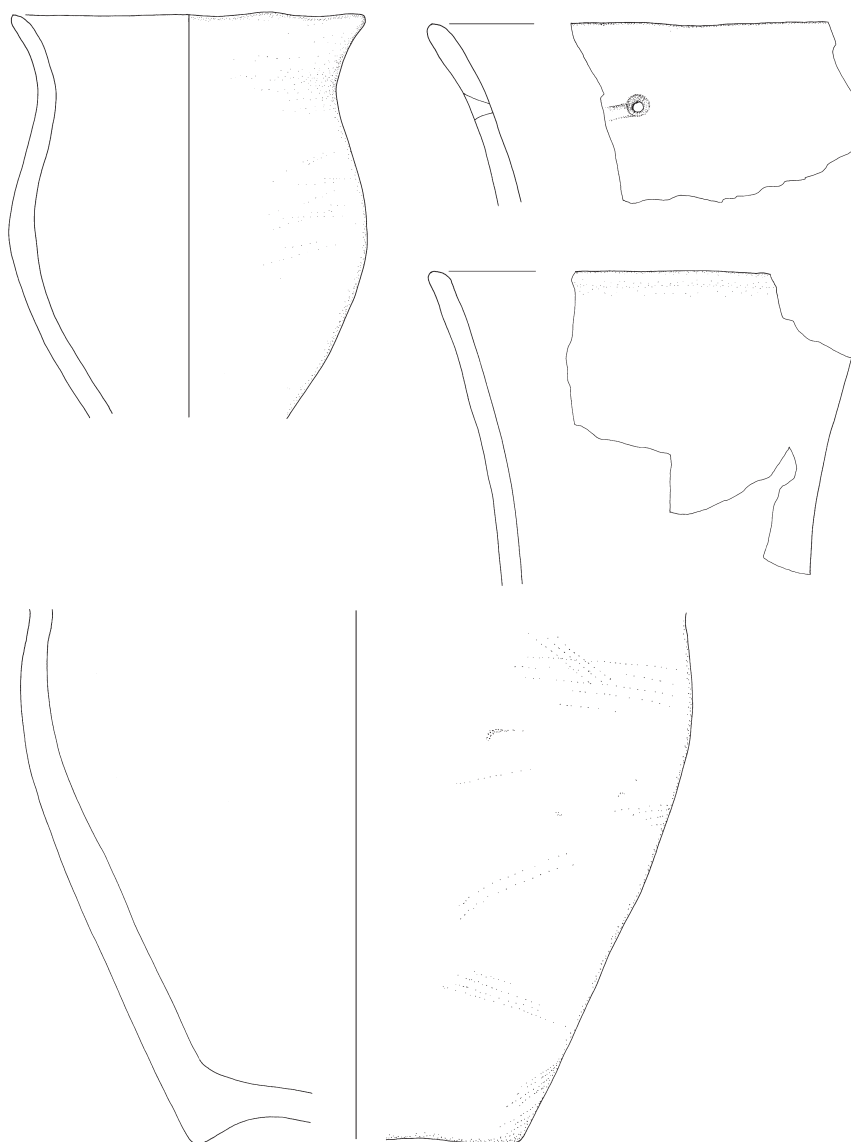


Figure 7.139 Late VLC pottery, scale 1:3 (after Moree *et al.* 2011, 38).

They are fragments of decorated beakers and pot beakers. A ¹⁴C date of charcoal from one of the small concentrations that is associated with bone and pottery falls at 2475-2202 cal BC, which is in line with the typological date of the pottery (Table 7.11).⁶⁷⁹ The excavators suggest that these are the remains of a site that was visited only shortly, even if bone of cattle were present and were consumed. The fish remains again point towards a fresh water environment.⁶⁸⁰ As a comment we would add that this sample is too small in size and derives from a too small area to validate such

⁶⁷³ Moree *et al.* 2011, 42.

⁶⁷⁴ Moree *et al.* 2011, 43.

⁶⁷⁵ Cf. Chapter 8.

⁶⁷⁶ Moree *et al.* 2011.

⁶⁷⁷ Moree *et al.* 2011, 40.

⁶⁷⁸ Moree *et al.* 2011, 43.

⁶⁷⁹ Moree *et al.* 2011, 48.

⁶⁸⁰ Moree *et al.* 2011, 47.

Table 7.11 ^{14}C dates from the Barendrecht sites (after Moree *et al.* 2011, 115).

| Lab code | Date BP | Context | Material | Calibrated range BC (2 sigma) |
|-----------|---------------|----------------------------|-----------------------------|-------------------------------|
| GrN-21343 | 4450 \pm 70 | Barendrecht 1 findnr 440 | charred seed of a buttercup | 3343 - 2926 |
| GrN-25915 | 4020 \pm 40 | Barendrecht 1 findnr 126 | charcoal | 2833 - 2466 |
| GrN-25917 | 3870 \pm 50 | Barendrecht 2 findnr 530 | charcoal | 2475 - 2202 |
| Ua-34481 | 3875 \pm 35 | Barendrecht 3 findnr 397 | charred remains on pottery | 2468 - 2210 |
| GrN-25914 | 3780 \pm 50 | Barendrecht 3 findnr 69 | charcoal | 2433 - 2035 |
| Ua-34480 | 3715 \pm 40 | Barendrecht 3 findnr 387 | charred remains on pottery | 2275 - 1978 |
| GrN-21562 | 3675 \pm 45 | Barendrecht 3 findnr 63 | sloe pit | 2199 - 1938 |
| Ua-34479 | 3620 \pm 40 | Barendrecht 3 findnr 202 | charred remains on pottery | 2131 - 1886 |
| GrN-25916 | 3650 \pm 45 | Barendrecht 4 findnr 320 | charcoal | 2187 - 1889 |
| GrN-21565 | 3470 \pm 45 | Barendrecht 4 findnr 322 | charred grain naked barley | 1912 - 1685 |
| Ua-34477 | 3470 \pm 40 | Barendrecht 4 findnr 334 | charred remains on pottery | 1891 - 1689 |
| Ua-34478 | 3335 \pm 40 | Barendrecht 4 findnr 494 | charred remains on pottery | 1736 - 1518 |
| GrN-25918 | 3680 \pm 50 | Barendrecht 5 findnr 18/21 | charcoal | 2202 - 1903 |
| GrN-25917 | 3650 \pm 45 | Barendrecht 5 findnr 21 | sloe pit | 2187 - 1898 |
| GrN-26900 | 3490 \pm 25 | Barendrecht 6 findnr 3 | worked pole (ash) | 1886 - 1746 |

conclusions on the entire site of which the limits are actually unknown.

7.27.4 Barendrecht 3

The site Barendrecht 3 consists of a 10–35 cm thick habitation deposit. The total surface of the site is estimated to have been 30 x 15 m, which means it does not extend far outside of the borders of the 8 x 21 m excavation trench.⁶⁸¹ The site is interpreted as a settlement site with a house and a find layer containing charcoal, pottery, flint, stone, worked bone and antler, a piece of copper and botanical and archaeozoological material.⁶⁸² On the basis of the five ^{14}C dates, this layer dates in the period Late Neolithic–Early Bronze Age (2468–1886 cal BC; Table 7.11).

The botanical remains from the site feature naked two-row barley (kerns and chaff) and emmer wheat. Other edible seeds stem from hazel nut and sloe. The remains of water plants indicate slow streaming or stagnant fresh or brackish water. Since the levee was only about 10 m wide, space for arable land was limited in the vicinity of the site.⁶⁸³

The faunal remains from the site show the same

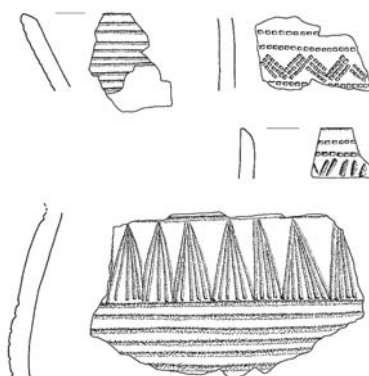


Figure 7.140 Barendrecht 2 BBC pottery, scale 1:3 (after Moree *et al.* 2011, 47).

spectrum of domesticated, and wild and hunted species. Cattle, pigs and sheep or goat were butchered, because the bones of these animals show butchering marks and gnaw marks.⁶⁸⁴

However, the skeletal remains of deer, roe deer, elk, beaver, otter, polecat, wild cat, marten, fox, and several bird species were also present. Fish remains (mostly Cyprian ides, three-spiked stickleback and sturgeon) were present in abundance. These anadromous fish species demonstrate that a connection to open sea was available, but that the part of the river where the site was located was probably brackish or fresh.

⁶⁸¹ Moree *et al.* 2011, 48.

⁶⁸² Moree *et al.* 2011, 48.

⁶⁸³ Moree *et al.* 2011, 48.

⁶⁸⁴ Moree *et al.* 2011, 49.

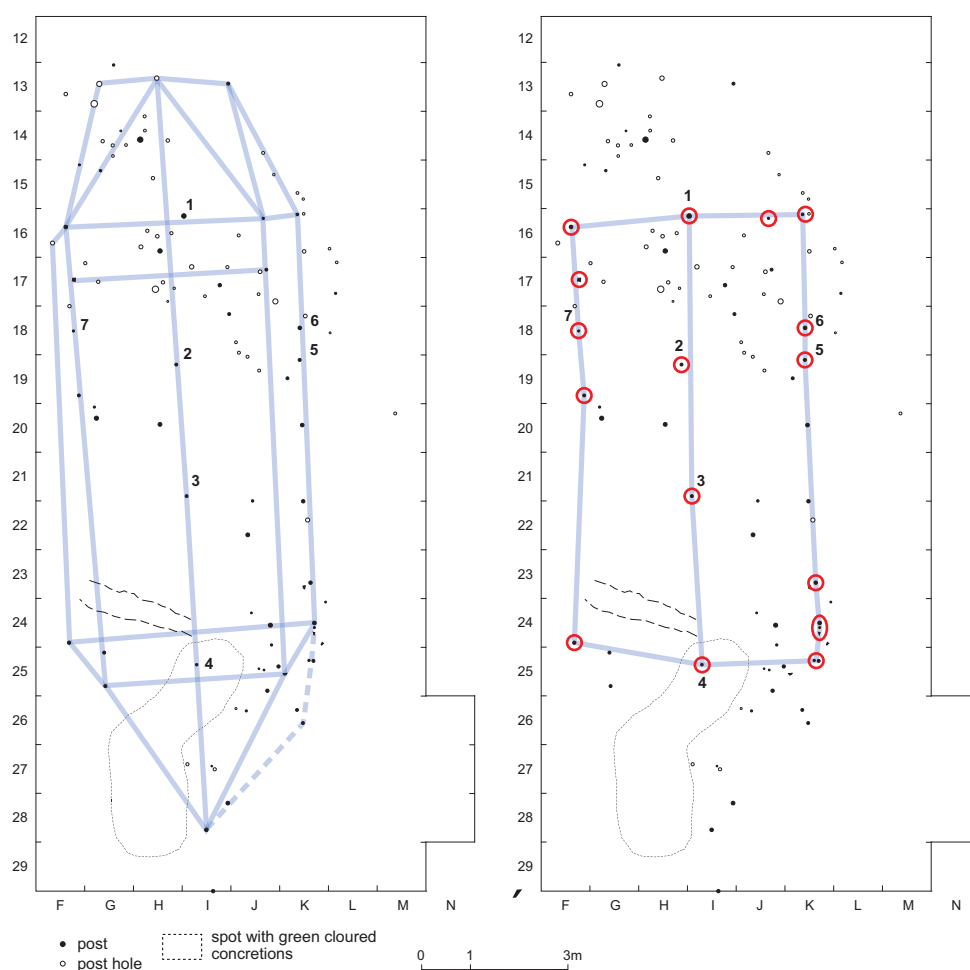


Figure 7.141 The two versions of the house plan postulated for Barendrecht-Carnisselande 3 (compiled after Moree *et al.* 2011, 53 and 54).

The excavators have proposed a house plan amongst the cluster of post pits and remains of posts found on the site (Fig. 7.141). Two possible versions of the plan have been presented in the excavation report, but both are very irregular and do not show any consistency in the distance between posts or any other indication that a roof bearing construction was present. The potential house is classified as an example of a Hesel A or Hesel B type house.⁶⁸⁵ Pottery fragments were present in abundance (2,430 fragments) and probably constitute the remains of at least 67 pots.⁶⁸⁶ 62% Of the sherds was tempered with grog. The sherds are mainly parts of pot beakers (Fig. 7.142; Fig. 7.143). Single or paired fingernail impressions, are often applied in different patterns as decoration.⁶⁸⁷ A typical type of decoration that is encountered more often in Late Neolithic and Early Bronze

Age settlement assemblages is a decoration with hollow reed or bird bone impressions.⁶⁸⁸ Since barbed wire decoration is completely absent from this assemblage, we would prefer to classify it as Late BBC. A sherd that was identified as typical Early Bronze Age,⁶⁸⁹ with nail impressions and grooves, fits well in the Late Neolithic pot beaker assemblage.⁶⁹⁰ Therefore, there is no reason to doubt the early date (Table 7.11 date 4).⁶⁹¹ The two ¹⁴C dates that have a range ending in the 19th century cal BC, still start just after 2200, so they could very well fit a pre-2000 cal BC date.

The flint industry from the site is not very specific. Most artefacts that show use-wear have been used to scrape hides. The flint in general was of low quality and probably derived from the river beds. Bone and antler artefacts mostly featured sharp points and had a function as an

⁶⁸⁵ Moree *et al.* 2011, 56; In Chapter 6, we have commented on the uncritical use of Waterbolk's classifications, especially with reference to Hesel A and B houses.

⁶⁸⁶ Moree *et al.* 2011, 56.

⁶⁸⁷ Moree *et al.* 2011, 61.

⁶⁸⁸ Moree *et al.* 2011, 60; Cf. fig. 7.6.8.

⁶⁸⁹ Moree *et al.* 2011, 71.

⁶⁹⁰ Cf. Oldeboom, Section 7.8.

⁶⁹¹ Moree *et al.* 2011, 71.

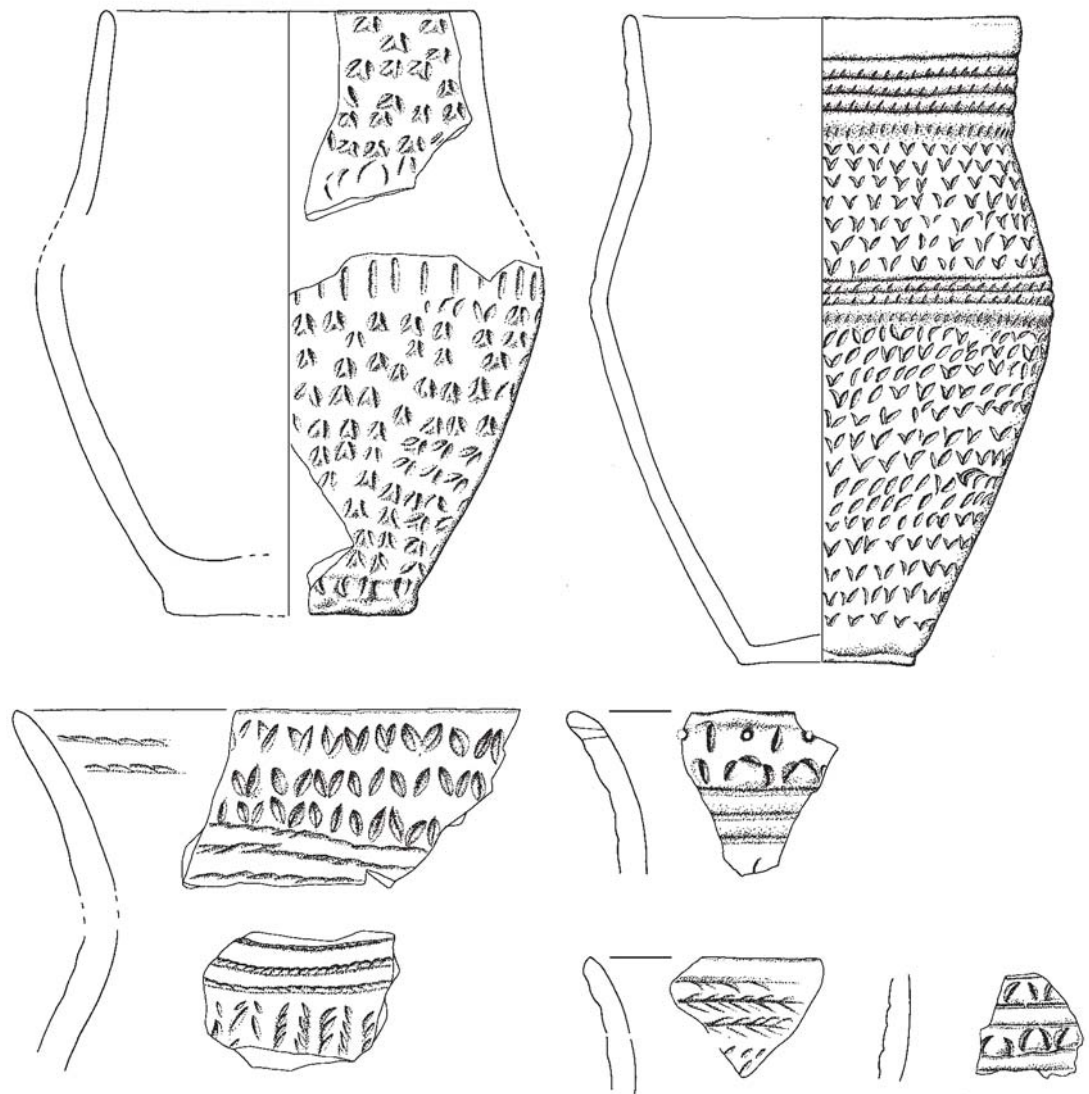


Figure 7.142 Pot beaker pottery from Barendrecht Carnisselande 3, scale 1:3 (compiled after Moree *et al.* 2011, 58-59).

awl or needle. Larger antler and bone objects were interpreted as chisels, gauges and axes or hoes (Fig. 7.144).⁶⁹²

A small piece of raw copper (1 cm in section) was provenanced to Scotland, Ireland or Wales, based on the lead contents of the piece.⁶⁹³

7.27.5 Barendrecht 4

The site Barendrecht 4 is the uppermost layer of the sequence. It is a deposit of 10-20 cm thick. The largest concentration of artefacts, bones, and of seeds was present in the northern part of the trench. There were a few concentrations

of charred grains (mainly emmer and barley) of which both kernels and chaff occurred at the site. Several edible wild fruits and plants were found as well, including hazel nut, sloe, apple, water chestnut. The remains indicate a mixed farming-gathering economy.⁶⁹⁴ The bone spectra were comparable to that of Barendrecht 3. This also goes for the wild fauna and fish. The site may have been used year round, because the seasonal indicators of fish and hunted animals are not specific.

In total 254 features were registered at the site, including a pit and 10 remains of wooden posts. The pit contained no find material. The posts and postholes do not amount to a well-defined structure (Fig. 7.145). The excavators

⁶⁹² Moree *et al.* 2011, 67-69.

⁶⁹³ Determination by P. Northover; Moree *et al.* 2011, 69.

⁶⁹⁴ Moree *et al.* 2011, 74.

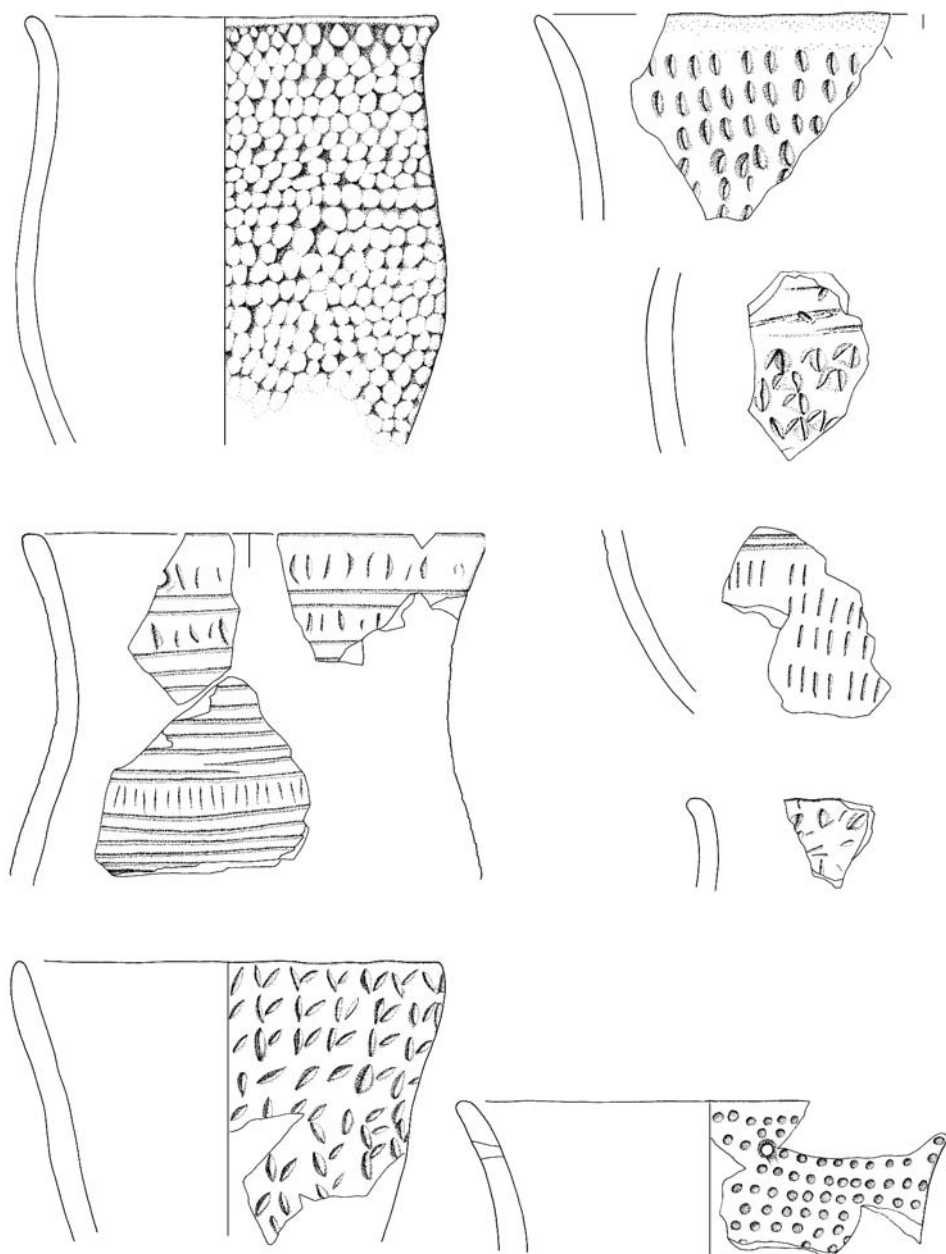


Figure 7.143 Pot beaker pottery from Barendrecht Carnisselande 3, scale 1:3 (after Moree *et al.* 2011, 60)

wisely concluded that ‘the postholes seem to indicate a place where probably a house once stood’, without proposing a specific house plan (Fig. 7.145).⁶⁹⁵

The pottery assemblage of Barendrecht 4 is peculiar (Fig. 7.146). Half of the material (2,056 sherds) is very small in size. Most of the sherds are just like those from the Barendrecht 3 level—tempered with grog. A minor percentage of the sherds was tempered with mineral material. The pottery that has a barbed wire

decoration was predominantly tempered with grog, but Hilversum sherds are mainly tempered with grog and quartz.⁶⁹⁶ Interestingly, some of the Hilversum-type sherds have a ‘maggot’ decoration. This decorative pattern is more common in the UK, but also is known from the Dutch river area (Fig. 7.147).⁶⁹⁷ Other characteristics of Early Hilversum pots in the assemblage are knob handles and raised shoulder cordons, sometimes decorated with nail impressions.⁶⁹⁸ Similar assemblages are

⁶⁹⁵ Moree *et al.* 2011, 80.

⁶⁹⁶ Moree *et al.* 2011, 84.

⁶⁹⁷ Bloo & Schouten, 2002; Moree *et al.* 2011, 84. A tin band of clay applied to the pot surface in a ‘wavy’ line.

⁶⁹⁸ Moree *et al.* 2011, 84.

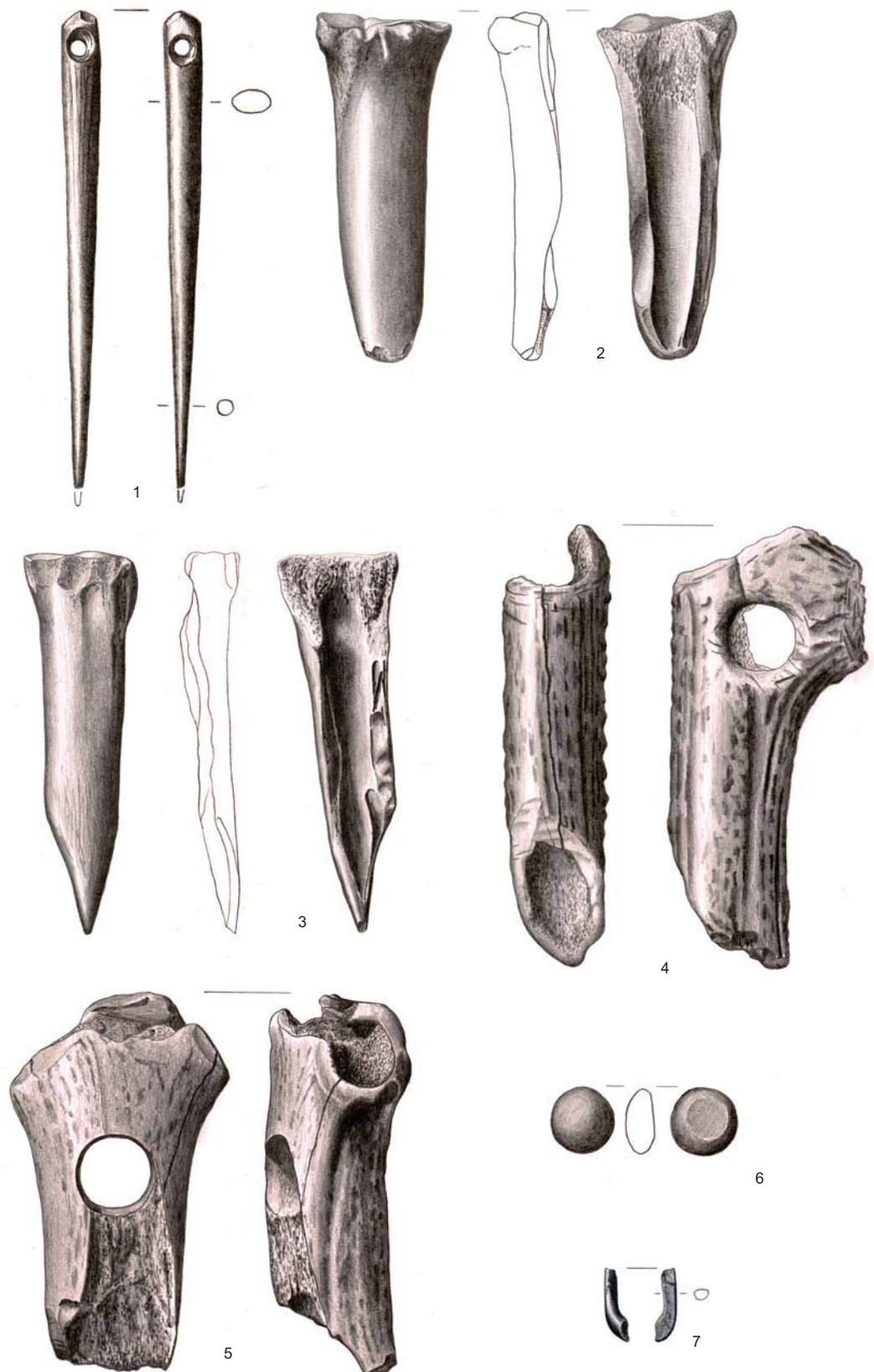


Figure 7.144 Worked bone tools from Barendrecht Carnisselande 3. 1: needle; 2,3: gauges or chisel; 4,5: axe or adze; 6: round object; 7: part of a fish hook. 1,7 scale 1:1; 2-5 scale 1:2 (compiled after Moree *et al.* 2011, 68).

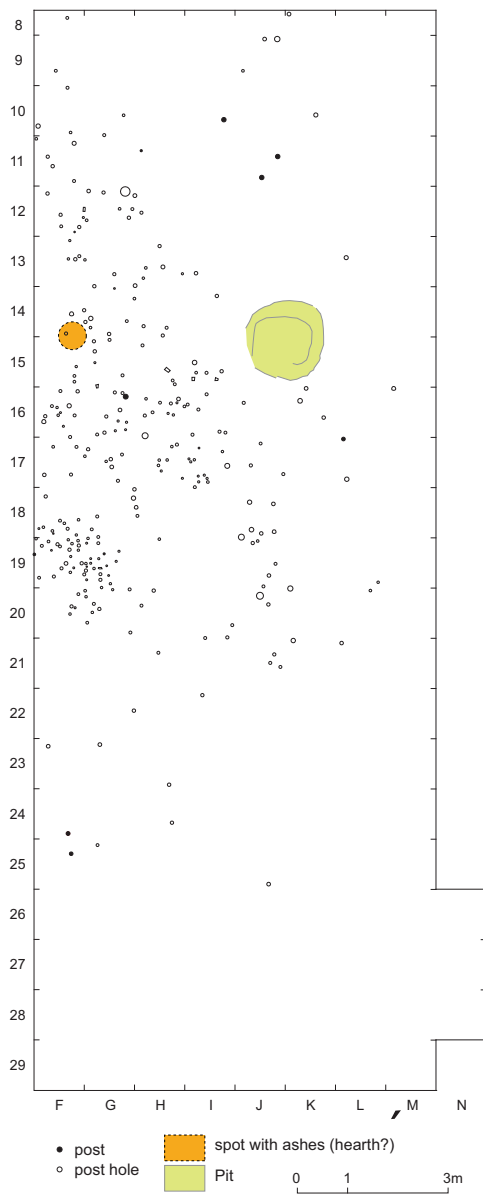


Figure 7.145 Features associated with Barendrecht Carnisselände 4 (after Moree *et al.* 2011, 76).

for instance known from Molenaarsgraaf.⁶⁹⁹ The rim shapes in the assemblage are also indicators of Early Hilversum forms.⁷⁰⁰ S. Bloo places this assemblage at the end of the Early Bronze Age and the start of the Middle Bronze Age A.⁷⁰¹ It is a very interesting assemblage typologically, because it shows that pot beaker decorative elements (paired patterned nail impressions) are still part of the repertoire, while both barbed wire and cord impressions are additionally applied as decorative techniques. Cord impressed ware, especially with a

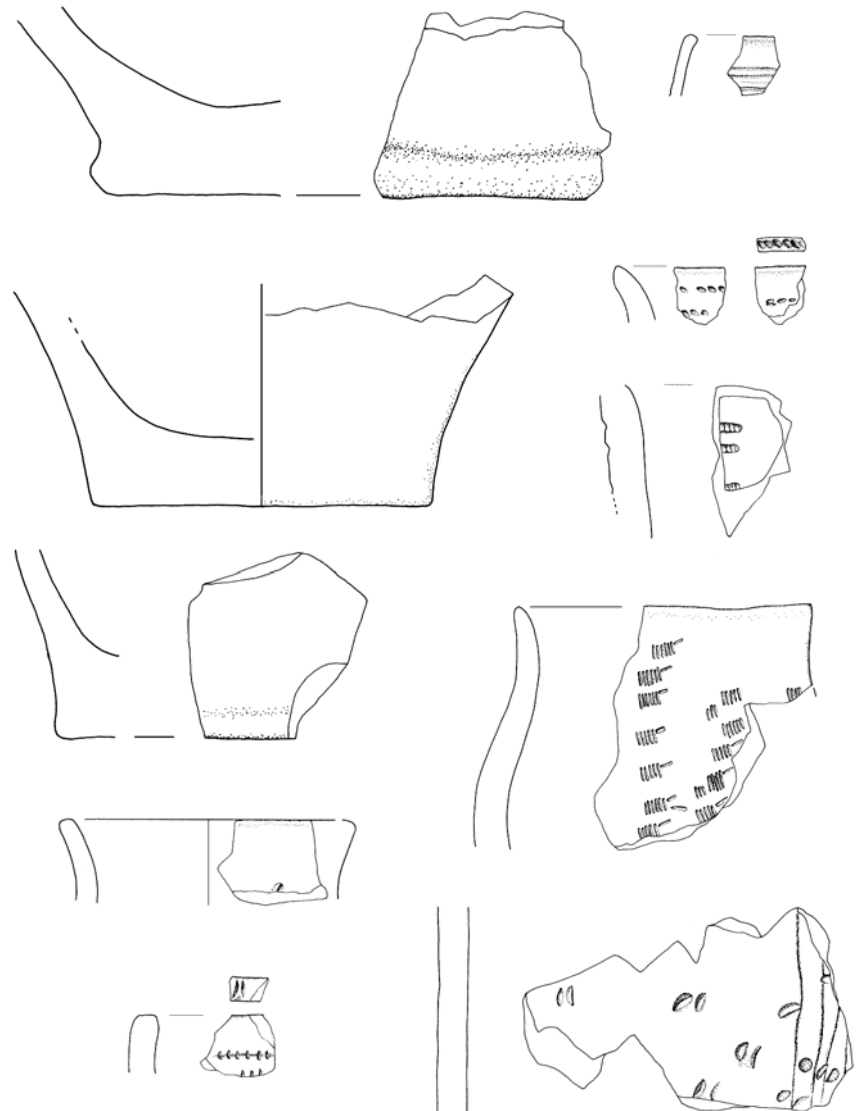


Figure 7.146 The Barendrecht 4 pottery assemblage, scale 1:3 (compiled after Moree *et al.* 2011, 81-83).

combination of horizontal and a vertical element is characteristic for Early Hilversum pottery (Fig. 7.147-3). The ¹⁴C date derived from cooking remains on the pot depicted in Fig. 7.147-3 (1891-1689 cal BC; Table 7.11) is in line with the typological date of the ceramics.⁷⁰² Dates of botanical material from the site are in line with this date as well (2187-1889 cal BC and 1912-1685 cal BC). On the basis of the combined evidence, the activities at site 4 probably date between 1900 and 1680 cal BC. The flint material from the site is limited to

⁶⁹⁹ Louwe Kooijmans 1974.

⁷⁰⁰ Cf. Ten Anscher 1990.

⁷⁰¹ Moree *et al.* 2011, 86.

⁷⁰² Moree *et al.* 2011, 85.



Figure 7.147 Early HVC pottery and 'Maggot' decoration from Barendrecht Carnisselande 4, scale 1:3 (after Moree *et al.* 2011, 81).

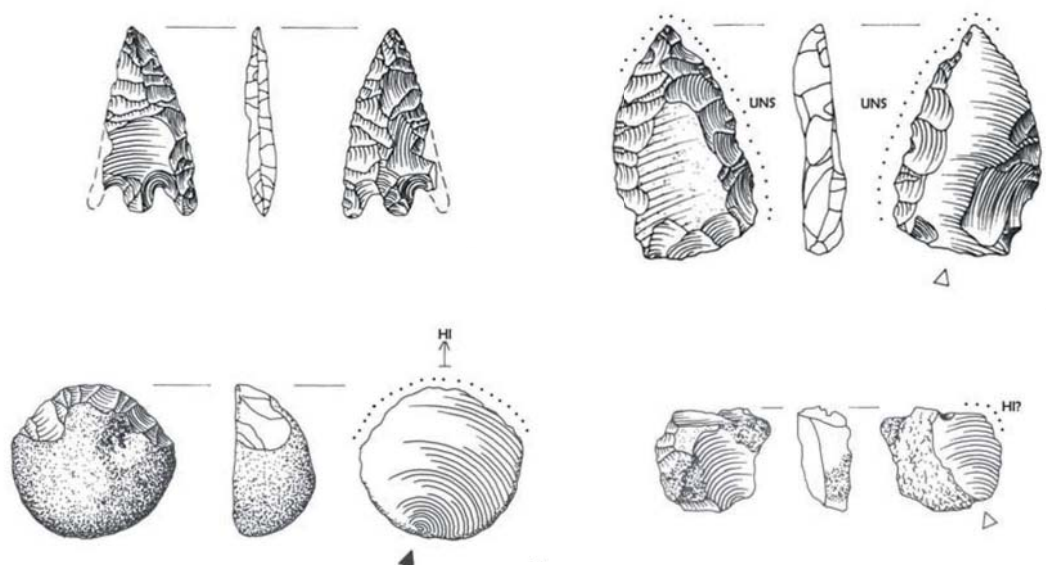


Figure 7.148 Flint implements from Barendrecht Carnisselande 4 (after Moree *et al.* 2011, 86).

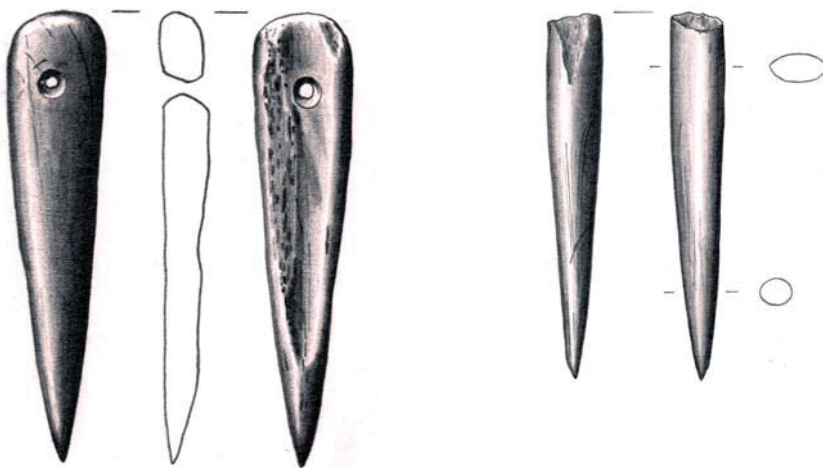


Figure 7.149 Worked antler and bone from Barendrecht Carnisselande 4 (after Moree *et al.* 2011, 88).

some 137 fragments, of which only 12 are modified artefacts. The artefacts are probably all made of the locally available rolled Meuse flint. Two arrowheads from the site, one with barbs and a tang, the other with a convex base, are characteristic for the Early Bronze Age (Fig. 7.148). The worked antler and bone implements (Fig. 7.149) are comparable to those of site 3.⁷⁰³

7.27.6 Barendrecht 5

The site Barendrecht 5 is situated on a short distance from Barendrecht 1-4. This site consists of a 30 cm thick palaeo-soil and was already partly destroyed by a sewer trench. The botanical and archaeo-zoological spectra as well as the lithic industry were entirely comparable with the Barendrecht 2, 3 and 4 sites.⁷⁰⁴ The pottery assemblage consists of 153 fragments of which the majority is very small (Fig. 7.150).⁷⁰⁵ The assemblage appears to combine elements of site 3 and 4, and is therefore dated at the end of the Late Neolithic and the start of the Early Bronze Age,⁷⁰⁶ probably a little after 2000 cal BC. This is confirmed by two dates of botanical material: 2202-1903 cal BC; 2187-1898 cal BC (Table 7.11).⁷⁰⁷ We would propose a date between 2000 and 1900 cal BC as the most probable estimate if we combine the above-mentioned data of relative and absolute dating methods. An interesting object from the site is a perforated cylinder described as a loom weight (Fig. 7.150 bottom), but this most probably is

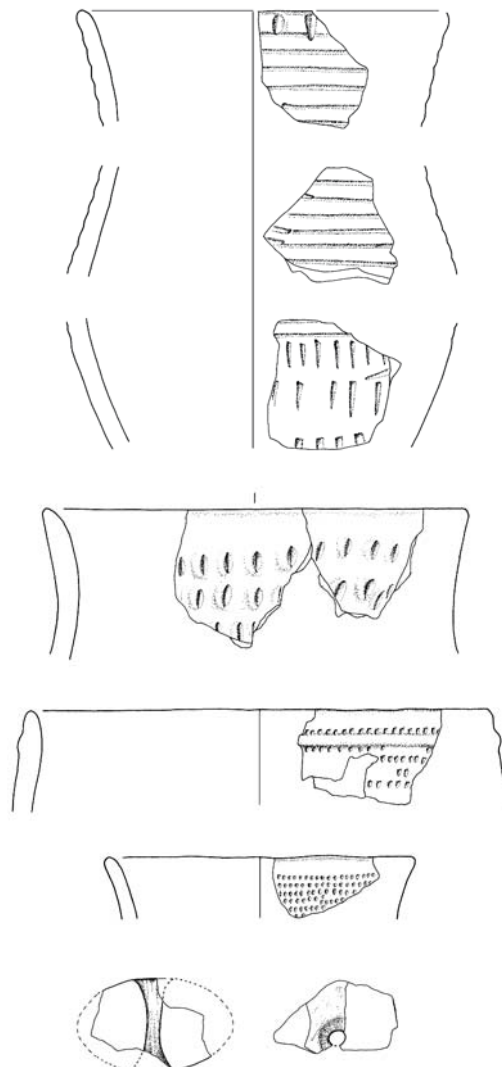


Figure 7.150 Late Neolithic pottery from Barendrecht Carnisselande 5. Scale 1:3 (after Moree *et al.* 2011, 94).

⁷⁰³ Moree *et al.* 2011, 89.

⁷⁰⁴ Moree *et al.* 2011, 92-93.

⁷⁰⁵ Moree *et al.* 2011, 96.

⁷⁰⁶ Moree *et al.* 2011, 95.

⁷⁰⁷ Moree *et al.* 2011, 97.

a fragment of a spindle whorl. Not very many spindle whorls are known from this period. They might be seen as evidence for wool production, but spindle whorls can also be used to make threads out of other fibres.

7.27.7 Barendrecht 6

Barendrecht 6 is again situated not far from Barendrecht 1-4 and 5. Material was collected from a 5.5 x 20 m trench from a 20 cm thick palaeo-soil. The limited archaeo-zoological material is comparable to that of the other Barendrecht sites. Stone tools were not present at this site. The pottery assemblage was also small: it consists of 85 sherds of which the majority are no bigger than crumbles. In terms of decorations the assemblage features barbed wire impressions, paired nail impressions and cord impressions. As a complex, it is comparable to Barendrecht 4. The occurrence of specific rim shapes, a horse shoe shaped cordon and horse shoe shaped cord impressions support that observation. A ¹⁴C date of botanical material supports this classification: the sample falls at 1886-1746 cal BC (Table 7.11).⁷⁰⁸ This timeframe is in line with the date we would expect from the composition of the pottery assemblage.

7.27.8 Comments

Barendrecht-Carnisselande 1-6 are important sites because they represent a type of site that is probably much more representative for Late Neolithic and Early Bronze Age sites than we currently believe. The authors conclude:⁷⁰⁹ 'The sites Barendrecht 1-6 fit well in the habitation history of the Meuse delta. They demonstrate that in the period of the VLC until the Middle Bronze Age the food economy in the 'wet' areas of the fresh-water tidal gullies had its own character. Until the Middle Bronze Age, 'Mesolithic' hunting and gathering was part of the otherwise Neolithic way of life. The possibilities for keeping domestic animals were good in the back swamps, but for arable farming the wet environment offered too little opportunity.'⁷¹⁰

The bottom-line of the conclusion of the excavators is correct: the clear evidence for the gathering of fruits and edible plants, as well as for hunting and fishing demonstrates that these practices were still very much part of the Late Neolithic way of life. The production of grain (especially emmer and barley) and the exploitation of cattle, pigs and sheep or goats definitely were part of this same mixture, but we might speak of an opportunistic economy: all available food sources were exploited. However, we think that the Barendrecht sites are not only representative for the Meuse delta, but for the Late Neolithic and Early Bronze Age farming sites in general, possibly even for subsistence economies until the Middle and Late Bronze Age.⁷¹¹

7.28 Houten-VleuGel 20

The site VleuGel 20 is situated in the river area, south of the present river Rhine. It is located on the flanks of one of the stream gullies of the Rhine that was active between about 2475 and 745 cal BC according to Berendsen and Stouthamer.⁷¹² In other words, it became active during the Neolithic B and remained so during the entire Bronze Age (Fig. 7.151).⁷¹³ The distance to the coast was about 56 km, and the ice-pushed ridges of the Utrechtse Heuvelrug and the Veluwe were about 10 km away.

7.28.1 Research history

The second name of the site (VleuGel 20) derives from the railroad between Vleuten and Geldermalsen. The project was part of research prior to the construction of a new rail road track.⁷¹⁴ First RAAP BV. was contracted to carry out a series of corings with the aim of searching for sites in the buried river landscape present at the planned trajectory of the rail road track. RAAP detected 18 sites,⁷¹⁵ of which eleven were selected for further research. For the area under consideration, five of those were investigated with trial trenches.

Site 20 was excavated in 2005 by ACVU-HBS with a trial trench of 8 x 50 m.⁷¹⁶ It became clear that several stratigraphically separate find layers

⁷⁰⁸ Moree *et al.* 2011, 100.

⁷⁰⁹ Moree *et al.* 2011, 108.

⁷¹⁰ Moree *et al.* 2011, 108.

⁷¹¹ Van Amerongen 2016.

⁷¹² Berendsen & Stouthamer 2001.

⁷¹³ Van der Heiden & Vos 2009, 26.

⁷¹⁴ Cf. Section 7.35.1.

⁷¹⁵ Jager 2001.

⁷¹⁶ Schurmans 2005.

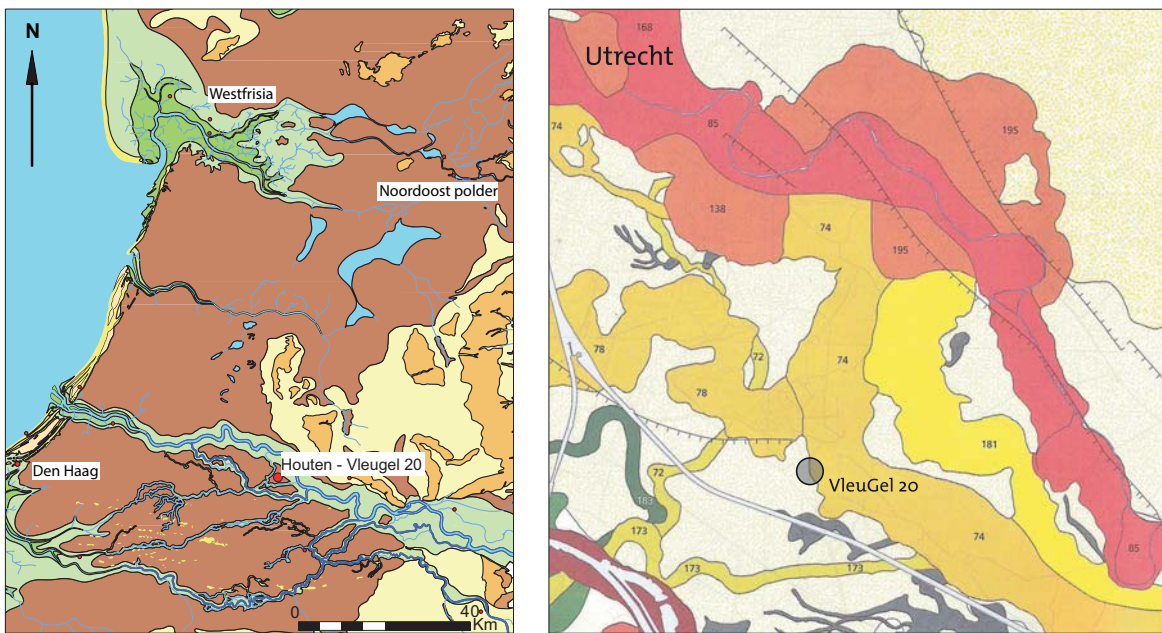


Figure 7.151 Palaeogeographic situation of VleuGel 20 on the Paleogeographic map of 2750 cal BC (left) and other BWBC sites known in the area according to ARCHIS (based on Vos & De Vries 2013). Right: the location of the site in relation to the stream gully of Houten (after Berendsen & Stouthamer 2001; Van der Heiden & Vos 2009, 26).

were present. In the top two occupation layers, three metal objects were discovered (Fig. 7.152). Also two small 'lumps' of bronze were found. These finds are remarkable, because bronze objects are normally absent from settlements, though there are other examples from the river area.⁷¹⁷ All objects point to an early Middle Bronze Age B date, probably in the sixteenth or fifteenth century BC.⁷¹⁸ The pottery assemblage of that top layer was in line with a later date and indeed can be considered a typical Middle Bronze Age B complex. The second find layer is dated to the Middle Bronze Age A on the basis of pottery. A few BWBC sherds were present in this layer, but these are considered to have been intrusions (in the past) from a third occupation layer dating to the Early Bronze Age.⁷¹⁹ On the basis of these finds and their stratigraphic contexts, the advice was to excavate site VleuGel20 as complete as possible within the spatial limits of the construction works. Therefore, yet another company (AAC Projectbureau) excavated the site in six weeks' time between December 2006 and January 2007. Typically for Dutch Archaeology, the excavation activities were directed by yet another party: the archaeological consultancy agency Vestigia BV. This consultancy agency



Figure 7.152 Metal finds found in the top layers of the Houten-VleuGel 20 excavation. From left to right: A roll-head pin, a possible awl and a chisel (Verhelst 2005, 42).

also wrote the WSI for the trial trenches and the excavation of the site. According to the WSI, the research was focussed on the 'layout and (diachronic and synchronic) development of the cultural landscape during the Bronze Age'.⁷²⁰

⁷¹⁷ Eigenblok: cf. Section 7.36.

⁷¹⁸ Verhelst 2005, 35.

⁷¹⁹ Schurmans 2005, 35.

⁷²⁰ Besselsen & Van der Heiden 2009, 8.

7.28.2 Excavation results

The area was excavated in 10 m wide trenches of about 15–20 m long. The first level was excavated immediately below the plough soil, the next levels were associated with three different Bronze Age layers and a Late Neolithic level (Fig. 7.153). Finds were collected in 5 x 5 m squares if there were few finds and in 2 x 2 m squares if there were many finds.⁷²¹ The reason for these differences in resolution is not offered in the report or WSI. A few sections were sampled completely and sieved, otherwise finds were collected by hand.

Because of the focus on dating and typochronology of the pottery assemblages, a dating programme was carried out, but with little result. From every layer at least two samples (bone, charcoal and cooking residue on pottery) were supposed to be dated.⁷²² But none of the bone samples contained enough collagen for an accurate date and the carbonate datings lacked precision too, so in the end no dates were available for the site. A proposal to use OSL-dating was rejected by the consultancy agency, ‘because one could not expect the developer to pay for this type of research’.⁷²³

The stream gully at the site was active from the Late Neolithic through the Bronze Age, which implies that it was running water during all of the occupation phases. According to Van der Heiden and Vos, the site was situated in the transitional zone between the stream itself and the backswamp.⁷²⁴ The lowermost layers consist of less compact clays, the top layers are more compact levee sediments. This demonstrates that the gully was meandering.⁷²⁵ According to the authors of the excavation report, the gully was already in the process of silting up during the Late Neolithic and only a depression remained. Sterile layers of sediment were alternating with layers that show signs of human occupation (Fig. 7.153). These layers were 25–35 cm thick. They contained finds, organic material and also remains of posts and other features. The oldest of these layers has been dated between 2140 and 1910 cal BC.⁷²⁶

The report has placed all specialist reports apart from each other, so that it is difficult to get a coherent view of the archaeological different layers. However, it is clear that most



Figure 7.153; Section at Houten-Vleugel 20; 2: occupation horizon from the Late Neolithic / Early Bronze Age; 3: occupation horizon from the Early Bronze Age; 4: occupation horizon from the Middle Bronze Age (after Besselsen & Van der Heiden 2009, 29).

of the find material came from the silted-up depression. Phase 1 is documented as the period between 2000–1900 cal BC.⁷²⁷ Around this period, there was a depression that contained water during some periods of the year. Seven different layers were distinguished containing a pottery assemblage that exhibits late Barbed Wire Beaker Culture elements, just like at Molenaarsgraaf,⁷²⁸ Rhenen-Remmerden⁷²⁹ and at Schokland-P14 (Fig. 7.154).⁷³⁰ Vessel v513, which has a decoration for which a direct parallel can be found at Molenaarsgraaf, was dated between 2140 and 1930 cal BC. However, this date was acquired by sampling charred food residue from the vessel (Table 7.12).⁷³¹ This could possibly result in the sample dating earlier than the vessel should the sampled residue contain fish remains. Owing to the position of the site next to a river, this is a distinct possibility, and on typological ground we think this might be the case. Instead, we date the assemblage between c. 1900–1800 BC.⁷³²

Elsewhere in the silted-up gully depression a thoracic vertebra of an adult human individual was also found, but without any further context.⁷³³ Interestingly, the vertebra showed

⁷²¹ Besselsen & Van der Heiden 2009, 19.

⁷²² Besselsen & Van der Heiden 2009, 21.

⁷²³ Besselsen & Van der Heiden 2009, 23.

⁷²⁴ Van der Heiden & Vos 2009, 29.

⁷²⁵ Besselsen & Van der Heiden 2009, 28.

⁷²⁶ Van der Heiden & Vos 2009, 29.

⁷²⁷ Besselsen & Van der Heiden 2009, 34.

⁷²⁸ Louwe Kooijmans 1974.

⁷²⁹ Cf. Section 7.30.

⁷³⁰ Cf. Section 7.7.

⁷³¹ Besselsen & Van der Heiden 2009, 80.

⁷³² Cf. Section 8.1.5.

⁷³³ Slopsma 2009, 57.



Figure 7.154 Pottery from Houten-Vleugel 20 phase 1 (occupation horizon 2). Scale 1:3, pot v513 scale 1:4 (from Stoffels 2009, 81).

traces of *spondylosis deformans*, a rheumatic disease.⁷³⁴ Cattle and sheep or goat were present at the site, but also pig and horse. Eleven percent of the bones was gnawed on.⁷³⁵ Hunted animals like red deer were also found alongside the fish remains (Table 7.13).⁷³⁶

The good conservation circumstances for bone also resulted in the find of a number of worked bone and antler objects, which could be studied for micro-wear. It shows that artefacts were used to work wool or textiles, wood, leather and pottery.⁷³⁷

Phase 2 is dated between 2000 and 1800 cal BC, which is approximately the same absolute date as the assemblage of Phase 1. In this period, the gully had dried up and the depression was completely filled and silted over. The find material from this phase was strongly

fragmented. Several post pits had been dug, but no clear structure can be discerned.⁷³⁸ Rows of pointed stakes are present as well, also without a discernible structure. This phase has yielded only 10% of the (very fragmented) bone material of the site. Most of the bones are cattle bones (67.5%),⁷³⁹ but the remains of pig, sheep or goat, wild animals and fish were also present (Table 7.13). This implies that the faunal spectrum is comparable to that of Phase 1, even though it is not clear how representative the sample is for the entire site.

Pottery of this phase is largely undecorated. Nail-impressed applique cordons occur, along with nail impressions in the rim in the fashion of Hilversum style decoration techniques. These occur together with pottery containing grooves and barbed wire stamp decoration (Fig. 7.155).⁷⁴⁰

⁷³⁴ Slopsma 2009, 56.

⁷³⁵ Slopsma 2009, 55.

⁷³⁶ Slopsma 2009, 57.

⁷³⁷ Besselsen & Van der Heiden 2009, 72.

⁷³⁸ Besselsen & Van der Heiden 2009, 37.

⁷³⁹ Slopsma 2009, 58.

⁷⁴⁰ Stoffels 2009, 84.

Table 7.12 ¹⁴C dates from Houten-VleuGel 20 (after Besselsen & Van der Heiden 2009, 33).

| Lab code | ¹⁴ C (BP) | Cal BC (2 sigma) | Cal BC (1 sigma) | Context | Phase | Feature | Material |
|-------------|----------------------|---------------------|---------------------|------------------|-------|---------|----------------------|
| | | | | Bronze Age 5 | 1 | | |
| Poz - 20989 | 3660 ± 35 | 2140 - 1930 | 2130 - 1960 | gully fill | | 267 | charred food residue |
| | | | | Bronze Age 4 | 1 | | |
| Poz - 21013 | 3650 ± 30 | 2140 - 1930 | 2120 - 1960 | gully fill | | 266.3 | bone |
| Poz - 21014 | 3670 ± 35 | 2190 - 1940 | 2140 - 1970 | gully fill | | 266.3 | bone |
| Poz - 20990 | 3690 ± 30 | 2200 - 1970 | 2140 - 2030 | gully fill | | 266.4 | charred food residue |
| | | | | Bronze Age 3 | 2 | | |
| Poz - 21326 | 3640 ± 30 | 2140 - 1910 | 2110 - 1950 | post pit | | 179 | charcoal |
| Poz - 21506 | 3070 ± 35 | 1430 - 1250 | 1400 - 1305 | pit | | 48 | bone |
| Poz - 13584 | 3610 ± 35 | 2120 - 1810 | 2025 - 1920 | find 1-3 | | - | charcoal |
| | | | | Bronze Age 2 | 3 | | |
| Poz - 21562 | 3565 ± 30 | 2020 - 1870 | 1955 - 1880 | occupation layer | | 5 | bone |
| Poz - 13585 | 3210 ± 35 | 1610 - 1410 | 1505 - 1435 | find 2 | | - | charcoal |
| | | | | Bronze Age 1 | 4 | | |
| Poz - 21505 | 2880 ± 35 | 1210 - 930 | 1120 - 1000 | occupation layer | | 27 | bone |
| Poz - 13586 | 3045 ± 30 | 1410 - 1210 | 1380 - 1260 | find 1 | | - | charcoal |

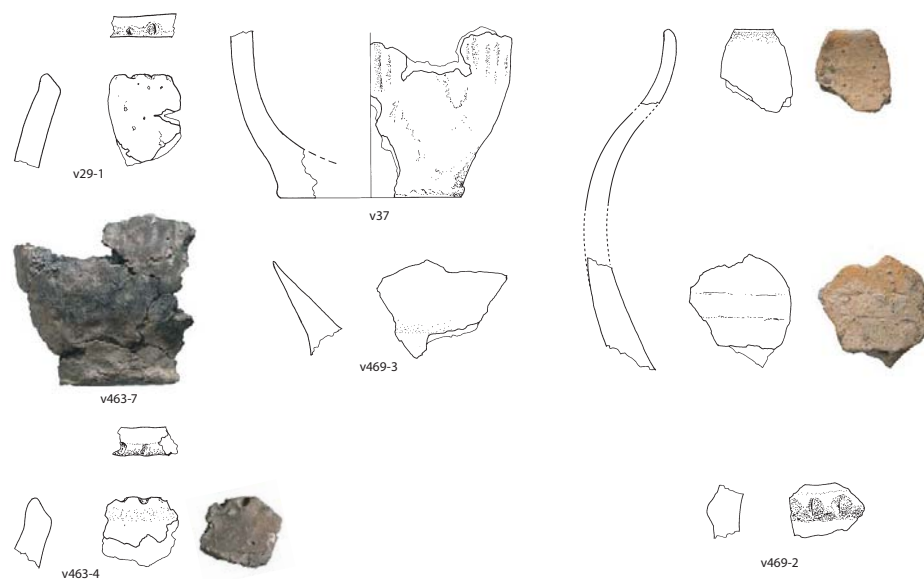


Figure 7.155 Pottery from Houten-VleuGel 20 phase 2. Scale 1:3 (from Stoffels 2009, 84).

The mixture of elements belonging to the Early Bronze Age and elements more typical of later Hilversum assemblages suggests the layer might contain mixed assemblages from multiple periods. This is also suggested by the ¹⁴C dates, which include both samples dating to the Early Bronze Age and the start of the Middle Bronze

Age B. Alternatively, the assemblage might date to c. 1800-1700, when Early Hilversum elements were found alongside Barbed Wire elements.⁷⁴¹ Phase 3 is the last phase containing Early Bronze Age elements. This level contains a relatively large number of (post) pits. Two small structures are proposed to be granaries: one with nine,

⁷⁴¹ Cf. Section 8.1.5.

Table 7.13 Composition of the bone material per phase from Houten-Vleugel 20 (after Slopsma 2009, 52).

| | Phase 4 | | | Phase 3 | | | Phase 2 | | | Phase 1 | | |
|--|---------|--------|------|---------|--------|------|---------|--------|------|---------|--------|------|
| Non-determinable species of mammals | Number | Weight | % | Number | Weight | % | Number | Weight | % | Number | Weight | % |
| Large mammal | 740 | 47,2 | 53,2 | 401 | 31,6 | 36,2 | 111 | 29,7 | 36,5 | 207 | 36,4 | 47,3 |
| Middle large mammal | 73 | 4,7 | 5,2 | 89 | 7 | 8 | 31 | 8,3 | 10,2 | 34 | 6 | 7,8 |
| Small mammal | 1 | 0,1 | 0,1 | 4 | 0,3 | 0,4 | 1 | 0,3 | 0,3 | - | - | - |
| Mammal | 577 | 36,8 | 41,5 | 614 | 48,3 | 55,4 | 161 | 43 | 53 | 197 | 34,6 | 45 |
| Total non-determinable | 1391 | 88,8 | 100 | 1108 | 87,2 | 100 | 304 | 81,3 | 100 | 438 | 77 | 100 |
| | | | | | | | | | | | | |
| mammals | | | | | | | | | | | | |
| Auroch / Oxen (<i>Bos primigenius / taurus</i>) | 140 | 8,9 | 79,5 | 76 | 6 | 46,9 | 46 | 12,3 | 65,7 | 70 | 12,3 | 57,4 |
| Sheep / Goat (<i>Ovis aries / Capra aegagrus hircus</i>) | 16 | 1 | 9,1 | 26 | 2 | 16 | 8 | 2,1 | 11,4 | 16 | 2,8 | 13,1 |
| Sheep (<i>Ovis aries</i>) | - | - | - | 1 | 0,1 | 0,6 | - | - | - | - | - | - |
| Pig (<i>Sus domesticus</i>) | 11 | 0,7 | 6,3 | 27 | 2,1 | 16,7 | 3 | 0,8 | 4,3 | 10 | 1,8 | 8,2 |
| Red deer (<i>Cervus elaphus</i>) | 6 | 0,4 | 3,4 | 27 | 2,1 | 16,7 | 8 | 2,1 | 11,4 | 18 | 3,2 | 14,8 |
| Dog (<i>Canis familiaris</i>) | 3 | 0,2 | 1,7 | 3 | 0,2 | 1,9 | 4 | 1,1 | 5,7 | 3 | 0,5 | 2,5 |
| Horse (<i>Equus ferus caballus</i>) | - | - | - | 1 | 0,1 | 0,6 | 1 | 0,3 | 1,4 | 3 | 0,5 | 2,5 |
| Otter (<i>Lutra lutra</i>) | - | - | - | 1 | 0,1 | 0,6 | - | - | - | - | - | - |
| Human (<i>Homo sapiens</i>) | - | - | - | - | - | - | - | - | - | 1 | 0,2 | 0,8 |
| Water vole (<i>Arvicola amphibius</i>) | - | - | - | - | - | - | - | - | - | 1 | 0,2 | 0,8 |
| Total mammals | 176 | 11,2 | 100 | 162 | 12,8 | 100 | 70 | 18,7 | 100 | 122 | 21,4 | 100 |
| | | | | | | | | | | | | |
| Fish | | | | | | | | | | | | |
| Bream (<i>Abramis brama</i>) | - | - | - | - | - | - | - | - | - | 1 | 0,2 | 7,7 |
| Sturgeon (<i>Acipenser sturio</i>) | - | - | - | - | - | - | - | - | - | 5 | 0,9 | 38,5 |
| Non determinable cyprinides | - | - | - | - | - | - | - | - | - | 4 | 0,7 | 30,8 |
| Roach (<i>Rutilus</i>) | - | - | - | - | - | - | - | - | - | 2 | 0,4 | 15,4 |
| Tench (<i>Tinca</i>) | - | - | - | - | - | - | - | - | - | 1 | 0,2 | 7,7 |
| Total fish | - | - | - | - | - | - | - | - | - | 13 | 2,3 | 100 |

and another with six posts (Fig. 7.156).⁷⁴² They are relatively irregular and the foundation of the posts is max 25 cm. This is rather shallow for granaries as the functions of the dug-in posts is to give construction stability.⁷⁴³ The shallow depth of the pits and the irregularity of the configuration casts some doubt on the interpretation, but the pits definitely prove that structures of some kind were present. The faunal spectrum of phase 3 is different from that of the earlier phases, because the percentage of cattle bones is much less (47%), while the percentages ovicaprids, pigs and red

deer are relatively high.⁷⁴⁴ The material is heavily fragmented. It is not clear from the analysis how representative the spectrum is for the entire site, as all the analysed bones were found in an area around the depression of period one.

In their conclusions, the authors of the excavation report point out that in all periods 'meatless' parts of cattle are over-represented, which in their view could indicate hide working, although it also could indicate removal of the meat-rich parts in order to take these to other sites.⁷⁴⁵ In our view this conclusion is a step too far, because it is absolutely impossible to tell

⁷⁴² Besselsen & Van der Heiden 2009, 41.

⁷⁴³ Cf. Chapter 6.

⁷⁴⁴ Slopsma 2009, 63.

⁷⁴⁵ Slopsma 2009, 63.

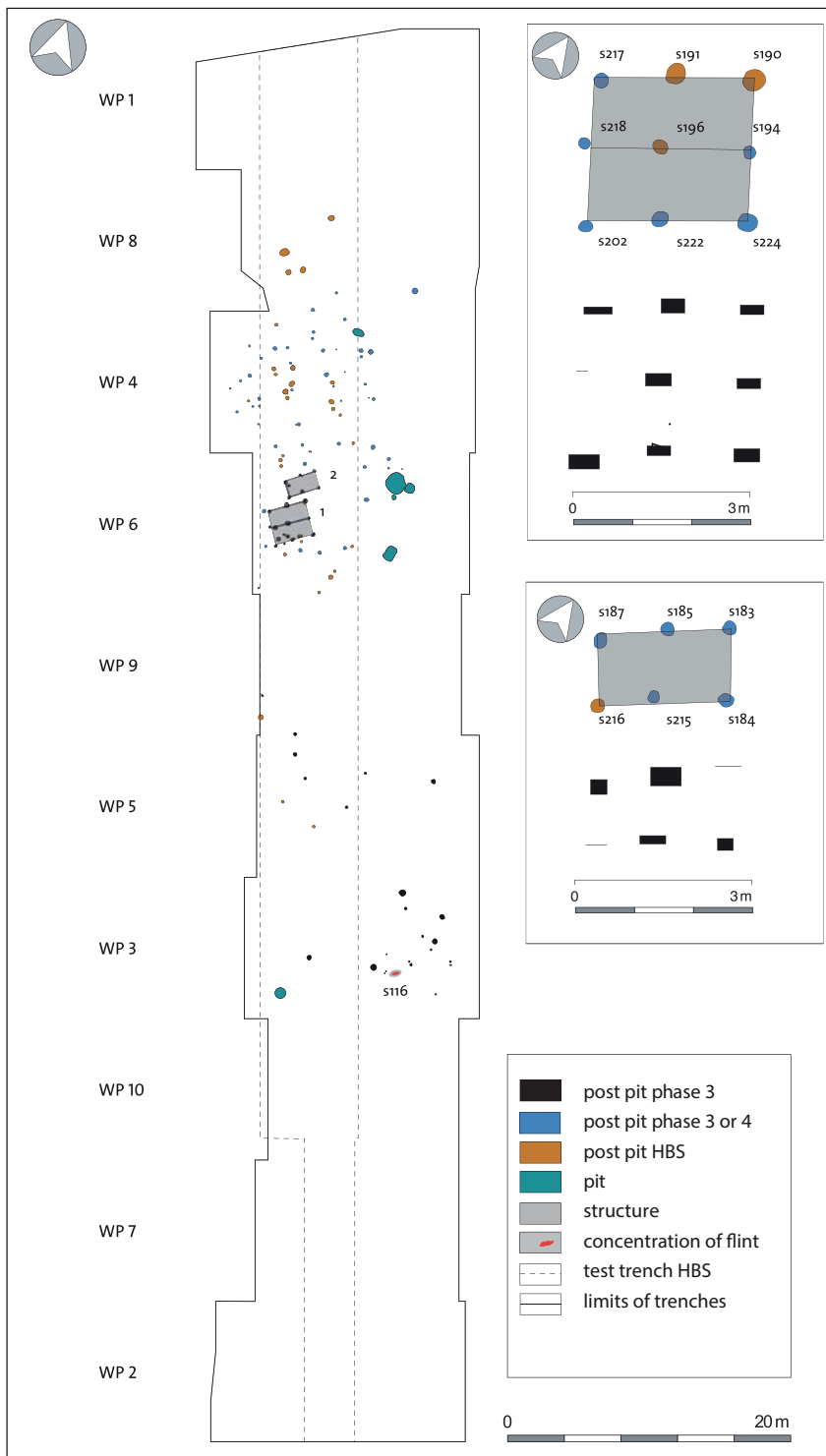


Figure 7.156 Granaries proposed for phase 3 of Houten-Vleugel 20 (compiled after Besselsen & Van der Heiden 2009, 41-42).

⁷⁴⁶ Stoffels 2009, 86.

⁷⁴⁷ Van Gijn & Verbaas 2009, 111.

⁷⁴⁸ Van Gijn & Verbaas 2009, 112.

⁷⁴⁹ Van Gijn & Verbaas 2009, 121.

⁷⁵⁰ Van Gijn & Verbaas 2009, 121.

⁷⁵¹ Van Gijn & Verbaas 2009, 121.

⁷⁵² Stoffels 2009, 88.

how representative this material is for the entire site assemblage.

The pottery of phase 3 shows the same spectrum of artefacts as phase 2, although the complex as a whole shows a number of Early HVC elements as well. According to the authors, a date around 1800 cal BC would be probable for this phase, although the presence of late HVC applique cordons along with BWBC elements suggests this assemblage might also be mixed together (Fig 7.157).⁷⁴⁶ We suspect at least part of the assemblage dates later than 1600 BC.

Apart from flint, there are a small number of stone artefacts from all periods, mostly whetstones and hammer stones. Flint artefacts are relatively scarce as in most sites from this period. In total, there were 178 artefacts, 122 of which were found in a small concentration (Fig. 7.156).⁷⁴⁷ They are all made from locally available alluvial flint, and not very extensively worked.⁷⁴⁸ The general conclusions for this period are important. Van Gijn and Verbaas state that the Vleugel 20 assemblage is comparable to what can be found elsewhere in the river area:⁷⁴⁹ most sites yield small assemblages and the raw materials in these assemblages are locally available river rolled flint of relatively low quality. The lithic technology was opportunistic: it solely aimed at the production of useable work edges. Yet the material was used intensively rather than *ad hoc*.⁷⁵⁰ Hide working and fire making belong to the most frequently diagnosed activities for this flint objects based on use-wear analyses.⁷⁵¹

Phase 4 is placed in Middle Bronze Age B, but at least one Barbed Wire decorated sherd was present, again suggesting a level of mixture within the assemblage. Only 6% of this assemblage was decorated with fingernail impressions and impressions with other objects.⁷⁵²

7.28.3 Comments

Several aspects make Vleugel 20 an important site, especially for the Early Bronze Age. This site demonstrates that settlement structures from this period are elusive, even though the find material shows clear elements of (permanent) habitation, like the presence of domesticated animals, leather working, pottery manufacture

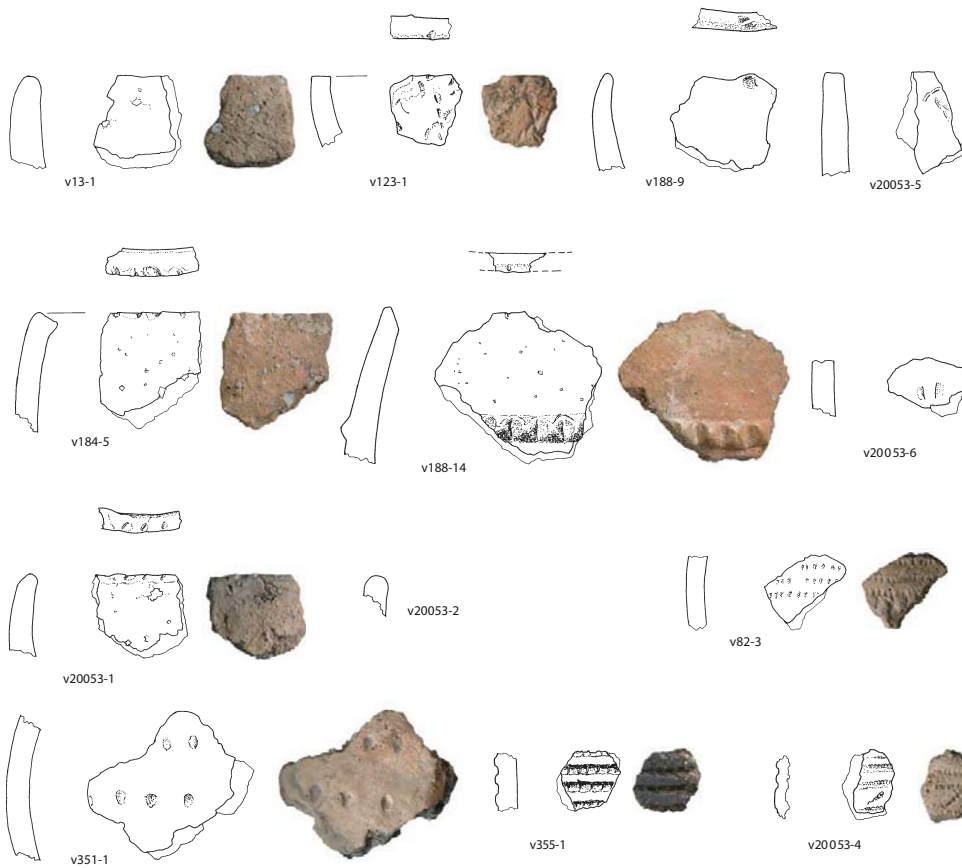


Figure 7.157 Pottery from Houten-Vleugel 20 phase 3, scale 1:3 (from Stoffels 2009, 86).

(evident from micro-wear). The settlement is located near river channels in a dynamic river landscape and an environment that seems to be very well suited for the exploitation of wild resources. Nevertheless, domestic animals are part of the assemblage like many other sites from this period. Organic material was very poor, but one pollen sample shows a very high percentage of barley pollen. Troostheide concludes that this must have been the result of threshing, so farming activities were carried out at the site as well.⁷⁵³

The report of VleuGel20 is one of the better specimens of its kind, although the coordination between the different specialist reports and their translation in the synthesis is marginal. The relation between stratigraphy and occupation layers is presented differently throughout the report and therefore also difficult to evaluate.

7.29 Amerongen-Bedrijventerrein Leersum / Leersum-Middelweg

Leersum is located on the flanks of the ice pushed-ridge of Utrecht, known as *De Utrechtse Heuvelrug*. It looks over the river Rhine to the south (Fig. 7.158). The municipality of Amerongen has been developing several business areas near Leersum, one is known as Bedrijventerrein Leersum, the other that we discuss here is Leersum-Middelweg, situated further to the northwest, and also a bit higher up on the Utrechtse Heuvelrug.

7.29.1 Research history

At Amerongen-Bedrijventerrein Leersum, test trenches had yielded remains dating from the Late Neolithic to the Late Iron Age.⁷⁵⁴ These

⁷⁵³ Troostheide 2009, 155.

⁷⁵⁴ Norde & Van der Roest 2007.

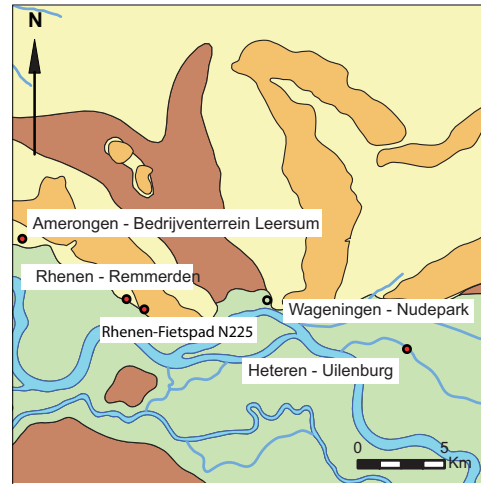


Figure 7.158 Location of Amerongen-Leersum, Rhenen, Wageningen and Heteren on the paleogeographic map of 2750 cal BC (based on Vos & De Vries 2013).



Figure 7.159 Large fragment of a pot beaker (after Norde & Van der Roest 2007, 21).



Figure 7.160 Charcoal filled pit (from Van der Roest 2009, 15).



Figure 7.161 Bell Beaker 'knife' found during prospective research (from Raczynski Henk 2010, 30)

first test trenches yielded a segment of a Late Neolithic pot beaker. In sequel to the first test trench, a small (test trench) excavation was conducted in order to check a few earlier observations.⁷⁵⁵ The final conclusion was that given the scarcity of features, further research was not necessary.

7.29.2 Excavation results

Even though the test trench results of research at Bedrijventerrein Leersum were negative, a large fragment of a pot beaker found in a section of one of the trenches (Fig. 7.159).⁷⁵⁶ The subsequent trenches to check this find, yielded

a few more finds. One pit (So60, which was round and about 80 cm in diameter) was found, filled with charcoal (Fig. 7.160). The charcoal was dated to 2.460 - 2.190 cal BC.⁷⁵⁷ Another pit contained another large fragment of a Late Neolithic pot beaker (So69).⁷⁵⁸ At Leersum-Middelweg, in July 2010, RAAP Archaeological Consultancy first carried out a prospective study by means of narrow test trenches. Four concentrations of Iron Age features, interpreted as farmsteads, were encountered. Additionally a flint blade, interpreted as a BBC knife was discovered in secondary context (Fig. 7.161). This was thought to be indicative for a disturbed barrow or grave from this period. The excavations of the site by BAAC in 2012

⁷⁵⁵ Van der Roest 2009, 5.

⁷⁵⁶ Norde & Van der Roest 2007, 21.

⁷⁵⁷ GrN-31236: 3830 ± 40 BP; Van der Roest 2009, 16.

⁷⁵⁸ Van der Roest 2009, 14.

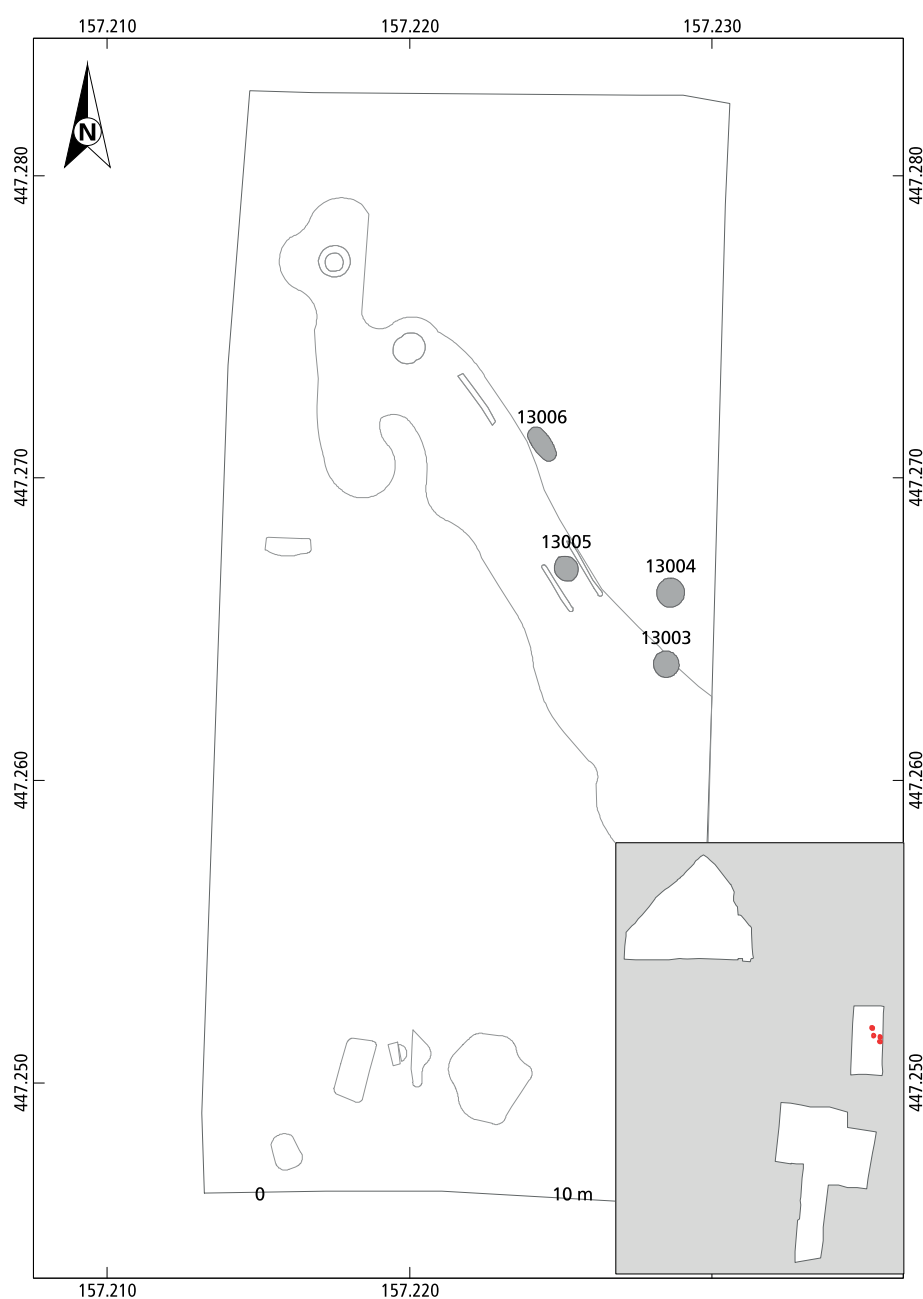


Figure 7.162 Excavation trench 13 of Leersum Middelweg with four Early Bronze Age pits (compiled after Tump 2014, 132).

demonstrated that in addition to Iron Age features, Early Bronze Age, Roman Period, and Merovingian features were present. There were a few features that were indicated as Early Bronze Age pits (Fig. 7.162). One of those contained 33 Early Bronze Age potsherds. Drenth has conducted a typological analysis of these sherds which in his view indicates that these potsherds represent a mixed BWBC – HVC assemblage. The HVC component consists of a

bi-conical pot with horizontal cord decoration on the inside of the pot, whilst the presence of the BWBC component is surmised from the vessel shapes (Fig. 7.163).

One soil sample was analysed for botanical remains but it did not yield much plant remains: a few carbonised grains, hazelnut remains, sloe and vetch.

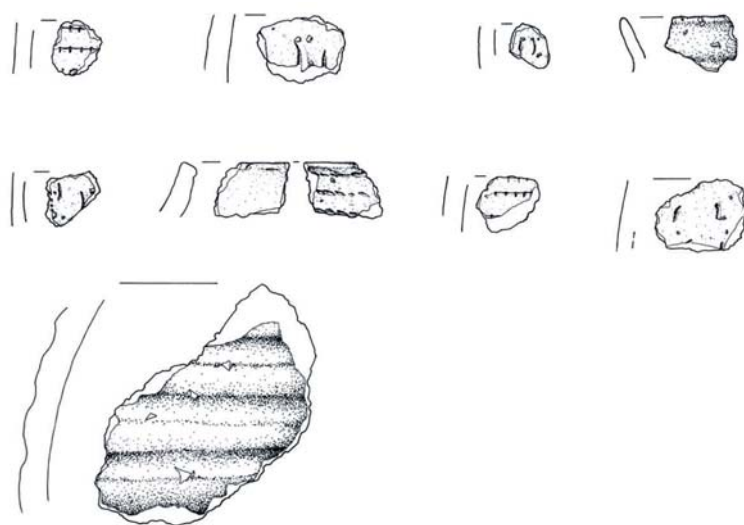


Figure 7.163 Selection of decorated Early Bronze Age potsherds from pit 13004 at Leersum – Middelweg, scale 1:3 (after Tump 2014, 115).

7.29.3 Comments

The complex at Amerongen-Bedrijventerrein Leersum seems to fit in a larger pattern of dispersed pit, filled with charcoal and associated with Bell Beaker habitation. How this should be interpreted in the framework of a settlement activities, however, is not clear.

At Leersum-Middelweg the Early Bronze component is there, but without any structure. This seems to be typical for BBC and also BWBC sites in the Netherlands in general. They frequently turn up as bycatch, but are extremely hard to target themselves.

7.30 Rhenen-Remmerden

Rhenen is located low plateau consisting of fluvio-glacial sandy sediments that washed down from the adjacent ice-pushed hills of the Utrechtse Heuvelrug.⁷⁵⁹ To the west the site is bordered by the river Rhine (Fig. 7.158).

7.30.1 Research history

Archaeological remains at the site were originally discovered in 1995 during a survey

campaign that preceded the construction of an industrial park. Prospection through auguring in an area of 15 ha, led to the discovery of archaeological indicators for sites from the Iron Age.⁷⁶⁰ A follow-up test trench campaign also revealed Late Neolithic and Bronze Age pottery.⁷⁶¹ The prehistoric remains appeared to have been preserved rather well, because they are covered by a Medieval *plaggen* soil.⁷⁶² Despite the presence of Late Neolithic to Early Bronze Age remains in the prospective phases of research, no specific research questions for these periods were postulated for the final phase of excavation. Therefore, the finds from these periods are essentially bycatch.

7.30.2 Excavation results

The features attributed to the Late Neolithic to Middle Bronze Age at the site Rhenen-Remmerden include several pits and two houses (Fig. 7.164). Both structures are dated to the end of the Early Bronze Age and the start of the Middle Bronze Age A, because features associated with the proposed structures contain pottery with barbed wire impressions and also pottery with cord impressions.⁷⁶³

Although the latter sherds are not pictured in the original publication, the description hints at an assemblage including both Late BWB elements and early HVC elements.

Two overlapping Early Bronze Age houses were recognised in a dense cluster of pits (Fig. 7.165). The proposed house plans appears to be irregular, mostly because of the uneven placement of features that are supposed to constitute the outer walls and the central row of uprights. A problem for the reliability is that the same rows of post pits are used in two different house plans. In structure 5 (Fig. 7.165 A) a more or less central row of posts is projected that is used as part of the southern wall in structure 1. However, this row is not a straight line, nor is it constituted by features of roughly equal dimensions. The pits are far too close together for roof supports, while such posts appear to be completely lacking in the eastern side of structure 1. In structure 5, such a row has been projected, but not in one line and some of these features are large and shallow pits, while others are very small. However, the northern wall of

⁷⁵⁹ De Moor 2001, 18–20.

⁷⁶⁰ Jongste 2001, 14.

⁷⁶¹ Jongste 2001, 15–16.

⁷⁶² Jongste 2001, 16.

⁷⁶³ Jongste & Kenemans 2001, 30.

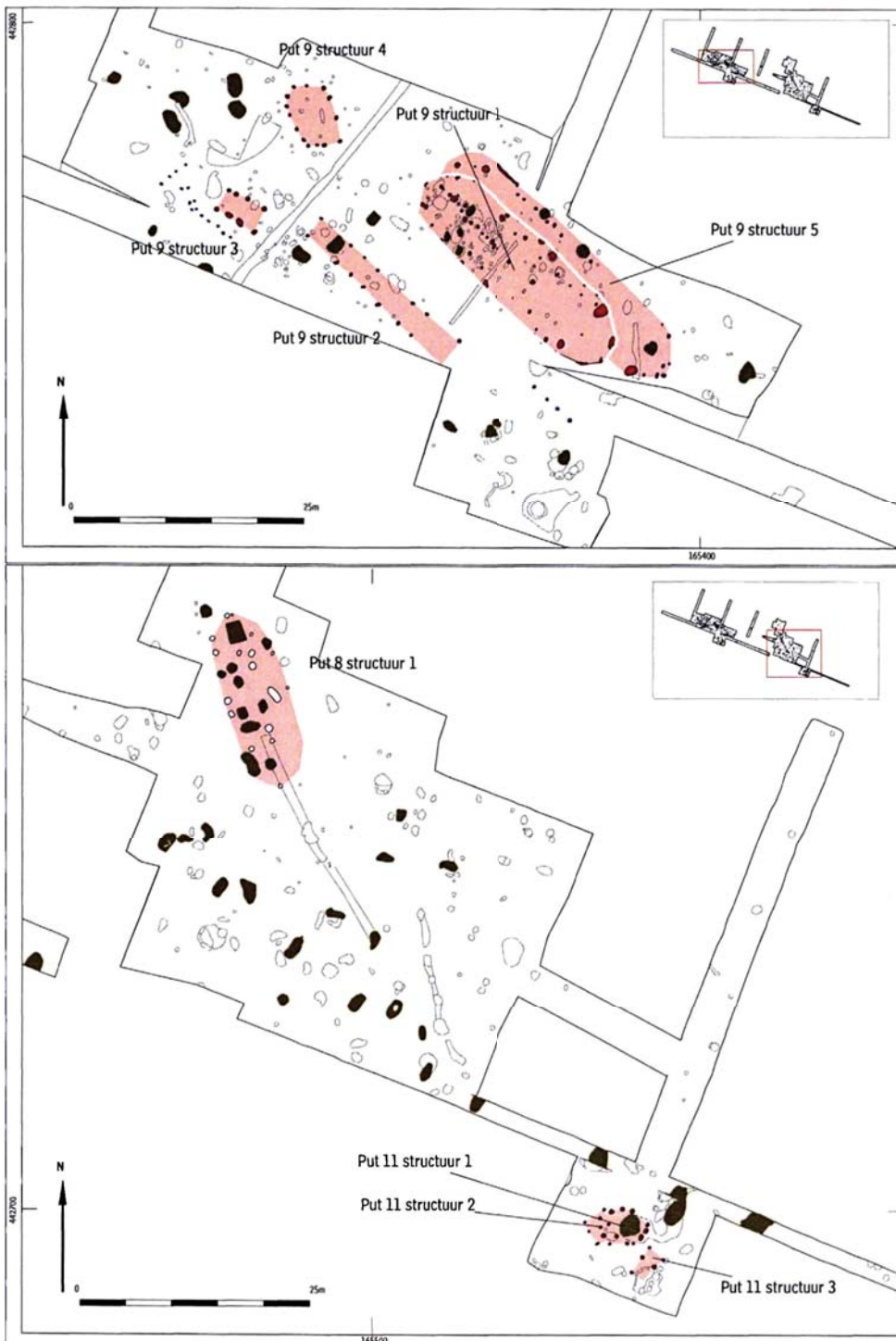


Figure 7.164 Map of the structures and features recognised at Rhenen-Remmerden (after Jongste & Kenemans 2001, 9).

structure 5 also consists of far larger features. Some of these inconsistencies are explained by the fact that both plans are overlapping and the fact that some of the features attributed to the first house are also used to reconstruct the

second house plan.⁷⁶⁴ However, we argue that there is not enough consistency in these plans to suggest a real structure. In order to support the roof of such a large structure (25-30 m long and more than 6 m wide) more consistency is

⁷⁶⁴ Jongste & Kenemans 2001, 34.

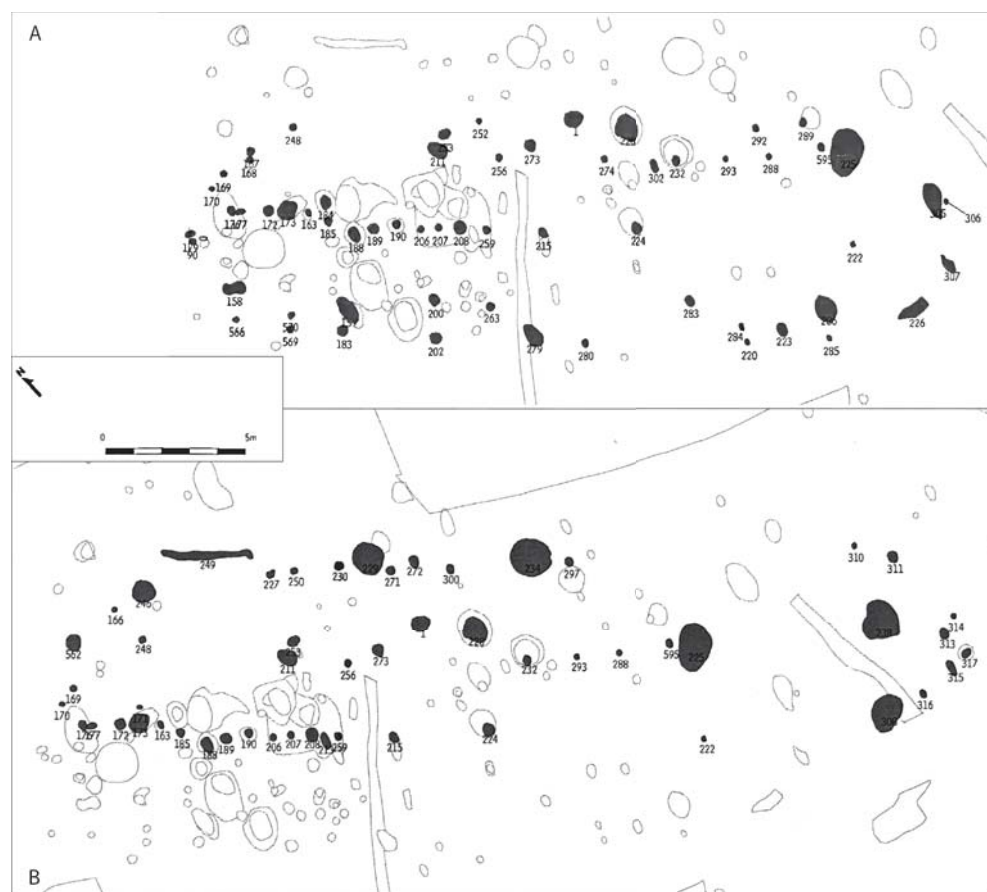


Figure 7.165 Two structures recognised at Rhenen-Remmerden; A: structure 5, B: structure 1 (after Jongste & Kenemans 2001, 28, 34).

needed. Such essential roof support elements are present in the contemporary house of Noordwijk-Bronsgest⁷⁶⁵, but are lacking in Rhenen. Our conclusion is that there is a large cluster of features that clearly indicates habitation, but as yet a clear house plan is absent.

It is not certain to what extent the pottery from the site can be treated as a single assemblage. If all pottery is contemporary, which is certainly possible, we seem to be dealing with a late BWBC assemblage with HVC elements (Fig. 7.166).⁷⁶⁶ The large vessel found at the site (Fig. 7.166E) is a good example of a pot that would classify as a HVC pot on account of the cord decoration on the neck and the typical rim shape.⁷⁶⁷ Also, the decoration on the rim is typical for early HVC pottery. Furthermore, the vessel is decorated with impressions of reed, or more likely bird bone. It is a pity that the provenance of this pot in the excavation is not

indicated in the excavation report. Vessel D (Fig. 7.166D) combines cord decorations with barbed wire decoration. A typical Early Bronze Age–Middle Bronze Age A flint arrowhead was found in a pit also said to contain early HVC pottery (Fig. 7.166F).

7.30.3 Comments

To conclude, the archaeological material of this site appears to be restricted to the transitional phase between the Early Bronze Age and the Middle Bronze Age A. In Chapter 8 we, argue that this is best indicated as the last phase of the Early Bronze Age. It should be dated somewhere around 1700 cal BC, though a precise date cannot be given.

⁷⁶⁵ Jongste *et al.* 2001.

⁷⁶⁶ Cf. Section 7.7 Schokland – P14; Ten Anscher 2012.

⁷⁶⁷ Bloo *et al.* 2001, 41.

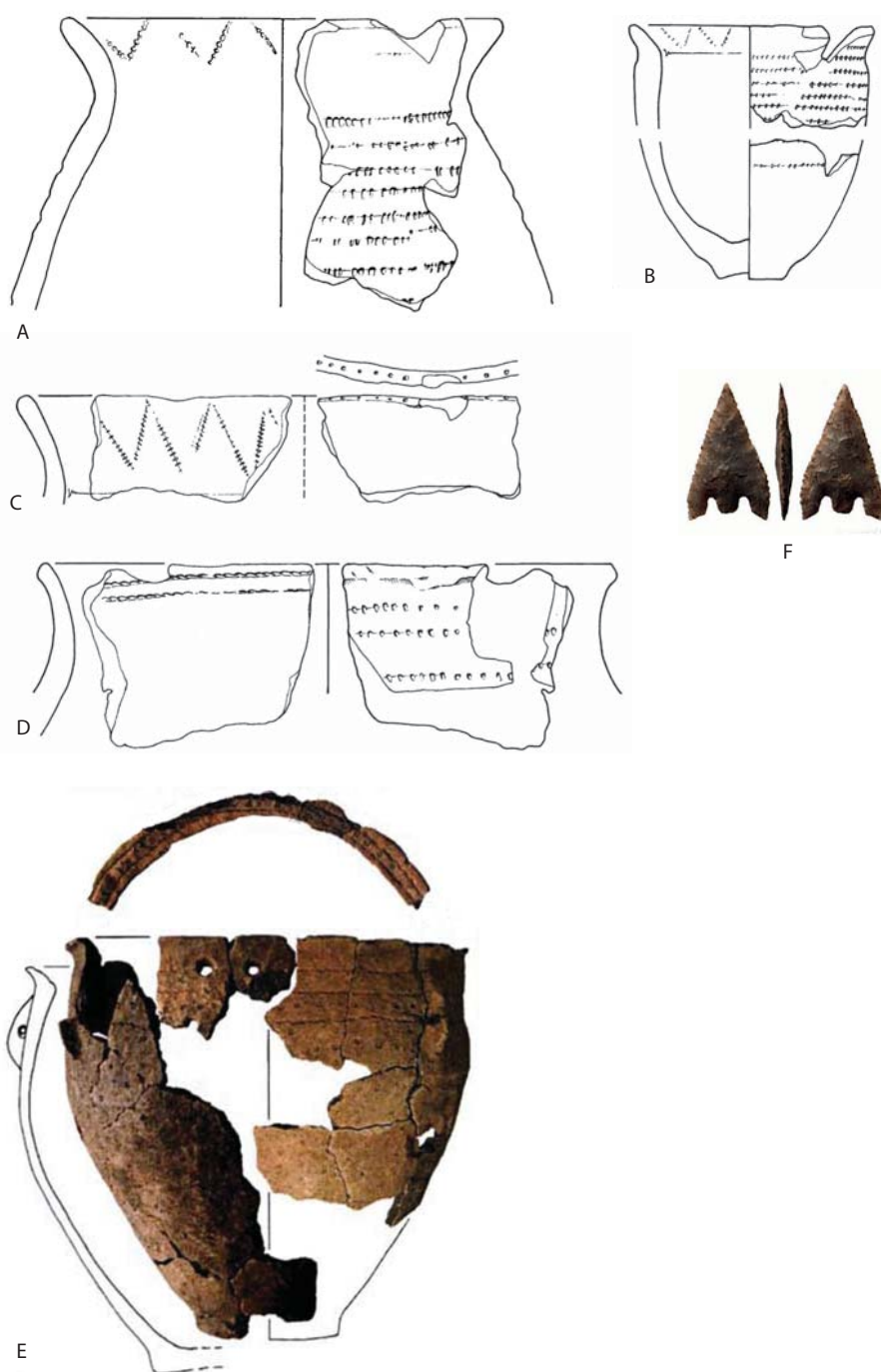


Figure 7.166 A, B, C, D: BWBC pots, scale 1:3; E: Hilversum pot decorated with cord impressions on the neck and the rim, and with round (bird bone?) impressions all over, scale 1:5; F: Early Bronze Age arrowhead, scale 1:2 (after Jongste 2001, 12, 37, 42).

7.31 Rhenen-Fietspad N225

Rhenen-Fietspad N225 is situated on the flanks of the Utrechtse Heuvelrug bordering the river valley of Rhine (Fig. 7.158).

7.31.1 Research history

The municipality of Rhenen planned a bicycle road along the N225 provincial road. Therefore they committed RAAP bv to excavate a number of prospective test trenches. In all eight different find locations were registered.⁷⁶⁸

7.31.2 Excavation results

At find location 5, a special deposition was excavated. The remains of four pot beakers were found in one pit. The pit (s61) was 110 x 60 cm, was still 46 cm deep, and had a brown-

grey fill. When it became clear that they were dealing with a deposition, the excavators lifted the fill in one block in order to excavate it under lab conditions.⁷⁶⁹ This way a good insight was obtained in the nature of the deposition. During the lab excavation the cluster of potsherds was carefully documented. The assemblage of sherds appeared to have been carefully constructed upon deposition.⁷⁷⁰ The bottom of one vessel had been broken off, and placed on a 'fan' of three layers of sherds (Fig. 7.167). All except one of these sherds belonged to the same vessel, and were placed with their decoration facing down. The only sherd belonging to a different pot beaker was placed with its decoration faced upwards. Another single sherd was placed within the bottom that sat atop the fan of sherds. This sherd was also deposited with its decoration facing downwards, and belonged to the same pot as the bottom in which it was placed. Within the same feature, sherds belonging to two more pot beakers were found, although their exact place and relationship with the above described cluster of sherds is uncertain. Furthermore, the fill of the pit contained many pebbles, but that would be normal in these soils. A number of

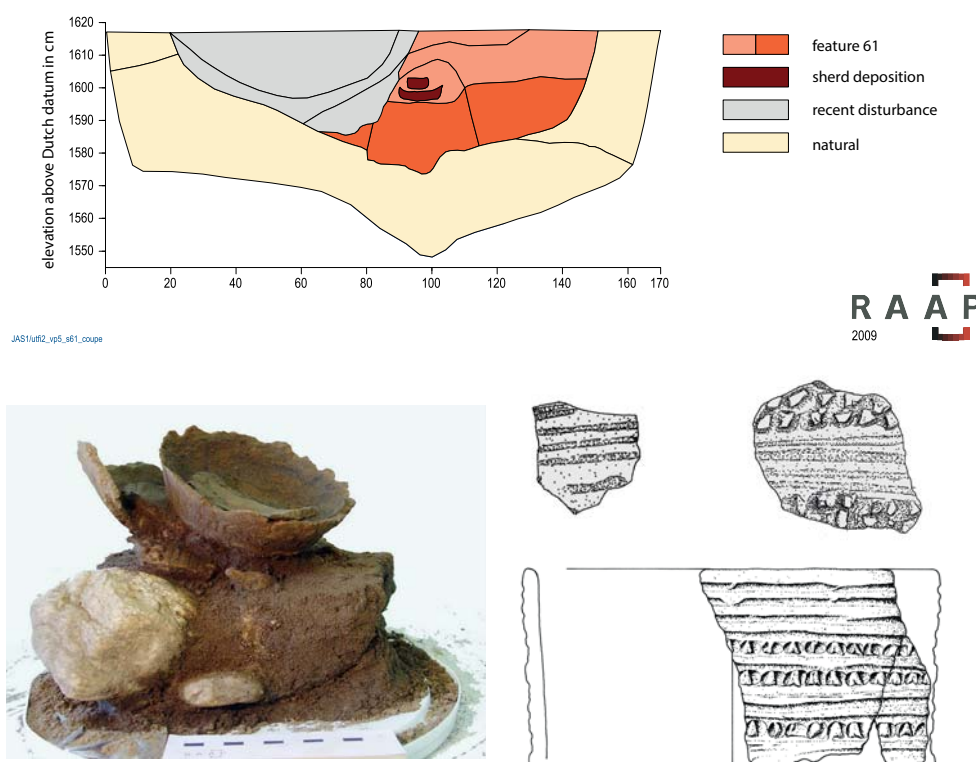


Figure 7.167 A. section through the deposition pit. B. the deposition excavated in the lab; C. some of the sherds, scale 1:3 (compiled from Schute 2009, 67, 69, 70, 71).

⁷⁶⁸ Schute 2009, 5.

⁷⁶⁹ Schute 2009, 66.

⁷⁷⁰ Schute 2009, 67-69

large pebbles, however, appear to have formed a kind of platform on which the potsherds were laid down.⁷⁷¹ Several samples were taken, but these have not been analysed since ‘that would have surpassed the goal of the test trench excavation’ and are still stored in the provincial depot.⁷⁷²

7.31.3 Comments

The gain of this excavation, is that the field archaeologist and the advisor of the Municipality recognised the find for what it was and decided to lift it and excavate it in the lab. Many questions have been left open, but it is one of the very few examples of a carefully documented deposition of this kind.



Figure 7.168 Impression of the broken stones found in a series of pits (from Hermesen & Heijting 2013, 49).

7.32 Wageningen-Nudepark

The site Wageningen-Nudepark is situated in the valley of the river Rhine (Fig. 7.158) on meanderbelt deposits (*De Herveldse stroomgordel*).⁷⁷³

7.32.1 Research history

A desk-based research and an auguring campaign in 2001 had indicated that possible settlement remains from the Late Neolithic to the Roman Period were present in the area. Test trenches were subsequently excavated in 2012, which more or less confirmed the earlier observations.

7.32.2 Excavation results

Neolithic remains eventually were restricted to a few pits (S22, S23 and S52) with a flat bottom. In this pits a large number of broken stones, charcoal and one beaker sherd were found. In all about 17 kilo stone material was present in those pits (Fig. 7.168). The stones were all broken and had been heated.⁷⁷⁴ A charcoal sample was dated to 2290-2140 cal BC.⁷⁷⁵

7.32.3 Comments

This site was chosen for a summary because it fits a pattern of pits with a flat bottom and filled with broken stones and charcoal. Probably the stones were broken as a result heating.

7.33 Heteren-Uilenburg

The Heteren-Uilenburg site is located on the edge of a crevasse splay⁷⁷⁶ and is situated near a channel of the river Rhine (Fig. 7.158).⁷⁷⁷ The site consists of several stratigraphically separated layers that yield archaeological finds and features from both the Late Neolithic and Bronze Age.⁷⁷⁸

7.33.1 Research history

Prospective research of the site included a 400 meter long trial trench dug by the Cultural Heritage Agency of the Netherlands in 1983. This trial trench did not lead to the discovery of prehistoric finds and features, but resulted in the area being recognised as an archaeological monument because of the Roman settlement that was present. In 1998, when plans for the

⁷⁷¹ Schute 2009, 72.

⁷⁷² Schute 2009, 72.

⁷⁷³ Hermesen & Heijting 2013, 11.

⁷⁷⁴ Hermesen & Heijting 2013, 49.

⁷⁷⁵ Beta-34588: 3790 ± 30 BP.

⁷⁷⁶ Cf. Section 7.1.1.

⁷⁷⁷ Van Zijverden & Bouman 2010, 23.

⁷⁷⁸ Van Zijverden & Bouman 2010, 19-26.



construction of the motorway N837 were first drawn up, the area was further prospected by auguring⁷⁷⁹ and trial trenches.⁷⁸⁰ The Roman site was delimited during the auguring campaign, but the subsequent trial trench campaign yielded Late Neolithic or Bronze Age features in addition to Roman features. These features included pits, ditches and postholes containing Early to Middle Bronze Age pottery and a Late Neolithic Bell Beaker sherd.

7.33.2 Excavation results

The site was thought to contain two stratigraphically separated feature layers, one with Late Neolithic to Bronze Age features and one with Roman Period features. These layers were to be excavated separately. This meant that finds were to be collected in 1 × 1 m squares and that 10 % of the occupation layer was to be sieved.⁷⁸¹ However, the additional auguring campaign executed by Van Zijverden and Bouman concluded that an intact occupational (find) layer was absent.⁷⁸² They noted that instead, the find layer might originate from activities that took place at the limits of a settlement. These findings caused to abandon a strategy focused on excavating these layers. In order to check whether this change in strategy was right, several trenches were dug down to the originally identified level, but an occupation layer was indeed found to be lacking.⁷⁸³

Even though an occupation layer was lacking, two separate clusters of Late Neolithic, Early and Middle Bronze Age pits were found (Fig. 7.169). Besides pottery, the pits also yielded stones and animal remains.⁷⁸⁴ Even though not all of the pits contained finds, these were comparable in shape and colour and therefore they were interpreted as being roughly contemporaneous. The pits were either round or oval and had a rather rectangular shape. Their steep cuts led the excavators to believe that they might have been used as storage pits, possibly supported by wooden linings.⁷⁸⁵ Apart from pottery, many pits contained fire cracked stones. These stone

Figure 7.169 Clusters of pits at the site Heteren-Uilenburg indicated on the overview of features in purple (from Hazen & Roessingh 2010, 34).

were interpreted as the remains of cooking stones. The excavators suggest they may have been discarded by the inhabitants of a nearby settlement. Consequently, the pit clusters are interpreted as located in the periphery of the settlement.

The pottery is discussed in some detail in the report.⁷⁸⁶ Apparently 94 Bell Beaker sherds were collected in trenches 24 and 25, but only two of these sherds could be described as decorated with a dented spatula and all others were too small and fragmented to even measure the wall thickness or determine the place of the sherds in the pot.⁷⁸⁷ The same material was not found in the pit clusters.

Barbed Wire Beaker pottery is absent at the site, but still some of the material is interpreted as Early Bronze Age finds. The pottery is described as tempered with quartz and decorated with plastic decorations ('warts') made with the finger tips (Fig. 7.170).⁷⁸⁸ The material is apparently very fragmented, so only very few diagnostic sherds are presented. There is also one sherd with cord impressions, which is interpreted as an Early Hilversum sherd.

The animal remains from the site were obtained by sieving the contents of some of the Bronze Age pits in order to get an impression of their function. The faunal assemblage includes remains from red deer, cattle, sheep or goat and pig, but also from fish and amphibians.⁷⁸⁹ None of the ¹⁴C dates presented do actually indicate an Early Bronze Age or a Middle Bronze Age A date (Table 7.14).

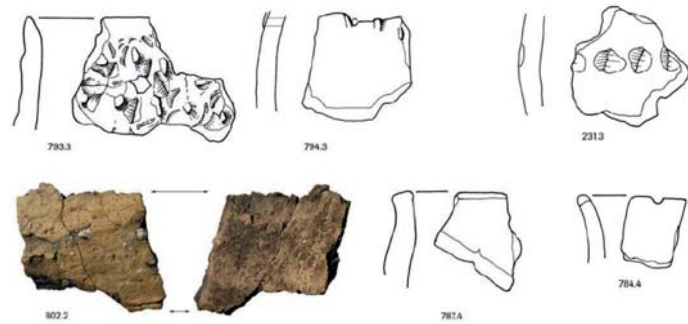


Figure 7.170 Pottery from Heteren-Uilenburg, scale 1:3 (after Van der Linden, Bloo & Besuijen 2010, 72).

7.33.3 Comments

The Bronze Age remains at the site of Heteren-Uilenburg derive from two clusters of pits. In sum, the evidence for an Early Bronze Age date is not clear, especially because four of the pits containing Early Bronze Age sherds showed a comparable dating range between 1600 and 1450 cal BC. Since most of the pots sherds were too small to provide a more precise date than 'Bronze Age', the actual dating of the whole complex remains vague. The pits could indeed represent a special activity area on the fringes of a settlement, but we do not agree with the storage interpretation. If these pits were indeed used for storage, then the question is: storage of what exactly? The pits contained mostly fire cracked stones, so it is more plausible to suggest a function that required heated stones. The pottery in these pits may not belong to the primary context. The mix of types and the mix in

Table 7.14 ¹⁴C dates of some of the pits at Heteren-Uilenberg, recalibrated with Calib 7 Feb 2016 (data after Blom & Roessingh 2010).

| Lab code | Date BP | Context | Material | Calibrated range BC | 2 sigma |
|------------------------|--------------|-----------------|----------|---------------------|---------|
| Suerc 24770 (GU-19107) | 3225 ± 35 BP | vnr 796, pit 03 | charcoal | 1609 - 1579 | 0.087 |
| | | | | 1563 - 1427 | 0.913 |
| Suerc 24772 (GU-19109) | 3205 ± 35 BP | vnr 76, pit 04 | charcoal | 1601 - 1585 | 0.023 |
| | | | | 1542 - 1540 | 0.001 |
| | | | | 1534 - 1411 | 0.976 |
| Suerc 24885 (GU-19112) | 3185 ± 30 BP | vnr 222, pit 09 | bone | 1507 - 1411 | 1.000 |
| Suerc 24884 (GU-19111) | 3260 ± 30 BP | vnr 930, pit 20 | bone | 1616 - 1493 | 0.923 |
| | | | | 1481 - 1454 | 0.077 |

⁷⁷⁹ Thanos 1998.

⁷⁸⁰ Hoegen 2007; 2008.

⁷⁸¹ Mietes & Jongste 2008, 17.

⁷⁸² Blom & Roessingh 2010, 26.

⁷⁸³ Blom & Roessingh 2010, 15.

⁷⁸⁴ Blom & Roessingh 2010, 32.

⁷⁸⁵ Blom & Roessingh 2010, 39.

⁷⁸⁶ Van der Linden, Bloo & Besuijen 2010,

69-72.

⁷⁸⁷ Van der Linden 2010, 69.

⁷⁸⁸ Van der Linden 2010, 72.

⁷⁸⁹ Van Dijk 2010, 124.

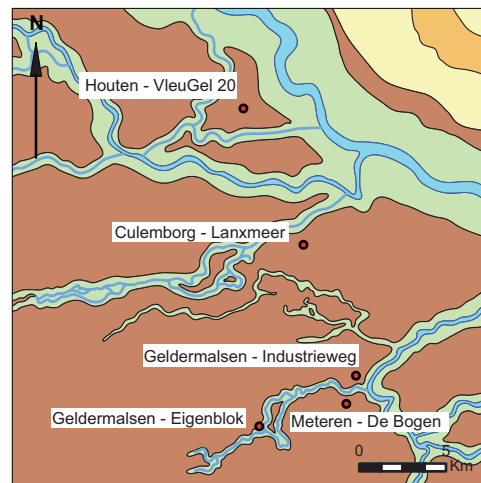


Figure 7.171 Location of Culemborg and Geldermalsen on the paleogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

^{14}C dates probably indicates that the pits were in use during the Middle Bronze Age B, rather than in the Early Bronze Age. The heavily fragmented and weathered pots herds probably were weathered and fragmented when they entered the pits, because they had been lying around already for a considerable amount of time. Our conclusion is that the early material indeed indicates habitation in the Early Bronze Age, but that the pits cannot be connected to that period. The sherds were already present at the site when the pits were dug.

7.34 Culemborg-Lanxmeer

The site is located on a fossil meander belt (Schoonrewoerdse stroomrug) in the Rhine-Meuse basin (Fig. 7.171).

7.34.1 Research history

The Municipality of Culemborg had selected the Lanxmeer site for soil sanitation on account of its high levels of pollution. These activities would disturb any archaeological sites in the area, warranting prospective archaeological research. Subsequent auguring led to the detection of several sites dating to the late Neolithic to the Roman Period. The site discussed here (site B)



Figure 7.172 Sherd decorated with a hollow impressions and one decorated with a barbed wire stamp (compiled after Huijs in't Veld *et al.* 2004, 27).

was expected to be a Bronze Age or Iron Age site.⁷⁹⁰ The excavation of the site was carried out simultaneously with the soil sanitation.⁷⁹¹

7.34.2 Excavation results

The site was excavated in four trenches of varying size, covering about 40 x 60 m. The conservation was good thanks to a clay layer covering the features. In all, 92 features were recovered. Amongst these features was also a supposed hearth. This feature was dug into a sandy outcrop in the subsoil and was surrounded by Early Bronze Age pottery.⁷⁹² This sandy layer was, according to the excavator, probably present in the whole excavation trench at a deeper level, but it had not been excavated.⁷⁹³ Therefore only a poor sample of the pottery and features from this period may have been preserved. Charcoal from the pit was dated between 1947 and 1779 cal BC.⁷⁹⁴

A few pits contained pottery fragments of BWB material. The Early Bronze Age pottery was decorated with BW impressions and hollow impressions of a stamp of some kind (Fig. 7.172). These decorations are often thought to have been made with a reed or a bird bone. In the latter case also a small raised circle should be visible in the middle of the impression, but that is not the case here. This decoration more often is found in BWB context, for instance

⁷⁹⁰ Huis in't Veld *et al.* 2004, 7.

⁷⁹¹ Huis in't Veld *et al.* 2004, 3.

⁷⁹² Huis in't Veld *et al.* 2004, 11.

⁷⁹³ Huis in't Veld *et al.* 2004, 11.

⁷⁹⁴ GrA-27104: 3555 ± 40 BP; Huis in't Veld *et al.* 2004, 13.

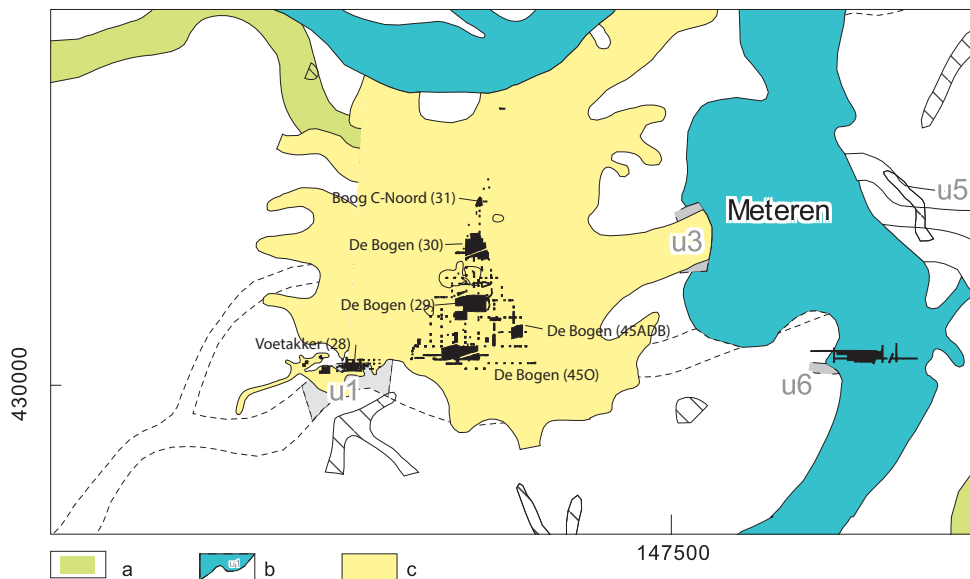


Figure 7.173 Fluvial systems in the Meteren-De Bogen region that had been active prior to the Late Neolithic and Early Bronze Age occupation on the crevasse splay deposits. a: fossil fluvial channels, b: active fluvial system, c: crevasse deposits, d: excavation trenches (compiled after Arnoldussen 2008 Appendix III, 61; Van Zijverden 2002, fig. 2.13c)

also at Zwaagdijk-Noorderboekert.⁷⁹⁵ One soil sample from the pit was analysed for botanical material, but without results.⁷⁹⁶

7.34.3 Comments

The complex was selected for presentation because of the well dated association of BWB pottery and decoration with hollow impressions, and because of the pit filled with charcoal. The report does not show any images of the features and photographs of only two finds. Many opportunities have been missed during fieldwork and in the report, or so it seems.

7.35 Meteren-De Bogen

Meteren-De Bogen, Eigenblok, Heteren, Geldermalsen, and several other sites excavated in this area are generally situated on fossil stream ridges, levees, and crevasses (Fig. 7.170). Conservation circumstances in these contexts are very good, which is why many of these sites yielded important data.

7.35.1 Research history

Meteren-De Bogen is the catch-all term for a series of sites excavated in the framework of Betuwe railroad, (generally indicated as the 'Betuweroute'). The Betuweroute sites were investigated between 1992 and 1999 as part of the railway construction through the Betuwe area. This construction of a freight railway connecting the Rotterdam harbour area with the Rhineland hinterlands was to disturb many archaeological sites, warranting large scale excavations. The first phase of research, executed between 1992 and 1994, involved field walking and auguring and readily attested the presence of well-preserved settlement sites. This result was underlined by the 1996 trial trench campaign, when intact vegetation horizons were discovered in several of the trenches. Among the many sites that were discovered, six were recognised as Middle Bronze Age sites.⁷⁹⁷ These sites have been excavated intensively and have subsequently been published as one of the first (pilot) projects of development-led archaeology in the Netherlands. The excavations were rigorously planned and directed by a team of archaeologists residing in the offices of ProRail, the railroad company

⁷⁹⁵ Personal observation H. Fokkens, 2015.

⁷⁹⁶ Huis in't Veld *et al.* 2004, 42.

⁷⁹⁷ Arnoldussen 2008, appendix II, 29.

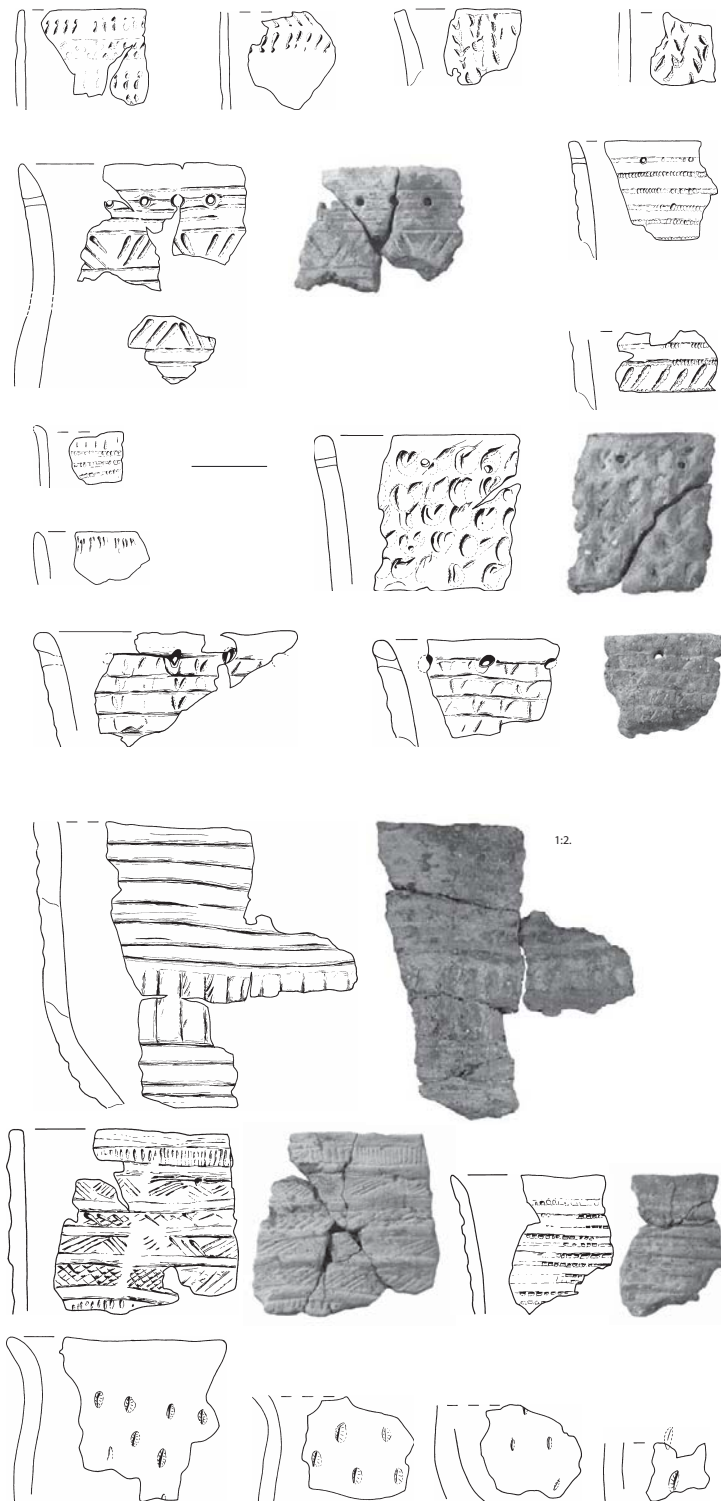


Figure 7.174 Meteren Boog C Noord Bell Beaker pottery, scale 1:3 (compiled after Schoneveld & Gehasse 2001, 49).

building the Betuwe rail road. The *Projectbureau Archeologie in de Betuweroute* under direction of B. Goudzwaard constructed the research designs and specifications, directed excavations, made decisions on behalf of the developer and also edited the resulting publications.

Since these Betuweroute excavations were carried out by different parties, a synthesis of the excavations was lacking. That synthesis eventually was written in the framework of the Malta harvest programme as a PhD thesis by Arnoldussen.⁷⁹⁸ The summary presented here draws heavily from the work done by Arnoldussen, especially because he has evaluated the numerous claims for Early Bronze Ages houses. The presentation of these sites in the present volume is limited; we refer to Arnoldussen's work for a more detailed analysis. Within the area, several excavations were performed, leading to three different publications (Fig.7.173).⁷⁹⁹ This short summary discusses these sites in combination. For a detailed discussion we refer to the work by Arnoldussen.⁸⁰⁰

The oldest Late Neolithic finds at the De Bogen sites were made during auguring campaigns, and consist of sherds with cord impressions, which implies that they are probably Late Neolithic A beakers. However, comparable material was not found during any of the excavations. Sherds of Bell Beakers, pot beakers, Barbed Wire Beakers and Hilversum pottery have been found during the excavation. Most of these sherds were recovered from the find layer directly above the level in which features became visible. Some sherds were found in pits or post-holes, but could not be attributed to structures.⁸⁰¹

7.35.2 Excavation results

The existence of several house plans dating to the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A at the site was proposed by the original excavators of the different sites. In his critical reflection, Arnoldussen disregards all of the proposed structures and their respective dating.⁸⁰² We refer to his careful considerations for details and we follow his conclusions here, already cited in Chapter 6. This does not imply that features from this period are absent: between the sites several pits and wells were



Figure 7.175 BBC (A), Early BWBC (B) and early HVC pottery (C) from various sites at Meteren-De Bogen, scale 1:3 (compiled after Ufkes & Bloo 2002, 323, 336, 338, 341, 342, 352)

dated to the Late Neolithic to Early Bronze Age and the sites also contain clear find material that can be attributed to these periods. Arnoldussen suggests that a large number of features which could not be dated might be part of a Late Neolithic settlement.⁸⁰³

It is impossible to discuss all finds from the De Bogen publications: the find analysis takes up more than 1000 pages of the excavation report. Here, we will only discuss the pottery in a general. Overall, the pottery is quite distinct from that of other sites. However, not that much pottery is collected from features. This means that we do not know exactly which sherds belong to what feature, which is a mayor handicap when trying to pinpoint why the pottery assemblage seems so distinctive. All material of site 28, 29, 30 and 45 is described in detail by Ufkes and Bloo,⁸⁰⁴ and that of site 31 (Boog C-Noord) by Ufkes.⁸⁰⁵ We reproduce

a selection of the published information of the ceramics, because these ceramics closely resemble those from contemporary sites discussed in this book, for instance the site Oldeboorn (Fig. 7.174, 7.175, 7.176).⁸⁰⁶ However, we do have to realise that the Meteren-De Bogen sherds are from different sites and not clearly associated with each other. They show the full range of BBC and pot beaker sherds, but it is a pity that the closed find contexts, like a pit with 19 Bell Beaker sherds, were not discussed and published as a coherent complex.

The barrow at site 45

Much has been written about the barrow at site 45. From the feature plan it is clear that there is a jumble of post pits and ditches at this location (Fig. 7.177). However, as Arnoldussen makes clear, the area was excavated in several levels and in the analysis not all of these were

⁷⁹⁸ Arnoldussen 2008. Arnoldussen was part of a team consisting of H. Fokkens, D. Fontijn, P. Jongste, L. van Beurden and W. van Zijverden in the NWO programme 'A Living Landscape. Bronze Age settlements in the Dutch river area (c. 2000-800 BC)' (Leiden University 2003-2008).

⁷⁹⁹ Meijlink & Kranendonk 2002; Schoneveld & Gehasse 2001; Milojkovic & Smits 2002.

⁸⁰⁰ Arnoldussen 2008.

⁸⁰¹ Arnoldussen 2008, Appendix III, 60-75.

⁸⁰² Arnoldussen 2008, Appendix III, 63-75.

⁸⁰³ Arnoldussen 2008, Appendix III, 64

⁸⁰⁴ Ufkes & Bloo 2002, 317-382.

⁸⁰⁵ Ufkes 2001a.

⁸⁰⁶ Cf. Section 7.8.

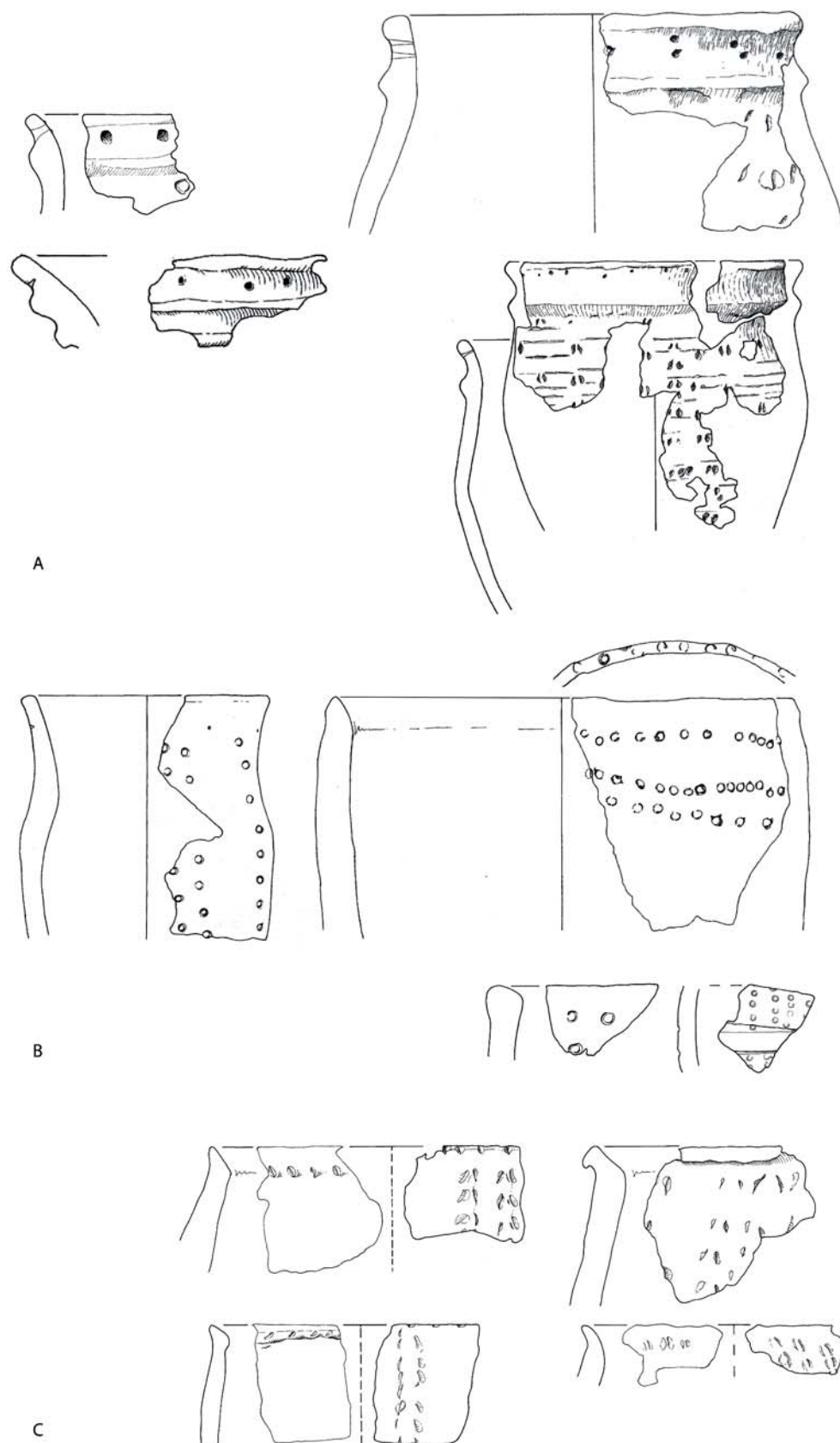


Figure 7.176 BWBC (A, B) and early HVC pottery (C) from various sites at Meteren-De Bogen, scale 1:3 (compiled after Ufkes & Bloo 2001, 341, 342, 343, 344, 350, 352)

kept separate.⁸⁰⁷ The problem with this ‘barrow’ is that it was not much more than a natural elevation at which many activities had taken place over several hundreds of years. Also, this barrow was not immediately recognised for what it was, and adequate documentation started at a late moment.

After careful analysis of the data and the dates, and after discussion with the excavator (B. Meijlink), Bourgeois and Fontijn have published a re-analysis of the barrow that we follow here.⁸⁰⁸ In their view, a large pit at the centre of the largest ditch is the primary ritual phase of this spot. According to Robb the pit contained 19 Bell Beaker sherds, bones of cattle, pig and roe deer (total 720 g) and parts of an incomplete human foot.⁸⁰⁹ The contents of the pit are tentatively interpreted as a sacrificial deposit, because of the anomalous content: the contents encompass large bones of both domestic and hunted mammals as well as human remains.⁸¹⁰ Charcoal of a willow tree from this pit was dated to c. 2110–1880 cal BC⁸¹¹, which corroborates the assumed Late Neolithic (or Early Bronze Age) use of this area.⁸¹² Thus, the use of the pit falls within the range of the Late bell Beaker and Early Bronze Age period. The exact age of the ring ditch is unknown, but a HVC sherd was found within it. Bourgeois and Fontijn convincingly argue that grave 1, which had been interpreted as a BBC burial by Lanting, is probably a Middle Bronze Age burial, which would be in line with the date obtained from collagen of the bone of the skeleton (c. 1600–1400 cal BC).⁸¹³

7.35.3 Comments

The De Bogen sites are important, because they show the long and intensive use-life of this area. Even if the proposed house plans may have been disregarded, it is still clear that people lived here for a long time in the Late Neolithic, the Early Bronze Age and the Middle Bronze Age. Regular sedimentation probably leads to intermittent habitation, hence the need to re-arrange and rebuilt any structures over and over again, resulting in myriads of pits. It demonstrated that even in such a dynamic environment people were really committed to living in that area. In our view living in those dynamic landscapes was a conscious choice guided by the opportunities

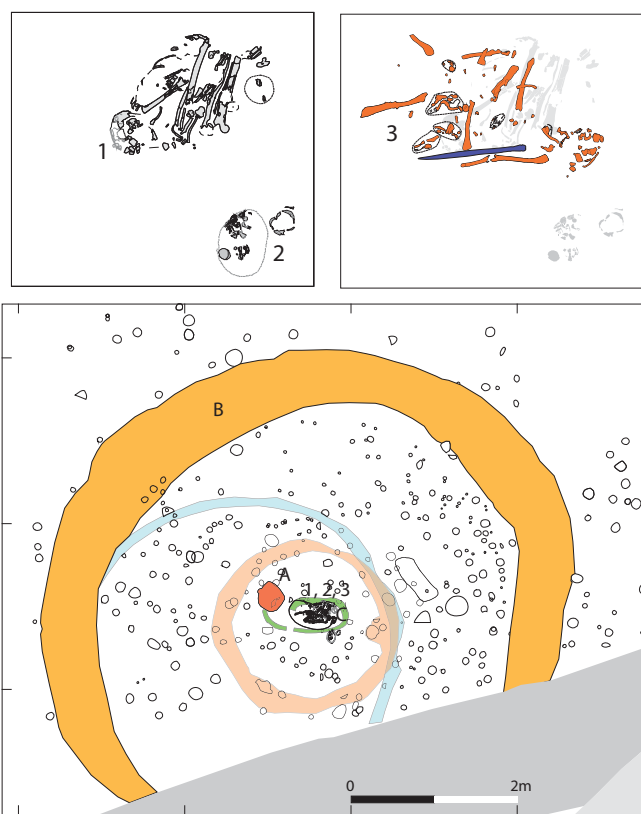


Figure 7.177 Barrow redrawn by Fokkens following the interpretation of Bourgeois & Fontijn 2008 on the basis of the drawing by Arnoldussen 2008 Appendix III, 100. First phase A: pit with BBC pottery, bones and a fragment of a human foot; second phase B : Burial 1 and 2 with an extremely flexed Middle Bronze Age burial and a inhumated child. Third phase: Late Bronze Age burial with a rapier (burial 3, rapier in blue). The other ring ditches and graves are of later date.

for a diverse subsistence basis of farming, hunting and gathering.

Also the barrow shows returns to the same burial area, even if there are sometimes centuries in between two burials. This looks like continuous use, but it is in fact much intermittent use. It demonstrates that people were aware of the ‘sacred’ nature of this location and performed burial rituals and possibly other rituals on the site. In that respect, the barrow of De Bogen is not different from small burial areas at, for instance, Hattemberbroek⁸¹⁴ and Schokland P14.⁸¹⁵ This may also demonstrate that the communities that used those sites for ages were aware of prior habitation histories and respected those.

⁸⁰⁷ Arnoldussen 2008, Appendix III.

⁸⁰⁸ Bourgeois & Fontijn 2008.

⁸⁰⁹ Robb 2002b, 684.

⁸¹⁰ Hielkema, Brokke & Meijlink 2002, 210; Hänninen & Van Haaster 2002, 726.

⁸¹¹ AA-37499: 3665 ± 60 BP, calibrated at 2 sigma; Meijlink 2002, 47.

⁸¹² Arnoldussen 2008, 63.

⁸¹³ Bourgeois & Fontijn 2008, 51.

⁸¹⁴ Cf. Section 7.11.

⁸¹⁵ Cf. Section 7.7.

7.36 Geldermalsen-Eigenblok

For the research history and the site location we refer to Section 7.35.1.

7.36.1 Excavation results

Eigenblok is located on a fossil fluvial system and on crevasse deposits (Fig. 7.178).⁸¹⁶ Active river channels were present just hundreds of meters away from the site. The surrounding areas consisted of fluvial back swamps. During

the Late Neolithic the residual channel would still have contained water, as was made clear by find materials in the top fill of the channel.⁸¹⁷ As with many sites, a Late Neolithic to Middle Bronze Age A presence was clear due to BBC pottery, BWBC pot beaker pottery and HVC pottery being found together (c. 90 sherds in all), but these ceramics were not associated with specific features or clusters of features.⁸¹⁸ The attribution of features to either of these periods is based ¹⁴C dates and typology. Settlement remains, apart from pottery and undatable features, are restricted to one tentative house plan that was not recognised by the excavators, but proposed by Arnoldussen.⁸¹⁹ He thinks that a Middle Bronze Age A house plan



Figure 7.178 Early Bronze Age to Middle Bronze Age A fluvial systems and Early Bronze Age and Middle Bronze Age A sites (massive symbols indicate certain identifications, outlined symbols uncertain identifications). Legend a: excavations, b: possibly active fluvial system, c: fossil fluvial system, d: younger fluvial systems, e: crevasse deposits, f: pottery, g: botanical remains, h: weapons (from Arnoldussen 2008, Appendix II, 31).

⁸¹⁶ Van Zijverden 2002.

⁸¹⁷ Van Zijverden 2002, 71.

⁸¹⁸ Arnoldussen 2008, appendix II, 32.

⁸¹⁹ Arnoldussen 2008, appendix II, 34-35.

may have stood in the vicinity of an Early Bronze Age barrow on site 6. However, he emphasises the tentative certainty of the proposed structure. The house plan only consists of a central line of posts (Fig. 7.179). One of the posts making up this post-line was dated between 1665-1443 cal BC, but that does not make it a Middle Bronze Age A construction. To conclude, in our view the structure proposed by Arnoldussen is not very convincing.

At site 5, two stratigraphically separate layers were present, of which the lowermost is dated to the Late Neolithic. A number of features are attributed to this period (Fig. 7.180), even though they contain very few finds. A few dated samples do indicate that Late Neolithic features are present. The circular structure at the site is argued to be a grave structure underneath or within a barrow. This structure is only 7 m wide and contains no finds, but a pit associated with this structure yielded a date between 2295 and 1635 cal BC.⁸²⁰ This is a pit with burnt clay and charcoal which, interestingly enough, resembles the pits found at Hattemerbroek and other contemporary sites discussed in this chapter. Given the find of burnt parts of the skulls of at least two individuals were found just east of the circular ditch, the excavators think there may have been a barrow that was not recognised during excavation.⁸²¹

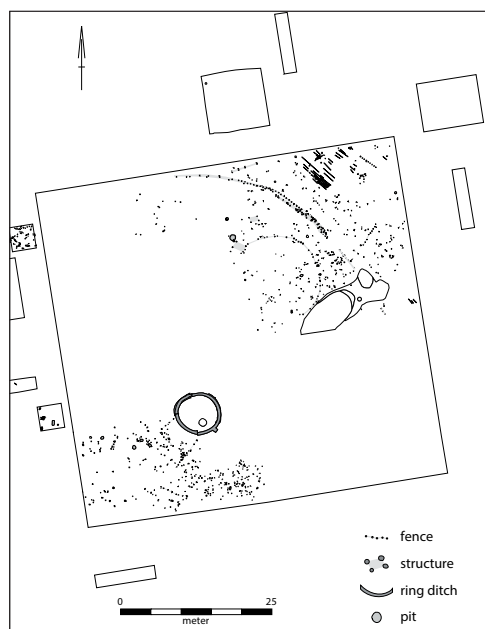


Figure 7.180 Survey of features attributed to the Late Neolithic and the Early Bronze Age (from Jongste 2002, 130).

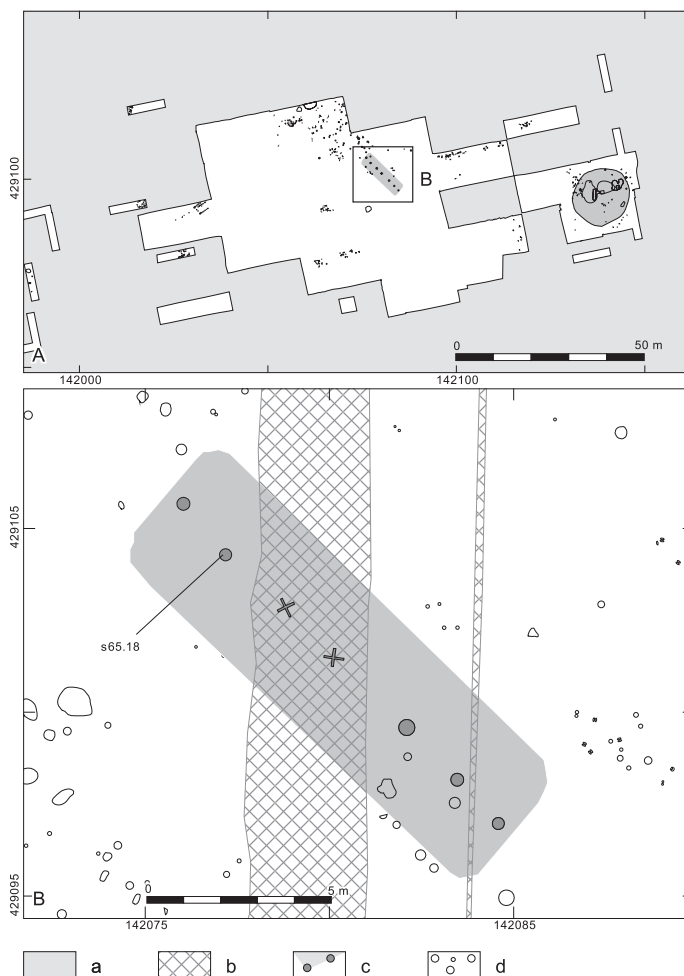


Figure 7.179 Location (A) and detailed view (B) of a tentative Middle Bronze Age-A (house) structure. The depth of the posts from northwest to southeast is 28, 27, 55, 58 and 23 cm respectively. Legend: a: not excavated, b: recently disturbed, c: features associated with structures, d: other features (from Arnoldussen 2008, Appendix II, 35).

7.36.2 Comments

The Eigenblok site was supposed to entail Middle Bronze Age A settlement remains (a house plan), but as Arnoldussen has demonstrated, this interpretation is very tentative. The remains from the site tell us little more than that the area was used during the above-mentioned period and possibly that barrows were erected on the site during prior periods.

⁸²⁰ Jongste 2002, 137.

⁸²¹ The skull fragments were discovered during the zoological analysis of bone material that had been collected as a sieve sample (Robb 2002).

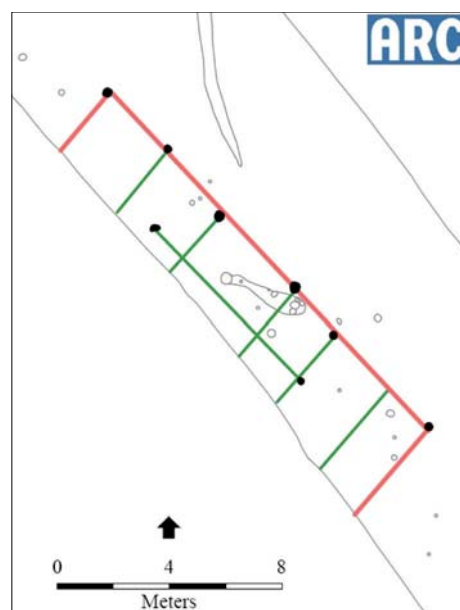


Figure 7.181 Claimed house plan form the Late Neolithic (after Eimerman & Van Malsen 2010, 11).

7.37 Geldermalsen-Industrieweg

Geldermalsen-Industrieweg is situated on meander belts in the Rhine-Meuse basin, close to the site Meteren-De Bogen (Fig. 7.171).

7.37.1 Research history

The municipality Geldermalsen had ordered a watching brief on a possible site located by auguring. The building project concerned a basin for retaining water. Any finds from the Late Neolithic to the Roman Period could be expected.⁸²²

7.37.2 Excavation results

A small trench of 8 x 47 m was excavated. Several pits were found, some of which were interpreted as the remains of a house plan (Fig. 7.181). The reconstruction on the basis of nine post pits is not convincing. A few pottery fragments of a bell beaker and a pot beaker were found in the vicinity, however, the report

does not go into detail about them.⁸²³

7.37.3 Comments

Neither the structure nor its dating are convincing in our view. We suggest that this site can best be interpreted as a cluster of dispersed pit, possibly of diverse dates. We selected it for a summary anyway because a Late Neolithic house plan was claimed and described in some detail.

7.38 Beuningen-Hogewald II

Beuningen is situated on meander belts in the Rhine-Meuse basin (Fig. 7.182).

7.38.1 Research history

In advance of the development of a housing estate (Hogewald) an excavation was carried out because prospective research by auguring had detected a potential site of the Late Bronze Age or Early Iron Age. This was confirmed by a test trench campaign later on.⁸²⁴

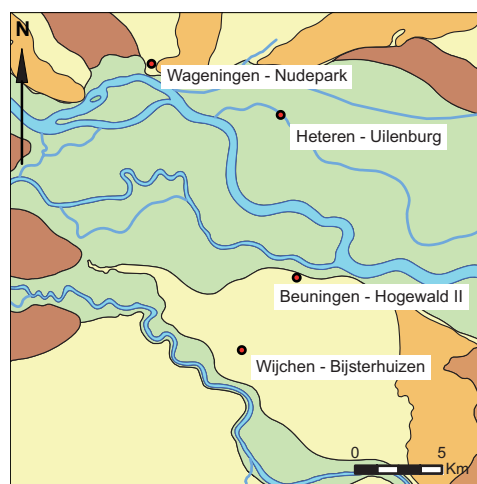


Figure 7.182 Location of Beuningen and Wijchen on the paleogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

⁸²² Eimerman & Van Malsen 2011.

⁸²³ Eimerman & Van Malsen 2011, 18.

⁸²⁴ Huijs in't veld 2006, 5.

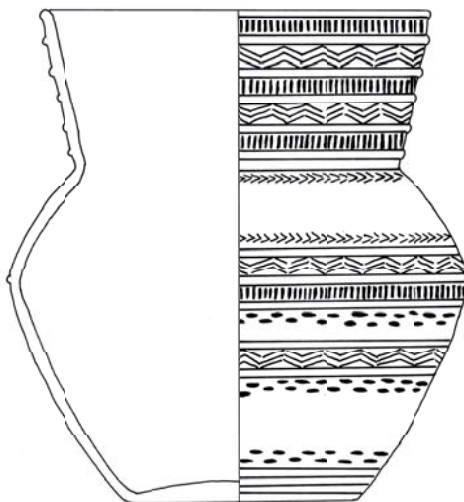


Figure 7.183 The Bell beaker when found (after Huis in't Veld 2006, 18) and a drawing of the beaker scale 1:3 (from Ufkes 2006, 58).

7.38.2 Excavation results

The excavation was about 50 x 60 m in surface. No clear features were visible that could be attributed to the Late Neolithic or the Early Bronze Age. Yet a cremation burial with a complete Bell Beaker (V148) was found (Fig. 7.183), demonstrating that features may have been present. Burnt bone was lying next to the beaker.⁸²⁵ The cremated bone was not analysed by an osteologist, but it was dated to 2291-2121 cal BC (87.3%) or 2093-2042 cal BC (0.12%).⁸²⁶

7.38.3 Comments

The site was summarised because of the beaker burial with a cremation and a beaker. The date may be rather late for a beaker with a zone decoration, but the motives and especially the neck decoration fit a later (Veluvian) style.

7.39 Wijchen-Bijsterhuizen

Wijchen is located on a row of Pleistocene river dunes in between the rivers Meuse and Waal. The site Wijchen-Bijsterhuizen was bordering a riverine back swamp area.⁸²⁷ During the Pleistocene this area had been traversed by

numerous gullies belonging to a braided river-system. The braided-river gullies, along with the gullies of Early Holocene meandering rivers, had left a fossil river valley landscape containing relatively large height differences, small lakes and swamp areas. The small river dune outcrop on which the site is located would have offered an excellent location for the exploitation of this landscape (Fig. 7.182).⁸²⁸

7.39.1 Research history

A series of field surveys near Wijchen executed in 1992 resulted in the identification of twelve sites.⁸²⁹ Several of these were threatened by the expansion of an industrial area. Therefore, these sites were tested by means of trial trenches and eventually two sites (sites 2 and 6) were excavated. The auguring and field walking campaign at site 6 had predicted an Iron Age settlement, but the excavation trenches indicated that the finds recovered during the field survey were not linked to sub-soil phenomena. Instead, one of the trenches yielded a pit containing Middle to Late Neolithic Vlaardingen-Stein group –VLC pottery.⁸³⁰

The sherds most likely belonged to the same vessel.⁸³¹ Since settlement finds dating to the Middle to Late Neolithic are rare, an excavation of the site took place in 2008. This excavation resulted in more VLC finds, but also in the discovery of three BBC graves.

⁸²⁵ Huijs in't Veld 2006, 18.

⁸²⁶ Calibration by us, in the report only the BP date was cited: 3765 ± 35 BP (GrA-28356).

⁸²⁷ Heunks 2011, 25-27.

⁸²⁸ Pers. com. W.K. van Zijverden

⁸²⁹ Scholte Lubberink & Oude Rengerink 1992.

⁸³⁰ Hermesen & Harmsen 2011, 22.

⁸³¹ Hermesen 2011, 37.

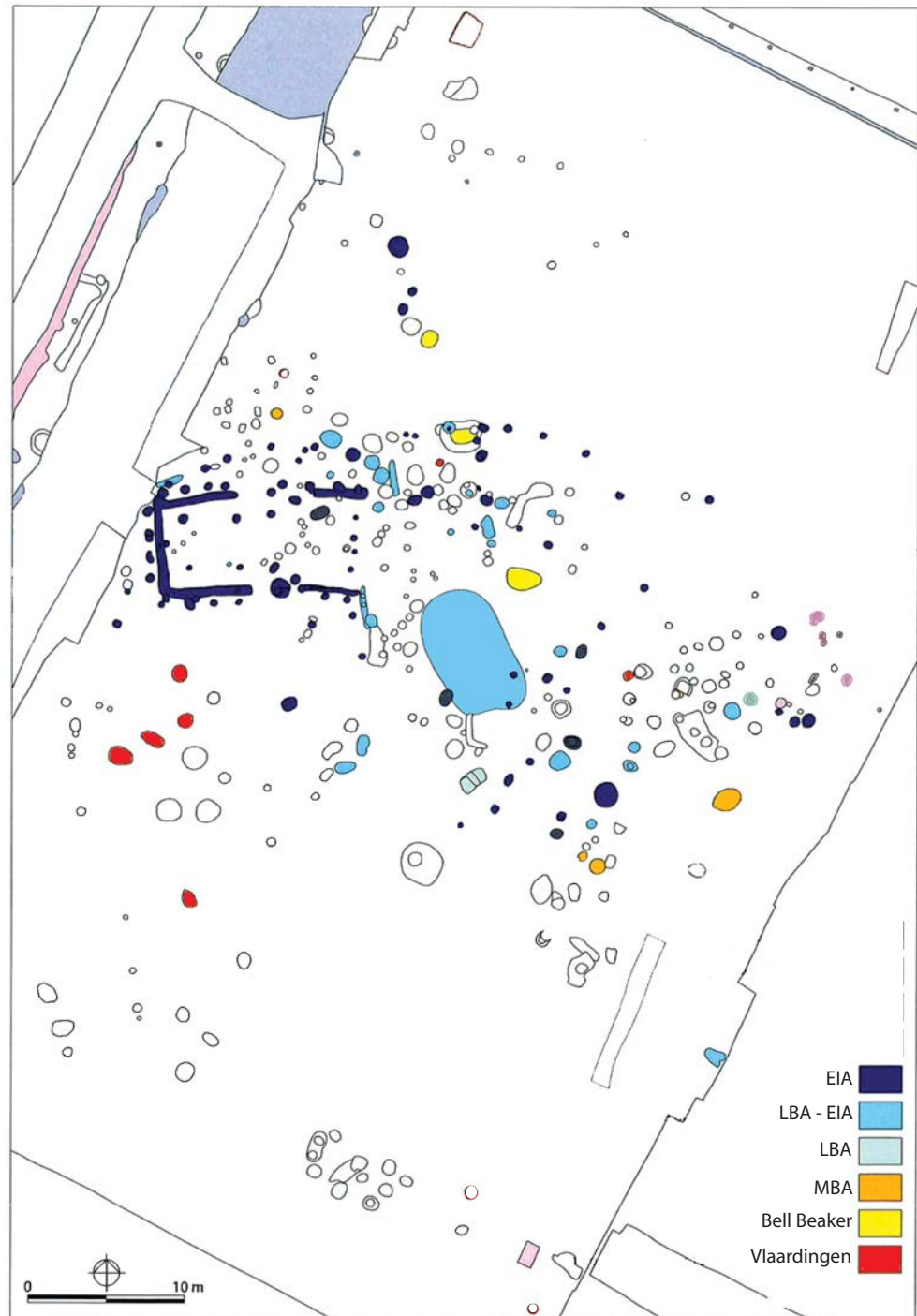


Figure 7.184 Plan of all features discovered at Wijchen-Bijsterhuizen (after Hermesen 2011, 36).

A similar complex was found at Wijchen-Sportpark Woezik-Noord. Here also a VLC pit was found with a lot of pottery and flint. In addition Bell Beaker sherds were discovered in dispersed features. For an account of those VLC finds, which date to the Neolithic B Early

Vlaardingen phase according to Drenth, we refer to the relevant site report.⁸³²

⁸³² De Koning 2010; Drenth 2010.

Table 7.15 ¹⁴C dates from Wijchen-Bijsterhuizen.

| Lab code | Date BP | Context | Material | Calibrated range BC | ± sigma |
|-------------|-----------|-----------------------|---------------|---------------------|---------|
| GrA-47111 | 4235 ± 35 | Vlaardingen pit 19.19 | bone | 2914 - 2853 | 0.569 |
| | | | | 2812 - 2744 | 0.350 |
| | | | | 2726 - 2696 | 0.081 |
| GrA-46023 | 4140 ± 40 | Vlaardingen pit 19.19 | hazelnut | 2876 - 2618 | 0.967 |
| | | | | 2608 - 2598 | 0.017 |
| | | | | 2594 - 2585 | 0.016 |
| SUERC-26372 | 3840 ± 35 | grave 3 | cremated bone | 2458 - 2413 | 0.109 |
| | | | | 2411 - 2202 | 0.891 |

7.39.2 Excavation results

Two more trenches were dug in the vicinity of the above-mentioned VLC feature in order to find out whether more finds dating to the same period would be present. Three more pits and two post holes were discovered, all located to the south-east of the pit discovered by the trial trenches (Fig. 7.184). The features not only contained pottery that could be classified as VLC pottery, but one also contained a segment of a grinding stone and multiple pieces of burnt bone.⁸³³ The bone segments originated from large to medium large mammals, the latter of which could either be sheep or goat. A sample from the skeletal remains was dated to 4235 ± 35 BP and a piece of hazelnut from the same pit was dated to 4140 ± 40 BP.⁸³⁴ When calibrated (Table 7.15), these dates indicate a habitation phase between 2880 and 2700 cal BC. Surprisingly, three Bell Beaker graves were found just 10 to 15 m from these Vlaardingen pits. The three graves are located less than 20 m away from each other (Fig. 7.183).⁸³⁵ Apart from these three grave pits, a fourth pit was found within the same cluster which might also have contained a burial,⁸³⁶ but since both skeletal remains and grave gifts from this pit are lacking, this conclusion remains tentative. All graves appear to have been flat graves that were not covered by a burial mound. The first two graves did not contain any skeletal remains. The interpretation of these pits as grave pits depends upon the associated find assemblages and the shape of the pits. They were interpreted as inhumation graves of

which the skeletal remains had decayed beyond recognition. Grave 1 is especially interesting, as a fill was recognised that represent an enclosed burial chamber or coffin comparable to those found at Schokland-P14 (Fig. 7.185A). The associated Bell Beaker was placed in an 'alcove' dug into the pit outside of this enclosed space.⁸³⁷ Such a burial chamber or coffin could not be recognised for the other two graves.

The second grave is interpreted as an inhumation, because of the size of the pit and the absence of cremated burial remains (Fig. 7.185B). The third grave yielded cremated burial remains.⁸³⁸ Analysis of the remains indicated that the age of the cremated individual lies between 20 to 40 year. However, the sex of the individual could no longer be established. These skeletal remains were dated to c. 2411-2202 cal BC (Table 7.15). Each grave was accompanied by a Bell Beaker. Grave 3 also included two small flint knives, one of which is a 'typical' Bell Beaker knife. The flint knife was analysed for traces of use-wear by K. Wentink. He concludes that the knife was used for cutting or sawing, but was retouched before being deposited in the grave.⁸³⁹

The beakers are Veluwe type Bell Beakers, though the wart-like decorations of the pot from grave 2 nor the lower part of the beaker in grave 3 (Fig. 7.186) are 'normal' on beakers in graves. The wart decoration does occur on pot beakers more often though, for instance at Oldeboorn.⁸⁴⁰ The excavation yielded a few pot beaker sherds, but much more Middle Bronze Age A pottery.⁸⁴¹ A single pit, pit 17.5, yielded c. 100 HVC sherds (Fig. 7.187). Another 100 sherds were retrieved from various other pits. The assemblage of pit 17.5 can be classified as an early HVC

⁸³³ Hermesen 2011, 38-45.

⁸³⁴ Hermesen 2011, 42.

⁸³⁵ Drenth & Hermesen 2011, 47-49.

⁸³⁶ Drenth & Hermesen 2011, 70-71.

⁸³⁷ Drenth & Hermesen 2011, 49-52.

⁸³⁸ Drenth & Hermesen 2011, 59-64.

⁸³⁹ Drenth & Hermesen 2011, 69.

⁸⁴⁰ Cf. Section 7.8.

⁸⁴¹ Drenth 2010, 135.

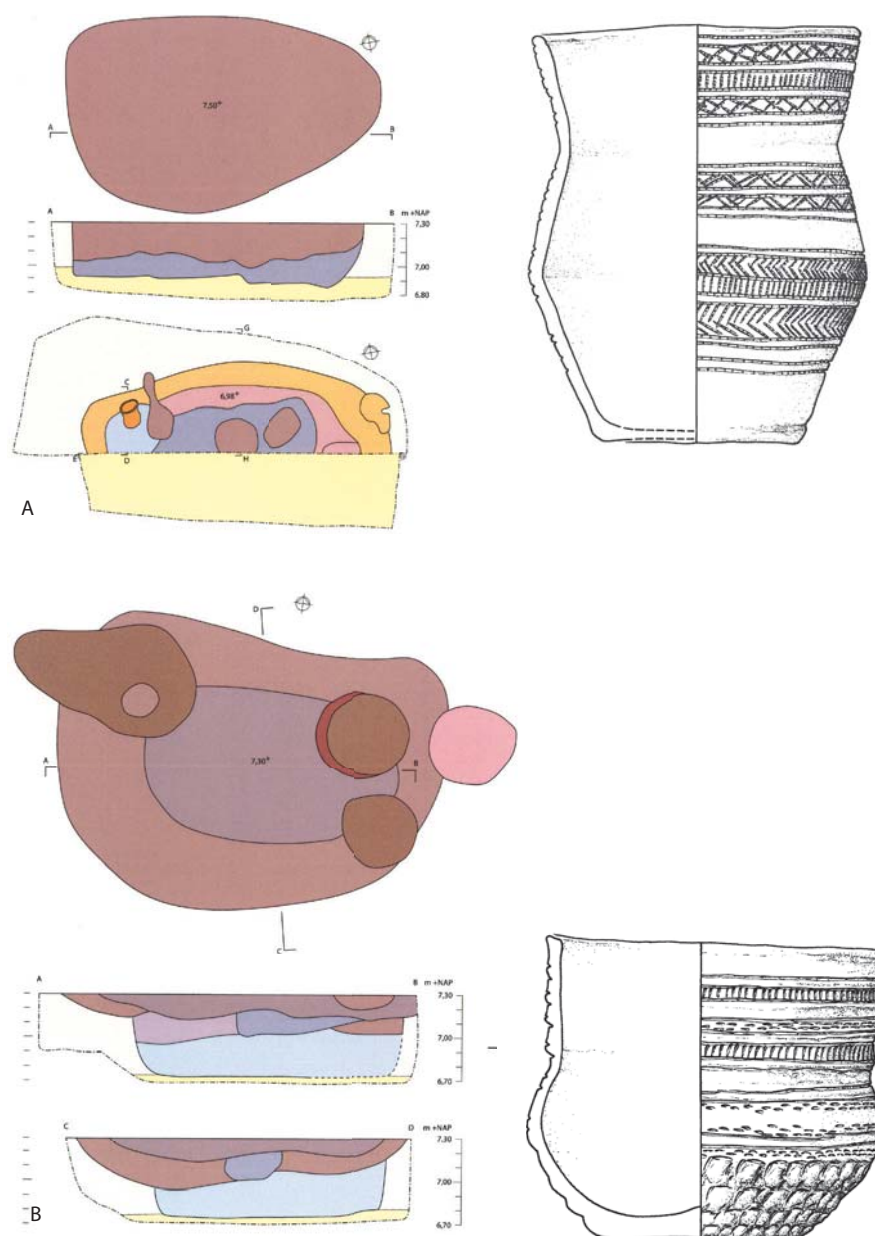


Figure 7.185 A: grave 1, beaker scale 1:3; B: Grave 2, beaker scale 1:3 (after Drenth & Hermesen 2011, 48-61).

assemblage. No barbed wire decoration is present, but several cord decorated sherds, frequent vertical decorative elements on the neck, and plastic cordons around the shoulder, generally decorated with fingernail or fingertip impressions. The absence of barbed wire decoration places the complex late in the Early Bronze Age or Early in the Middle Bronze Age, probably between 1700 and 1600 cal BC.⁸⁴²

7.39.3 Comments

The site Wijchen-Bijsterhuizen demonstrates how crucial prospective research with trial trenches is for detecting sites with dispersed features and little developed occupation layers. Field walking and auguring had only detected the Iron Age material. For that reason the site was not targeted as a potential Late Neolithic

⁸⁴² Cf. Section 8.1.5.

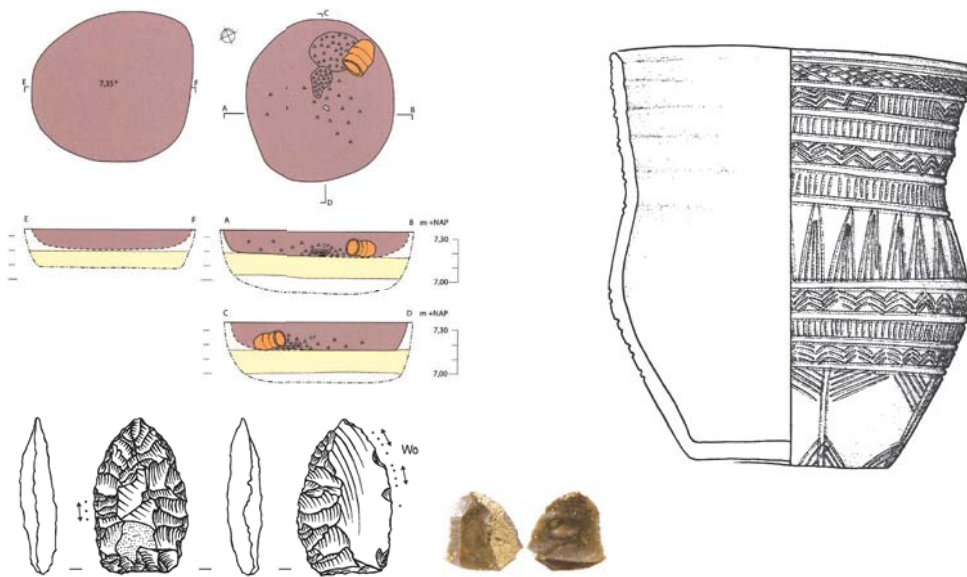


Figure 7.186 Grave 3, beaker scale 1:3, flint knives scale 1:2 (after Drenth & Hermesen 2011, 48-61).

site. Only during the next stage of the research trajectory, the trial trenches revealed the VLC pits and the final excavation also the BBC flat graves and HVC pits.

However, this does not make the site Wijchen-Bijsterhuizen less important. The small Bell Beaker cemetery has similar characteristics as the one discovered at Hattemerbroek and Schokland P14. Such graves help to solidify our understanding of small scale burial communities.

As a pottery assemblage the site is interesting because the VLC complex has no admixture of SGC material. Since the material is dated to the period between 2880 and 2700 cal BC, which probably means that this admixture had not taken place by then. In the traditional sequence this would be called the VL 2A phase of the Vlaardingen Culture.

7.40 Cuijk-Groot Heiligenberg

The site Cuijk-Groot Heiligenberg is located on top of a Pleistocene river dune. The present course of the river Meuse is situated c. 1 km to its east, and a fossil Pleistocene stream gully of the same river directly to its west (Fig. 7.188).

7.40.1 Research history

The Groot Heiligenberg research area was subjected to multiple phases of research between 1999 and 2009. The planned construction of a business park meant a disturbance of soils which, as an initial auguring campaign pointed out, had until then had been protected by a *plaggen* soil.⁸⁴³ Finds from nearby areas and the results of the auguring campaign mostly pointed at the presence of archaeological remains from the Iron Age and Roman period. These results determined the expectations during later phases of prospection. However, subsequent test trench campaigns also yielded AOO pottery, BBC pottery, BWBC pottery, and Middle Bronze Age Drakenstein pottery.⁸⁴⁴ These finds were made either in solitary pits or originated from the *plaggen* soil. No larger clusters of Late Neolithic, Early Bronze Age or

⁸⁴³ De Baere 2000, 16.

⁸⁴⁴ Ball & Arnoldussen 2001, Heirbaut 2007.

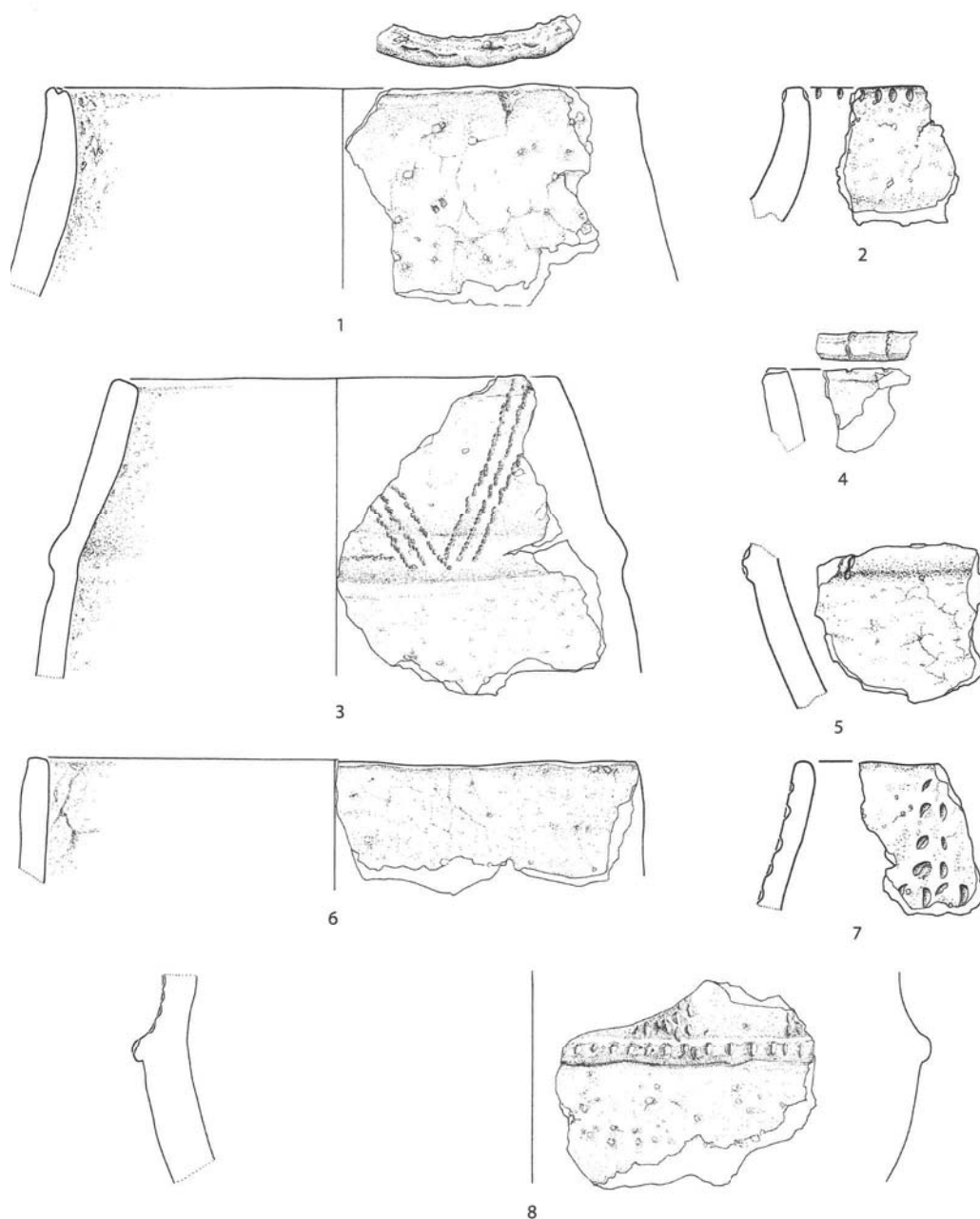


Figure 7.187 Early Hilversum pottery from pit 7.15, scale 1:3 (from Drenth & Hermesen 2011, 138-139).

Middle Bronze Age A finds or features were present at the site. In the research questions, these period were therefore not specifically targeted.

7.40.2 Excavation results

The final phase of the project included the study of a 2692 m² area of in nine trenches. These

trenches yielded no structures dating to the Late Neolithic to Middle Bronze Age A, but a pit containing material dating to the Late Neolithic B and a pit dating to the Early to Middle Bronze Age A were found (Fig. 7.189).⁸⁴⁵ Other finds from these periods at the site include a cluster of pits that most likely dates to the Middle Bronze Age B, a Late Bronze Age to Iron Age settlement and finds and features of younger age.

The pit containing the BBC material was partially cut by a younger ditch. No other Neolithic

⁸⁴⁵ Janssens 2010, 49-53.

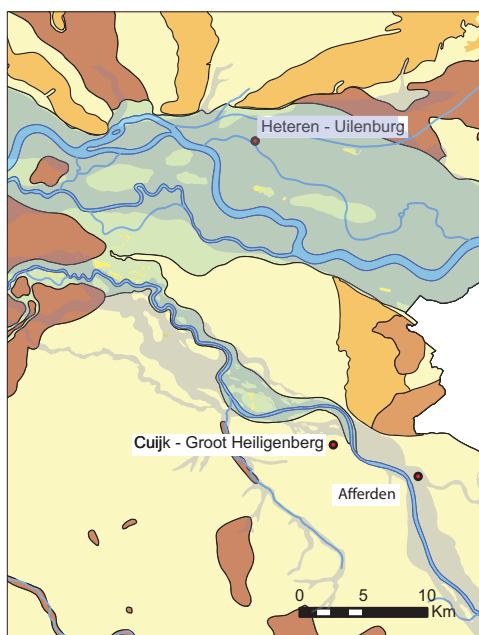


Figure 7.188 Location of Cuijk-Groot Heiligenberg and Afferden projected on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

features can be attributed to this period with any degree of certainty. The pit dating to the Early to Middle Bronze Age A is located c. 5 m south of the Neolithic pit. It contained pot sherds, flint and stones. The internal structure of the feature was clearly visible. It showed a dark brown central fill, which contained the finds and several surrounding fillings of a colour more closely resembling the soils at the site. The dark brown

colour was most likely caused by the inclusion of charcoal, which was sampled for ^{14}C dating. The complex as a whole was interpreted as a refuse pit. Whether this was indeed its primary function is highly disputable, but we indeed seem to be dealing with settlement remains. The ^{14}C sample yielded a date of 1831-1688 cal BC⁸⁴⁶, placing the pit at the end of the period in which barbed wire decoration can be found. The multiple fills of the pit are thought to represent multiple phases of use, but we see very little data to support that interpretation.

The Late Neolithic remains from the site are few. The Late Neolithic pit described above contained six sherds belonging to two vessels (Fig. 7.190A). The first of these vessels was interpreted as a bowl and exhibits decorative patterns typical of Veluwe type Bell Beakers. As a comment we would like to add that the lower part of that bowl is decorated in pot beaker style. A second vessel was represented by only one sherd, and shows paired nail impressions which are also known from pot beakers.

The Early Bronze Age finds from the pit are more informative. The pottery assemblage consists of 62 sherds from at least three vessels (Fig. 7.190).⁸⁴⁷ Decoration types include barbed wire impressions and nail impressions on the same sherd. The barbed wire decorations were placed in steep zig-zag motives inside of the rim. Nail impressions were placed on the outside at the widest part of the vessel and on top of the rim. Another sherd from the same pit shows nail impressions below an early Hilversum A2 type



Figure 7.189 Pit with a cluster of Early Bronze Age artefacts (from Janssens 2010, 52).

⁸⁴⁶ CUYGA M1: 3450 ± 30: 1879-1837 (21.4%), 1831-1688 (78.6%) calibrated at 2 sigma.

⁸⁴⁷ Janssens 2010, 71.

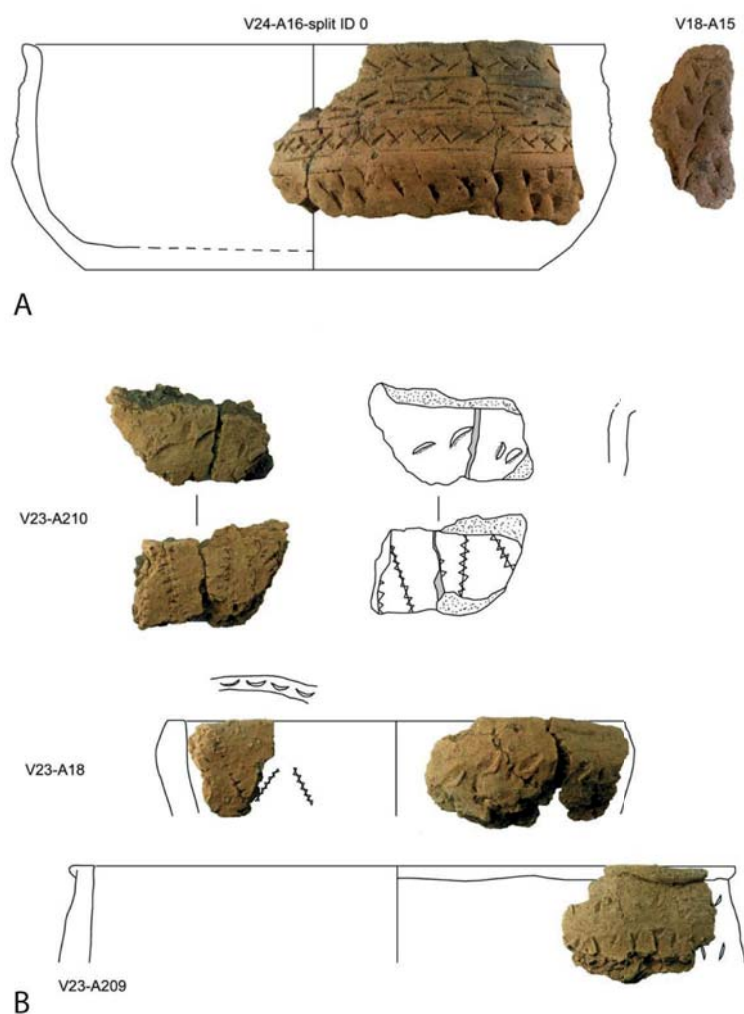


Figure 7.190 A: BBC bowl; B: BWBC pottery, scale 1:3 (from Janssens 2010, 60, 70).

rim.⁸⁴⁸ The assemblage thus combines late BWBC elements with Early Hilversum elements. The excavator notes that the base of several sherds shows a protruded foot, but these sherds are not displayed in the report. Lastly, the pit containing the barbed wire pottery also contained a fragmented cooking stone and a flint artefact.⁸⁴⁹

7.40.3 Comments

In a general sense, the results from the excavations at Cuijk-Groot Heiligenberg do not seem to be important regarding our knowledge of the Late Neolithic to Middle Bronze Age A, as it only concerns two pits. However, the occurrence of these pits fits in a wider pattern of poorly understood isolated

pits. Details regarding the function of these pits, the occurrence and appearance of settlements and the subsistence are absent at Cuijk-Groot Heiligenberg.

In addition, we should mention that at another site in Cuijk, Cuijk-Oosterweg, also a number of pits, tentatively interpreted as ovens, were recorded. In the top of these pits Bell Beaker sherds were found, and also a date is obtained that fits the period, but by far the majority of the material points at the early VLC, also ¹⁴C dates. Therefore it is assumed that the pits were part of an Early VLC occupation and that the Bell Beaker finds were part of later occupation on top of these filled-in ovens.⁸⁵⁰

7.41 Afferden-Spitsburg

Afferden is situated on Pleistocene river sediments near the river Meuse (Fig. 7.188).

7.41.1 Research history

In 2008 the RCE carried out a survey and excavated test trenches in the area in order to validate a known Roman villa complex.

7.41.2 Excavation results

In several of the test trenches Roman Period settlement remains were indeed found. Older finds were generally absent, but outside feature context, just underneath the plough soil, a large fragment of an Early Bronze Age pot with perforations underneath the rim and a plastic cord on came to light. The body is decorated with vertical patterns of nail impressions (Fig. 7.191).⁸⁵¹

7.41.3 Comments

We have chosen to present this find because it demonstrates the wide distribution also upstream in the Meuse valley of a type well known in the central river area. The authors draw a

⁸⁴⁸ Cf. Ten Anscher 1990.

⁸⁴⁹ Janssens 2010, 97. The flint artefact possibly is an older object that entered the pit when it was backfilled.

⁸⁵⁰ De Koning 2010, 71.

⁸⁵¹ De Groot *et al.* 2010, 50–51.

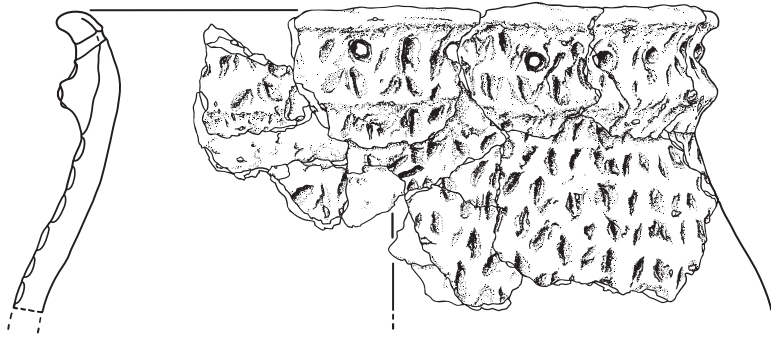


Figure 7.191 Early Bronze Age pot fragment from Afferden, scale 1:3 (after De Groot *et al.* 2010, 50). Apart from this large fragment, a few other sherds were found dating to the Late Neolithic or the Early Bronze Age.

parallel with a pot beaker found at Echt,⁸⁵² but in our opinion it also fits the Early Bronze Age very well, especially the large beaker pots that we know of sites like Molenaarsgraaf, Barendrecht-Carnisselande 3, Houten-VleuGel 20 and other sites.

7.42 Rosmalen-De Driehoek

The site Rosmalen-De Driehoek is situated in the western part of the Maaskant area, on the flanks of a cover sand dune. The river Meuse presently flows at a distance of 10 km of the site (Fig. 7.192), by its course in the Late Neolithic and the Early Bronze Age probably was much nearer.

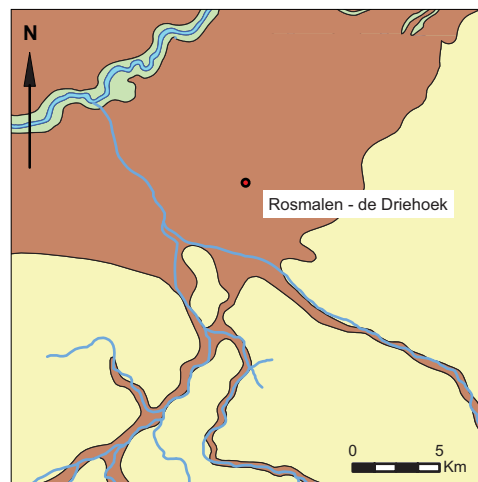


Figure 7.192 Location of Rosmalen-De Driehoek projected on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

7.42.1 Research history

North of 's-Hertogenbosch, an area of 860 ha was reserved for housing estates to facilitate the rapid expanding town of 's-Hertogenbosch. Through prospection by auguring, many spots in this area were indicated as settlement remains from the Late Neolithic and the Early Bronze Age. Several of those locations were investigated by Hollandia in 2003.⁸⁵³

7.42.2 Excavation results

Several 'find spots' were first prospected by test-trenches and some subsequently excavated. In most locations settlement remains of the Middle

Bronze Age were expected, and found. At all locations also Early Iron Age settlement remains were found, with clear house plans, granaries, wells and fences.⁸⁵⁴

For find spot 9, Rosmalen-De Driehoek, the expectations were diverse: in the prospective phase possible Bronze Age flint and one potsherd were found. Test trenches showed that indeed Middle Bronze Age pits were present in the area, but many more from the Early or Middle Iron Age, including house plans.⁸⁵⁵

In one of the features, a round pit of 100 cm wide and 30 cm deep (F528), a complete pot beaker was found (Fig. 7.193).⁸⁵⁶ It had broken in many fragments and the excavators realised only in the post-excavation phase that the pot was complete.⁸⁵⁷ The sherds were very soft and had to be impregnated.⁸⁵⁸

⁸⁵² De Groot *et al.* 2010, 50.

⁸⁵³ Koning & Vaars 2003, 10.

⁸⁵⁴ Koning & Vaars 2003, 13-50.

⁸⁵⁵ Koning & Vaars 2003, 53-63.

⁸⁵⁶ De Koning & Vaars 2003, 53-55.

⁸⁵⁷ De Koning & Vaars 2003, 53.

⁸⁵⁸ De Koning & Vaars 2003, 53.

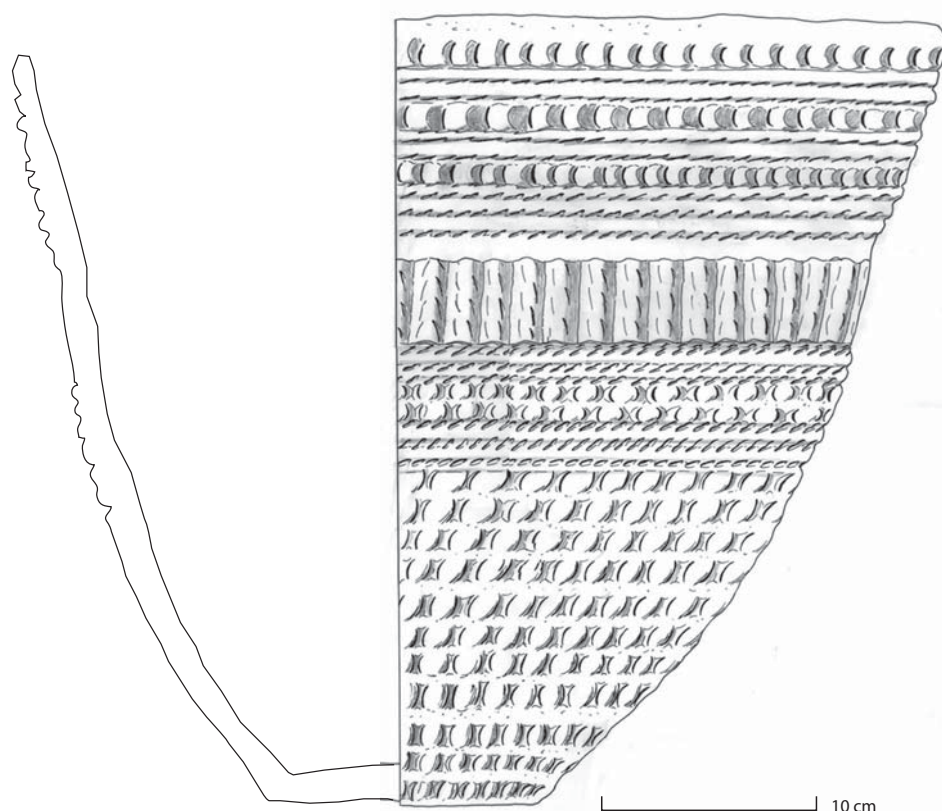


Figure 7.193 V161 from pit F258 (from De Koning & Vaars 2003, 55).

7.42.3 Comments

The site was selected for discussion because of the isolated pit with a complete pot beaker. In this case no other remains from the same period were found. The fact that the intact pot was deposited in a small isolated pit seems to indicate that we are dealing with an intentional deposition. These are discussed further in section 8.6.3.

7.43 Vorstenbosch-De Helling

The research area at Vorstenbosch is situated in a low-lying area of the province of Noord-Brabant geologically indicated as 'de Centrale Slenk' (Fig. 7.194).⁸⁵⁹ The site was situated on a coversand ridge.

7.43.1 Research history

Plans for a new housing estate (De Helling) in the municipality of Bernheze called for prospective research. The first phase consisted of desk-based research and auguring. The expectations were high, but not based on actual finds, just on the situation of the planned housing estate on a coversand ridge and on the presence of a potentially protective plaggen soil.⁸⁶⁰ The vagueness of the first phase made prospection with test trenches a better option. In the Vorstenbosch-Helling area 19 test trenches were excavated by Archol bv.

7.43.2 Excavation results

Despite the fact that the original soil was indeed intact in large areas, few prehistoric features were discovered. Of special interest were a charcoal filled pit, and a concentration of Early

⁸⁵⁹ Pruijsen 2011, 8.

⁸⁶⁰ Pruijsen 2011, 13.

Hilversum sherds.⁸⁶¹ The charcoal filled pit yielded a date in the Mesolithic. The pottery concentration of about 50 cm in diameter became visible directly underneath the medieval plaggen soil. Twenty-two sherds were found, all belonging to the same Early Hilversum pot (Fig. 7.195).⁸⁶² Even though no feature was found in which the pot was originally placed, the excavator assumes it must have been there. A possibility is that it was disturbed by a later ditch with was dug just aside the cluster. That also may account for the fact that half of the pot was missing. No bottoms herds were present, which prompts the excavator to suggest it may have been buried upside-down.⁸⁶³ A similar vessel, also only the neck represented, was recently found at Tilburg-Berkel Enschoot (see section 7.50).

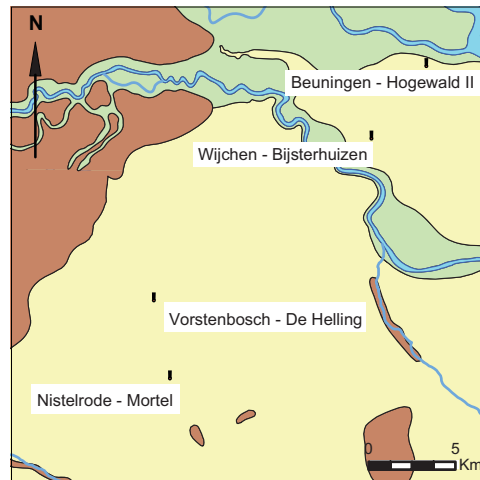


Figure 7.194 Location of Vorstenbosch and Nistelrode on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

7.43.3 Comments

The Vorstenbosch Hilversum pot was found at 200 m distance of the long-time famous Early Hilversum pot of Vorstenbosch described by Modderman.⁸⁶⁴ Yet that pot is probably older, it shows a combination of Early Hilversum decoration on the neck and barbed wire stamp decoration on the belly. Like many other pots of this kind it demonstrates a long lasting tradition of burying large beaker-like pots, often upside-down.

7.44 Nistelrode-Mortel

Just like Vorstenbosch, Nistelrode is situated in the *Centrale Slenk* on a coversand ridge (Fig. 7.194). The site is located on a ridge flanked on both sides by stream valleys.⁸⁶⁵

7.44.1 Research history

In 2003 and 2004, several excavations were executed near Nistelrode. These were necessary because of the construction of a motorway and a residential area.⁸⁶⁶ The prospective phase of research consisted first of auguring, which yielded no finds in Zwarte



Figure 7.195 A. large fragment of an Early Hilversum urn found at Vorstenbosch (from Puijsen 2011, 24); B. the Vorstenbosch urn found in 1958 (source: <http://www.vorstenbosch-info.nl/over-vorstenbosch/de-urn-van-vorstenbosch/>).

⁸⁶¹ Puijsen 2011, 23-24.

⁸⁶² Puijsen 2011, 24.

⁸⁶³ Puijsen 2011, 24.

⁸⁶⁴ Modderman 1959, 288.

⁸⁶⁵ Jansen 2007, 20-21.

⁸⁶⁶ Jansen 2007, 9.

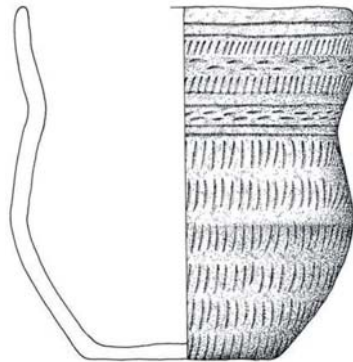


Figure 7.196 The small Bell Beaker of Nistelrode-Mortel, scale 1:3 (after Van Hoof 2007, 69).

Molen development area, and three sites in the motorway track. The auguring campaign at Zwarte Molen is a classic example of the inadequacy of auguring as a prospective tool in site detection on sandy soils: it detected no sites, and the advice was to conduct the roadworks without further research.⁸⁶⁷ When building started with the preparation of roads, it turned out that an extensive settlement from the Roman Period and a Medieval village had been overlooked. These settlements could still be excavated in the end, but had nearly been destroyed. The excavations at Nistelrode-Mortel and Loo also yielded features and finds from the Late Neolithic.

7.44.2 Excavation results

In one of the trenches at Nistelrode-Mortel, a pit was uncovered that contained a small Bell Beaker (Fig. 7.196). The pit was 180 x 90 cm and still 20 cm deep. On account of its size and the presence of the beaker it was interpreted as a grave-pit, but was not associated with any kind of ring-ditch or post-circle that would suggest a grave monument. Therefore the feature is thought to have been a flat grave.⁸⁶⁸ The Bell Beaker is decorated in Veluwe style with grooved lines, vertical and horizontal spatula impressions (Fig. 7.196). Another pit, at 1.5 m distance, was of similar dimensions and fill, and therefore was also suspected to have been a grave.⁸⁶⁹

The Beaker was only 11 cm tall and 9.5 cm in diameter (rim). For this reason it was indicated as a beaker for a child. The contents of the beaker were analysed for pollen, but none were detected.⁸⁷⁰ From the burial pits no samples have been taken or analysed.

At Nistelrode-Mortel also several pits with Early-Hilversum material were found. One of these was found 15 meters north of the Bell Beaker graves and contained the remnants of a cord-impressed Early Hilversum pot.⁸⁷¹ This pot had been buried upside in an intact state,



Figure 7.197 The Early Hilversum pot from Nistelrode as it was found in the excavation (after Van Hoof 2007, 72).

⁸⁶⁷ Oudhof 2001.

⁸⁶⁸ Van Hoof 2007, 67-68.

⁸⁶⁹ Van Hoof 2007, 68.

⁸⁷⁰ Van Hoof 2007, 68.

⁸⁷¹ Van Hoof 2007, 72-73.

but ploughing had likely destroyed the bottom half of the pot (Fig. 7.197). The deposition of this find can be grouped under a larger phenomenon involving pottery depositions during the Late Neolithic to Middle Bronze age which is discussed further in chapter 8.⁸⁷²

7.44.3 Comments

The Nistelrode site demonstrates again the practice of dispersed buried large bakers and beaker pots being buried upside down, and a possible Bell Beaker 'cemetery' of two graves. Such graves easily may have been excavated often, but have remained unnoticed if pottery was absent as in the second pit suspected to have been a grave.

7.45 Boekel-Parkweg

Boekel-Parkweg is situated on a cover-sand plateau in between the river Aa to the west and the present day Peel moors to the east. In historical times, it was situated between series of east-west running rivulets that drained the higher Peel plateau (Fig. 7.198). These have cut sharply defined gullies into the coarse sandy soils. Two such rivulets run in the direct vicinity of the site: the Burchtse loop 200 m to the north, and the Kerkenloop 300 m to the south.⁸⁷³

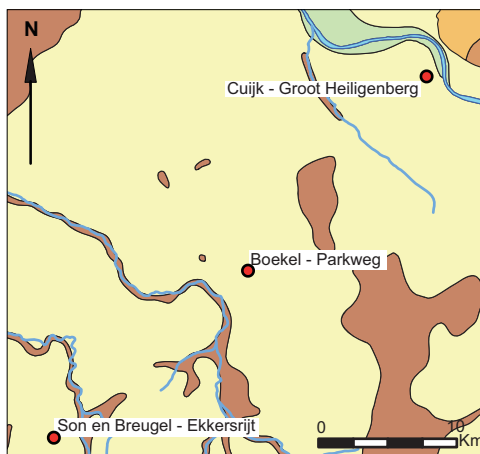


Figure 7.198 Location of Boekel-Parkweg and Son en Breugel-Ekkersrijt on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

7.45.1 Research history

The area was selected for the construction of a new school, which warranted archaeological research. Auguring was executed in order to test to what degree the soil would be disturbed, and test trenches were excavated in order to form an informed opinion regarding the archaeological expectation. An intact soil profile and Iron Age remains drove the decision to fully excavate the terrain.⁸⁷⁴

7.45.2 Excavation results

The excavated area has a dimension of about 55 x 150 m. Prior to excavation, a desk based research (ARCHIS survey) yielded no finds in the area. Augurings demonstrated undisturbed soil profiles and a few finds called for test trenches to be dug. These confirmed the presence of intact soil profiles and yielded several Iron Age features.⁸⁷⁵ Subsequently, an excavation was started to study the Iron Age remains.

During the above-mentioned excavation an Early Iron Age settlement was recovered, or rather a part of it, consisting of a house and a few granaries. However, older features were discovered in the same area: several pits with HVC pottery dating to the Middle Bronze Age A (Fig. 7.199).

In one of those pits, 55 cm deep, and 1.5-2.00 cm in size, two complete HVC pots were buried, lying on their sides (Fig. 7.200A). The contents of the pit were sieved, but not finds or grains were recovered. Eight gram of charcoal was recovered from the sieved material and dated to 3470 ± 60 BP, which implies the pots were deposited between 1940 and 1632 cal BC⁸⁷⁶ if the charcoal was indeed associated with the pots. From a typological perspective, the ceramics do fall in this range.

Another pit yielded the remains of a HVC pot that was buried upside down. Only the neck of this pot remained, because of ploughing in younger periods disturbed to soil up to a certain depth (Fig. 7.200B).⁸⁷⁷ The contents of this pot were also sieved, but without any results.

The excavation of other pits yielded a grand total of 134 Bronze Age sherds, which is one of

⁸⁷² Cf. section 8.6.3.

⁸⁷³ De Jong 2008, 9.

⁸⁷⁴ De Jong 2008, 7.

⁸⁷⁵ De Jong 2008, 11.

⁸⁷⁶ GrN-30726; calibrated at 2 sigma: De Jong 2008, 41.

⁸⁷⁷ De Jong 2008, 39.

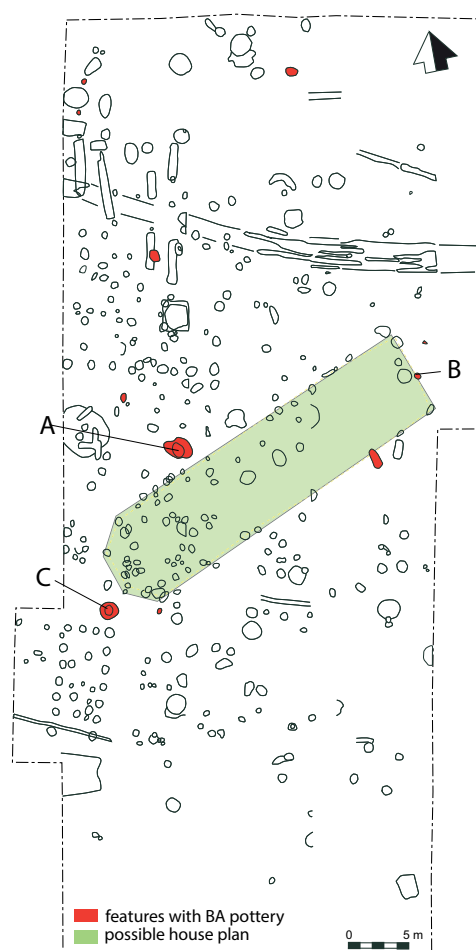


Figure 7.199 Site plan with the pits in which Bronze Age pottery was found. A: two HVC pots; B: HVC pot buried upside-down; C: pit with Bronze Age pottery (after De Jong 2008, 26).

the reasons that the excavators argued for a house plan in this particular area (Fig. 7.199). However, in our view there is insufficient evidence to really propose the existence of a house at the site. There are no structural post pits visible. The excavator himself was also aware of the very tentative nature of his proposal.⁸⁷⁸

7.45.3 Comments

The Boekel-Parkweg Hilversum pots are yet another demonstration of the tradition of burying complete vessels, often upside-down.⁸⁷⁹ The context of such depositions is never very

clear. Since house plans from the Early Bronze Age and the Early HVC phase are notoriously elusive, we do not know what the position of these depositions is in relation to settlements. Boekel-Parkweg, however, appears to indicate that we are dealing with a settled area: even though there was no clear house plan, the presence of several pits demonstrates that the site is a settlement context.

7.46 Son en Breugel-Ekkersrijt

The research area is situated on a cover-sand plateau with a few sand dunes (Fig. 7.198).

7.46.1 Research history

At Son en Breugel-Ekkersrijt an area of about 18 ha was threatened by road building activities. Between 2006 and 2008 about four hectares were excavated. The results included in 28 very clear house plans and some 80 sheds and granaries from the Middle and Late Bronze Age (Fig. 7.201), excavated in an exemplary manner.⁸⁸⁰ Almost all plans were recognised in the field and photographed and documented accordingly. We only briefly report a few of those results, since these houses were dated to the Middle Bronze Age A.

7.46.2 Excavation results

When the excavations started at Son en Breugel-Ekkersrijt, it was not clear to which phase of the Bronze Age the settlement remains could be attributed. In the end, it turns out that most of the farms that were discovered date to the Middle Bronze Age B. Six houses were attributed to the Middle Bronze Age A based on ¹⁴C dates of charcoal found in post holes (Table 7.16). In this case, the dated material and their context provide the main problem with these houses.⁸⁸¹ There is little doubt about the structural consistency of these houses, because all plans were recognised in the field, carefully documented, photographed and sampled (Fig 7.202).⁸⁸²

⁸⁷⁸ De Jong 2008, 25.

⁸⁷⁹ Cf. Section 8.3.3; Cf. Drenth 2015a for a recent survey.

⁸⁸⁰ De Jong & Beumer 2011; 2013.

⁸⁸¹ Cf. Section 7.46.3.

⁸⁸² This image was reproduced in full to illustrate the quality of this publication and the fieldwork (photo).



Figure 7.200 Early HVC pots from Boekel; A: Two pots found in one pit (drawing and photo); B: Hilversum pot found upside-down (after De Jong 2008, 40-42).

Eventually houses 2, 6, 11, 12, 13, 14 and 22 were attributed to the Middle Bronze Age A. Houses 2 and 6 were described by De Jong and Beumer in report 51,⁸⁸³ the remainder of the houses in report 52.⁸⁸⁴

All houses have a good structure (Fig. 7.203; apart maybe from house 6), but the sampled material seems older than the habitation. The structures themselves fit very well in the pattern of known Middle Bronze Age B houses. We suggest that they are indeed Middle Bronze Age

B houses.⁸⁸⁵ Moreover, the early date obtained for house 13 derives from a small pit that is not necessarily part of the construction (Fig. 7.202). The pottery from the site that could date to the Middle Bronze Age A, is in all cases pottery of the Late Hilversum phase. That implies that Early Hilversum elements (such as cord impressions, vertical fingernail or cord decorations on the neck, type A rims) are absent.⁸⁸⁶ The only decoration types are plastic cordons with fingernail or fingertip impression, and

⁸⁸³ De Jong & Beumer 2011.

⁸⁸⁴ De Jong & Beumer 2013.

⁸⁸⁵ Cf. Section 7.46.3.

⁸⁸⁶ Cf. Section 8.1.3.

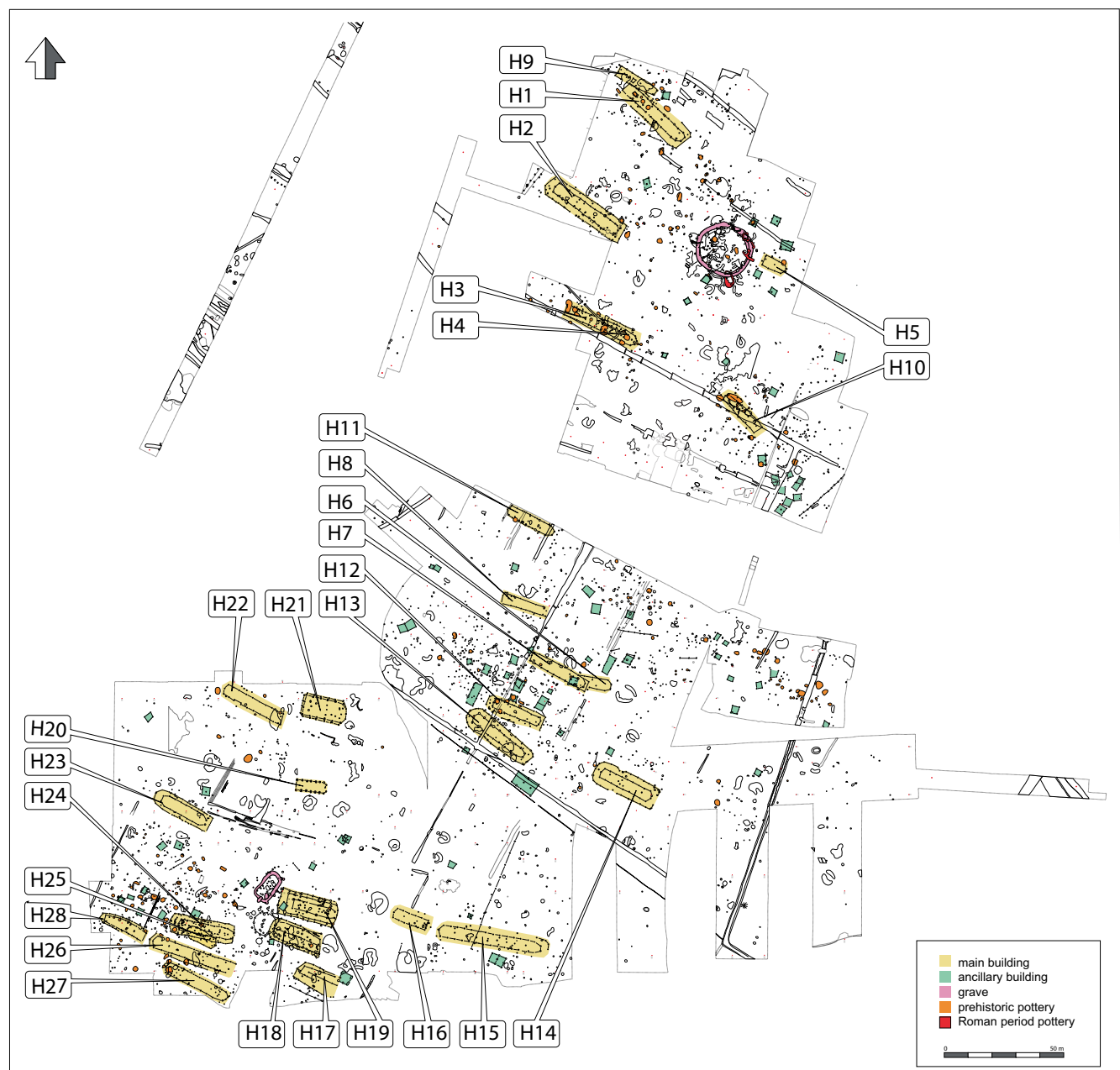


Figure 7.201 Survey of all features and structures at Son en Breugel-Ekkersrijt (after De Jong & Beumer 2013, 52).

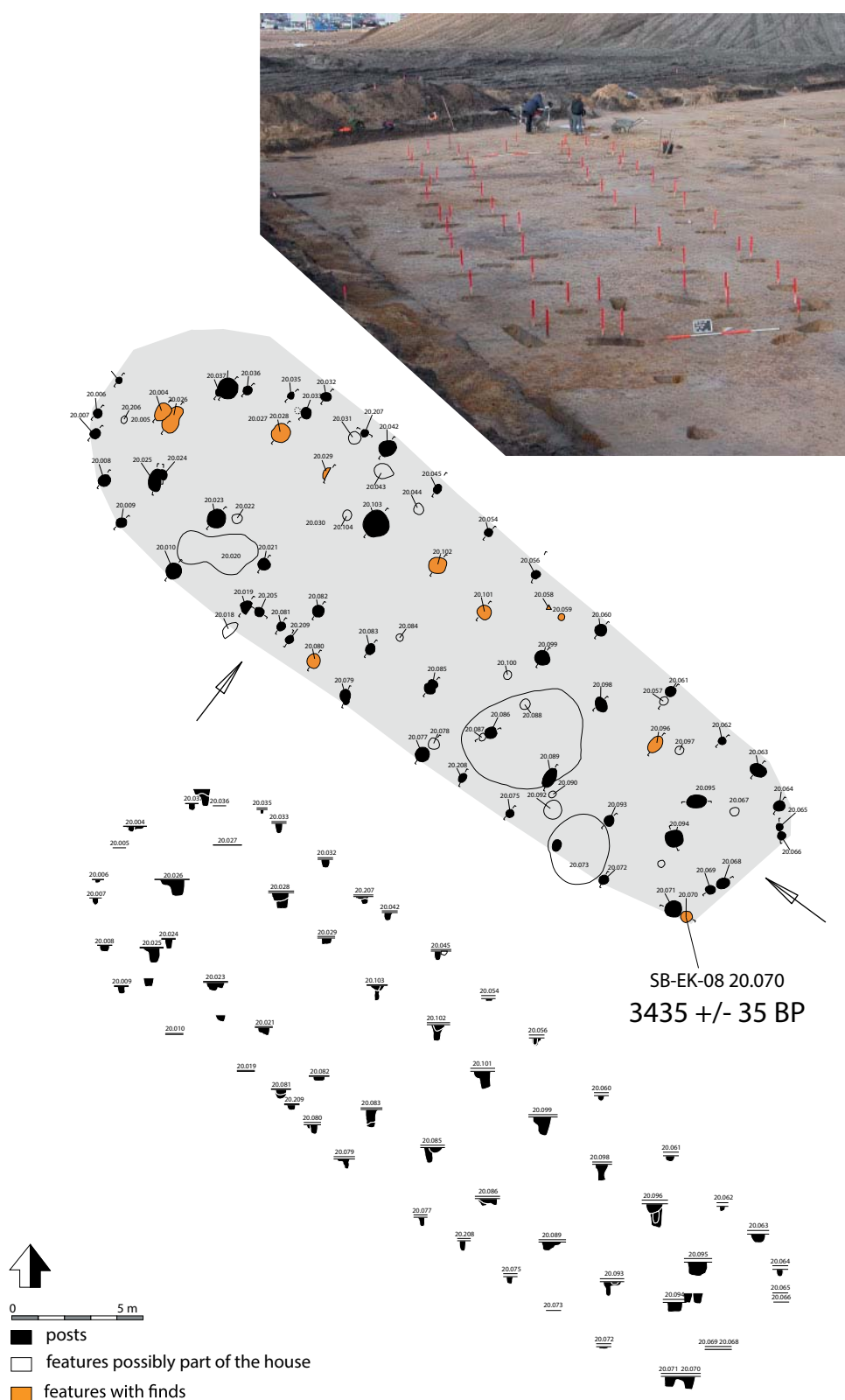


Figure 7.202 House 13 as presented by De Jong & Beumer 2013, 52.

Table 7.16 ^{14}C -dates from Son en Breugel-Ekkersrijt (after De Jong & Beumer 2013).

| Lab code | date BP | Calibrated range BC | z sigma | Context | House |
|-----------|---------------|---------------------|---------|-----------------|----------|
| GrN-31445 | 3470 \pm 35 | 1886 - 1729 | 0.892 | post pit 15.24 | house 2 |
| | | 1723 - 1692 | 0.108 | | |
| GrA-39974 | 3200 \pm 30 | 1521 - 1417 | 1.000 | post pit 15.20 | house 2 |
| GrA-40012 | 2985 \pm 30 | 1372 - 1358 | 0.016 | pit 14.90 | house 2 |
| | | 1297 - 1115 | 0.984 | | |
| GrA-43823 | 3390 \pm 30 | 1750 - 1620 | 1.000 | post pit 13.13 | house 6 |
| GrA-43860 | 3320 \pm 35 | 1685 - 1513 | 1.000 | pit 19.10 | house 11 |
| GrA-43846 | 3280 \pm 35 | 1637 - 1495 | 0.973 | pit 18.126 | house 12 |
| | | 1477 - 1458 | 0.027 | | |
| GrN-31952 | 3215 \pm 45 | 1611 - 1571 | 0.102 | pit 18.125 | house 12 |
| | | 1566 - 1413 | 0.898 | | |
| GrA-43489 | 2500 \pm 30 | 787 - 536 | 1.000 | pit 18.132 | house 12 |
| GrN-31964 | 3105 \pm 45 | 1493 - 1479 | 0.017 | post pit 20.193 | house 14 |
| | | 1455 - 1259 | 0.975 | | |
| | | 1243 - 1234 | 0.008 | | |
| GrA-43501 | 3500 \pm 30 | 1907 - 1743 | 0.997 | post pit 20.175 | house 14 |
| | | 1707 - 1705 | 0.003 | | |
| GrA-31986 | 3405 \pm 20 | 1748 - 1643 | 1.000 | pit 31.78 | house 22 |
| GrA-44191 | 3335 \pm 45 | 1738 - 1714 | 0.053 | post pit 31.37 | house 22 |
| | | 1696 - 1508 | 0.947 | | |
| GrA-44160 | 3325 \pm 35 | 1689 - 1514 | 1.000 | pit 31.59 | house 22 |
| GrN-31985 | 3310 \pm 40 | 1685 - 1503 | 1.000 | pit 31.76 | house 22 |
| GrA-44193 | 3425 \pm 45 | 1878 - 1838 | 0.127 | pit 29.20 | |
| | | 1830 - 1627 | 0.873 | | |
| GrA-43876 | 3365 \pm 35 | 1745 - 1604 | 0.931 | pit 29.1 | |
| | | 1584 - 1544 | 0.067 | | |
| | | 1538 - 1535 | 0.002 | | |
| GrA-44181 | 3345 \pm 35 | 1736 - 1715 | 0.053 | pit 38.128 | |
| | | 1695 - 1530 | 0.947 | | |

finger nail impressions (Fig. 7.204). This pattern is consistent with a date somewhere in the 17th century cal BC or later. This material would fit well in a Middle Bronze Age B repertoire.

7.46.3 Comments

Our comment on these reports is that the dating of the houses is problematic. The issue of sampling and context are most evident for house 2 (Fig. 7.202). Charcoal from two post

holes that are considered part of the same roof set of support posts were dated to 3470 \pm 35 BP and 3200 \pm 30 BP respectively.⁸⁸⁷ This probably implies the inclusion of older charcoal that was already present in the prehistoric topsoil in the oldest post pit. House 6 was not a very clear structure; it is more likely to be an ancillary structure (Fig. 7.202). Houses 11, 12, 14, and 22 are dated on the basis of pits that probably do not belong to the structures. Some are younger (as in house 2 and 12, some are also older, like in house 22).

To conclude, the settlement site of Son en

⁸⁸⁷ De Jong & Beumer 2011, 33.



Figure 7.203 Houses 2, 6, 11, 12, 14, 22 at Son en Breugel Ekkersrijt (House 2, 6 after De Jong & Beumer 2011, 33, 43; houses 11, 12, 14, 22 after De Jong & Beumer 2013, 25, 28, 33, 50).

Breugel-Ekkersrijt probably had a Middle Bronze Age A phase, but clear house plans from that period have not been substantiated. The many pits that have been dated attest of an early phase of settlement, but they are not likely to belong to the houses proper. In turn, these houses are most probably of a Middle Bronze Age B date. The prehistoric topsoil probably

contained much material from earlier phases that entered pits when they were filled in.

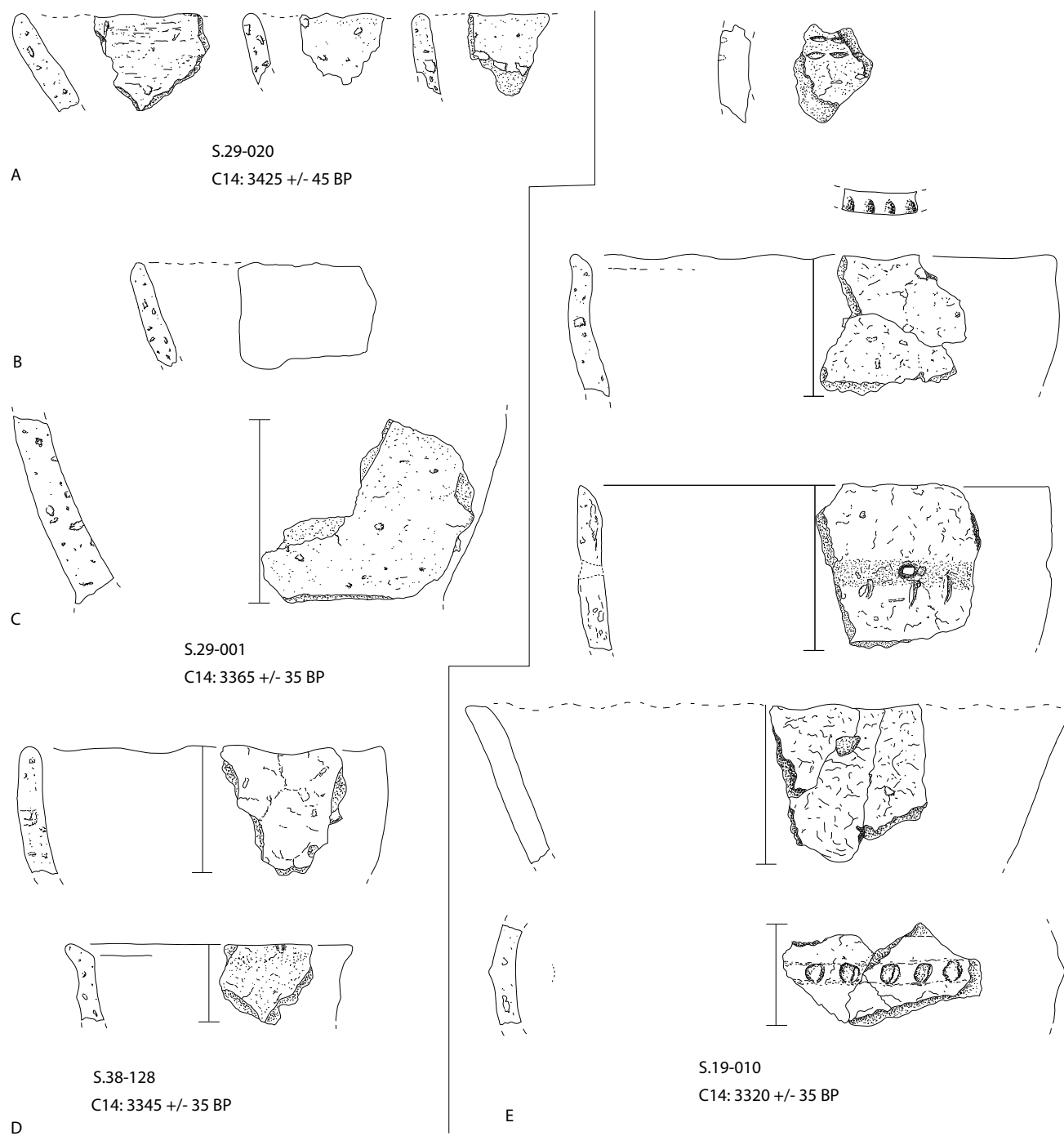


Figure 7.204 Dated pottery from pits at Son en Breugel-Ekkersrijt, scale 1:3 (after De Jong & Beumer 2013, 180, 181).

7.47 Veldhoven-Habraken

Veldhoven-Habraken is situated on the Pleistocene soils of Noord-Brabant, on a plateau near a tributary to the river Aa (Fig. 7.205). This VLC site has surprised the Dutch archaeological world because previously it was assumed that most Vlaardingen sites were located in the Rhine Meuse basin or near the river Meuse. But Veldhoven-Habraken site is situated about 30 km north of the Meuse. However, the palaeogeographic map indicates that small river channels were nearby and that communication with sites further north must have been perfectly well possible over water.

7.47.1 Research history

The site Veldhoven-Habraken has a long history of research by auguring, desk-based research, field walking, trial trenches and a final excavation.⁸⁸⁸ Already during the prospective phase, a concentration of VLC pottery was discovered, but it was interpreted as a disturbed burial. A small test trench yielded no features at that particular spot.⁸⁸⁹ Therefore the site was not selected for further research. Instead, a few

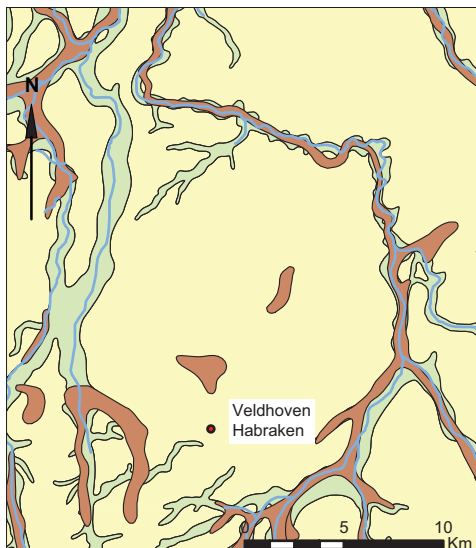


Figure 7.205 Location of Veldhoven-Habraken on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

other areas were excavated instead. Eventually, it was decided to test whether or not more VLC remains occurred in the vicinity of the earlier encountered concentration of VLC material earlier encountered. This led to the discovery of features with VLC pottery and eventually the discovery of five houses and a 'granary' dating to the Late Neolithic A.

To some extent, it was fortunate that the site was not excavated as a typical Neolithic site. That probably would have resulted in a time consuming excavation of squares and sieving because that is standard operation procedure for Neolithic sites. Because at Veldhoven-Habraken archaeological soil features were easily visible it was decided that a large scale excavation of the Neolithic features would take place instead of sieving all of the squares.⁸⁹⁰

7.47.2 Excavation results

The excavation took place in 2009 and the early months of 2010. A total of 1.7 ha was excavated, in which the remains of four or five house plans were discovered (Fig. 7.206). These were all situated in a close vicinity of each other, were mostly built along the same axis and partially overlapped. This is thought to imply that the houses were each other's successors. The house plans have similar layouts. They are slightly trapezoid two-aisled structures, with an average size of 6 m x 25 m. The walls were placed into bedding trenches.⁸⁹¹ Not only are four out of the five houses exceptionally well preserved for this period, there are datable finds from this context as well. Most houses yielded at least two fragments of organic finds (mostly hazelnuts or grains) fit for carbon dating. The results indicated that the houses date to the Late Neolithic A, within a range between 2895 and 2471 cal BC.⁸⁹² It is not certain what the dated samples precisely represent, because both hazelnuts and grain could have been laying around for a long time already before they ended up in the pits. However, the various dates are sufficiently comparable to argue for a date within the Late Neolithic A.

In principle, all structures are the structure is two-aisled, even though house 2 has a part that is 'three-aisled', just like at Zeewijk-Oost (Fig. 7.207). Kriek has visualised this to some extent

⁸⁸⁸ Van Kampen & Koot 2013, 5-8.

⁸⁸⁹ Van Kampen & Koot 2013, 8.

⁸⁹⁰ Van Kampen & Koot 2013, 12.

⁸⁹¹ Van Kampen & Van den Brink 2013, 39-62.

⁸⁹² Van Kampen & Koot 2013, 36.

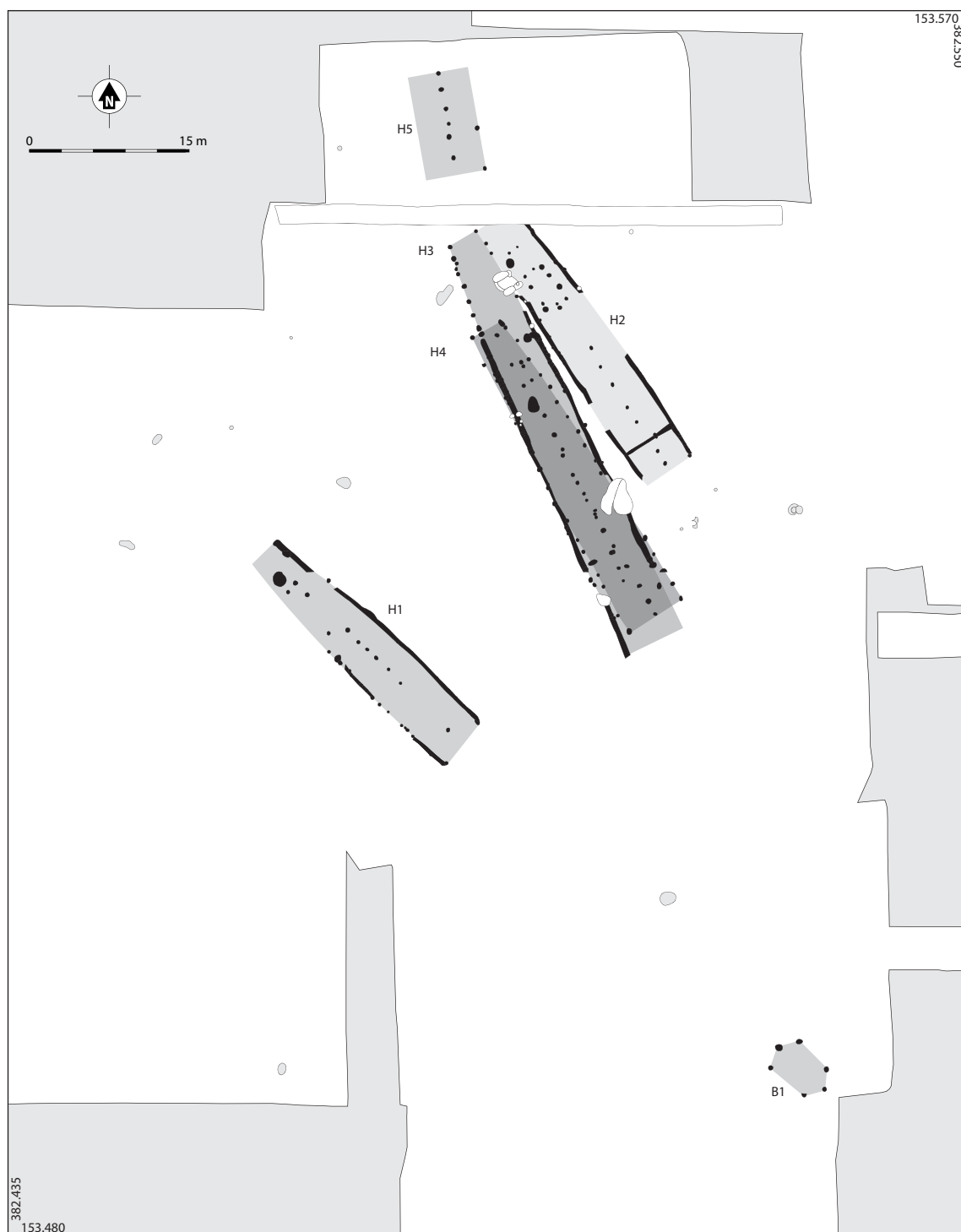


Figure 7.206 Overview of the features and structures of Late Neolithic date at Veldhoven-Habraken (from Van Kampen & Koot 2013, 40).

in his beautifully made reconstruction (Fig. 7.208). As explained in Chapter 6, the central row of posts does not necessarily support the roof top, even though that is possible. Its main function may have been to support tie beams that are used to support the rafters at a point roughly halfway between the ridge-line and the wall. In that respect, Kriek's reconstruction is probably not correct. In his reconstruction, the tie beams are situated between and on top of the walls. However, these beams would then have their only function is to support the walls in this construction and not the roof proper. Apart from the fact that the walls would then also need to be built to a minimum height of about 2 m to make enable humans to enter or exit the structure possible, the roof would be unsupported according to this reconstruction. The most ideal reconstruction favours the earth-fast post as supporting the rafters. The crux of the reconstruction is that the tie beams also support a purlin.⁸⁹³ There should be a wall plate at the height of the wall, like there indeed is in Kriek's visualisation; but there should also be a purlin higher up to support the rafters. If we compare the four well-preserved houses, we see only minor differences (Fig. 7.209). It is interesting that the form of all houses is trapezoid. The same shape is present at the same at Zeewijk-Oost. It is the northern end that is narrowest at Veldhoven, at Zeewijk that is the western end. It is quite clear that the Zeewijk example has a gable roof at both ends, which makes it vulnerable to longitudinal instability. In Chapter 6, we have explained that houses with a hip roof on one or both ends are more stable in this respect. We suspect that a tapered end would have had a comparable

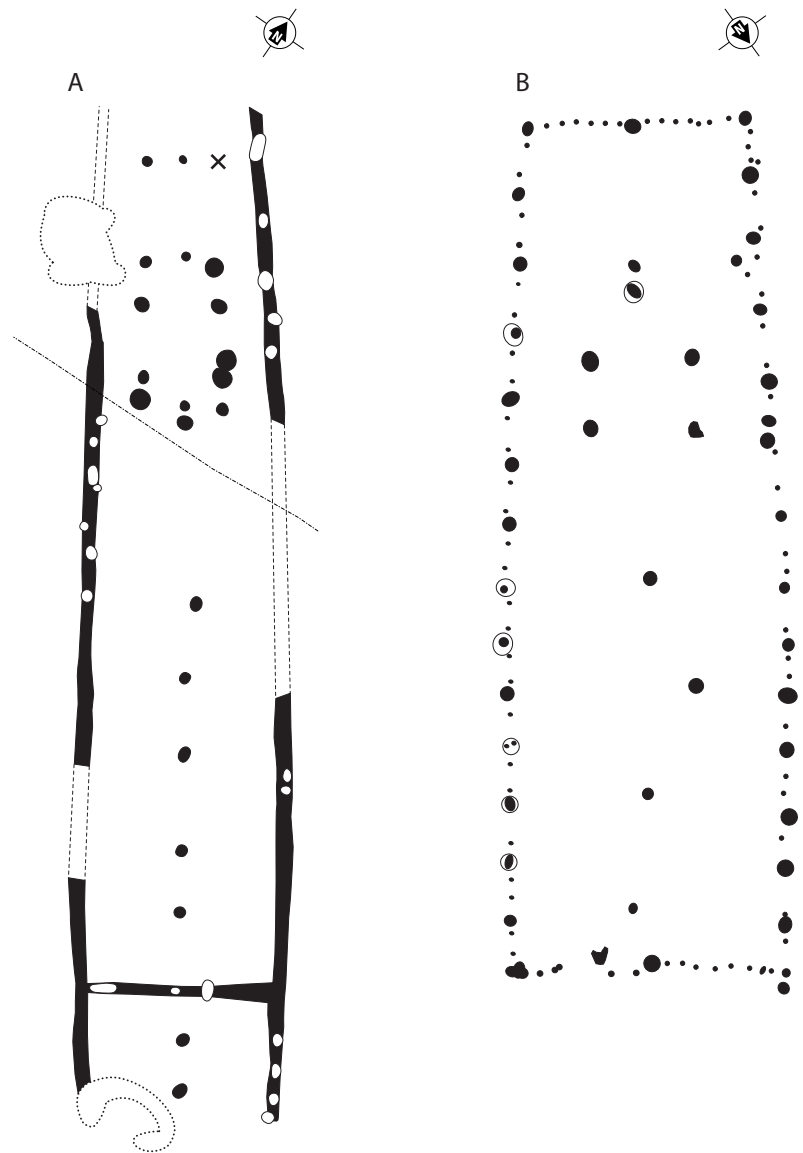


Figure 7.207 Comparison between the houses of Veldhoven-Habraken 2 and Zeewijk-Oost houses (from Van Kampen & Koot 2013, 50).

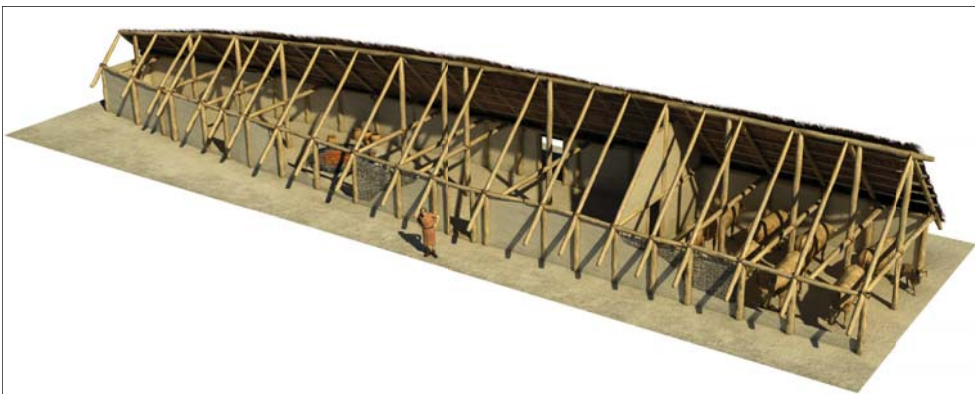


Figure 7.208 Reconstruction of one of the Veldhoven-Habraken houses by M. Kriek (from Van Kampen & Koot 2013, 47).

⁸⁹³ Cf. Chapter 6; Fig. 6.3 A.

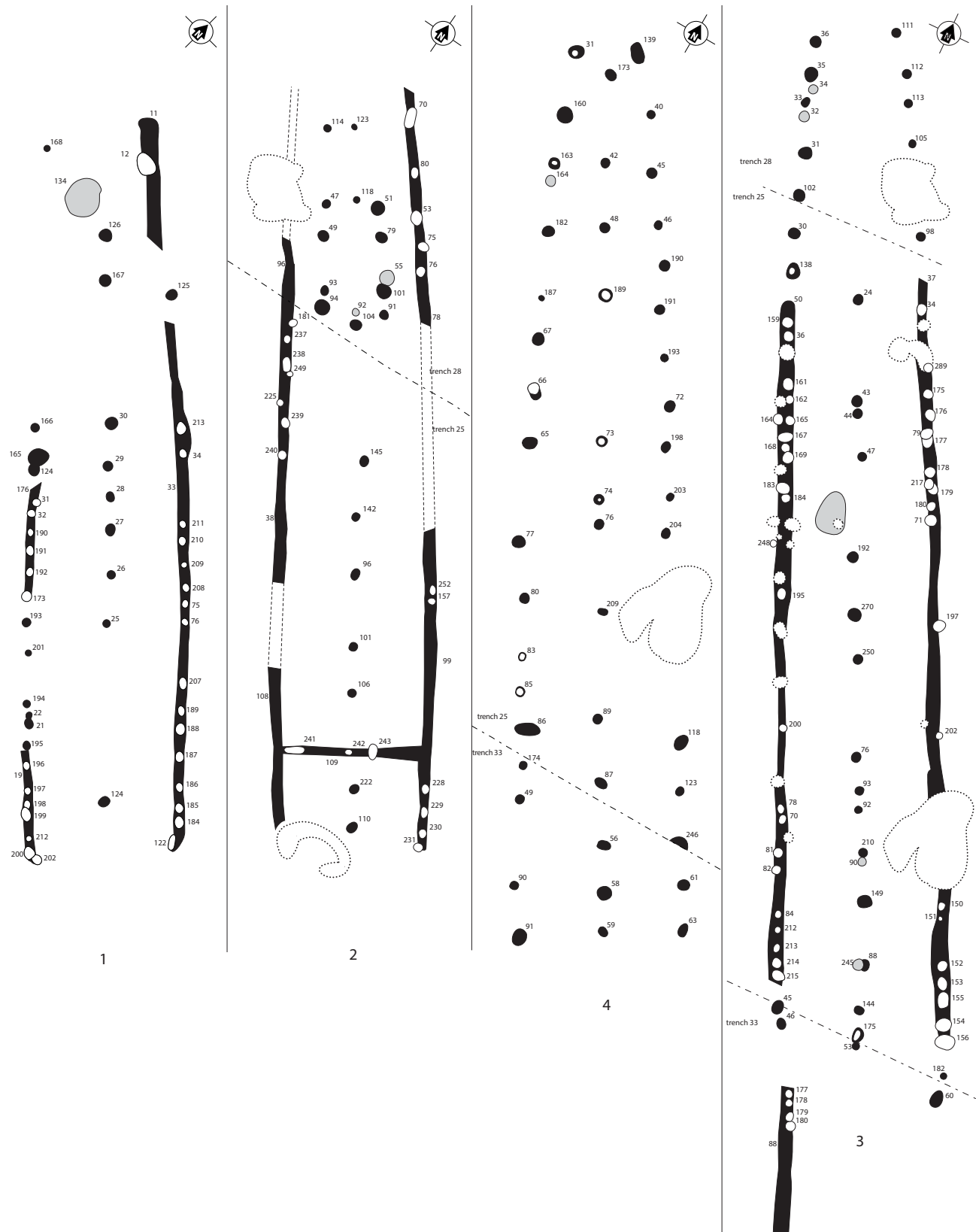


Figure 7.209 A comparison of the four major houses of Veldhoven-Habraken. X signs to that indicate 'missing' posts in the original image have been left out (compiled after Van Kampen & Van den Brink 2013, 179, 181, 184, 187).

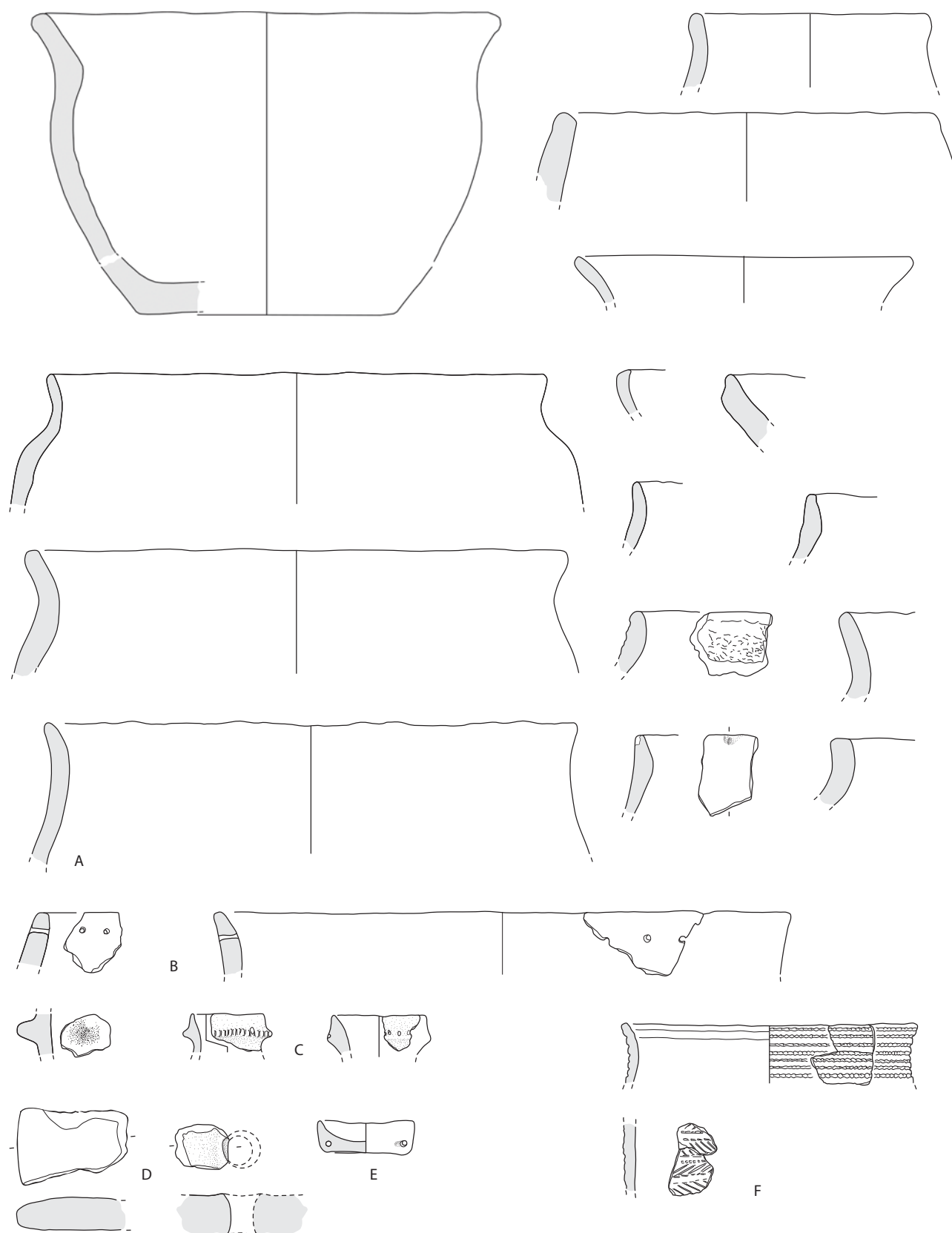


Figure 7.210 Pottery from Veldhoven-Habraken. A: undecorated VLC ware, B: VLC pottery with perforations, C: fragments of flasks, D: fragment of a baking plate, E: perforated cup, F: fragments of a Bell Beaker (left) and of a SGC beaker (right), scale 1:3 (compiled after Van Kampen *et al.* 2013, 90, 93).

effect in increasing the longitudinal stability of the structure, as longitudinal movement pushes the structure together or apart rather than it toppling over. Consequently, part of this typical shape may be functional. Nevertheless, it is equally possible that it was a socio-cultural choice to build houses that way. Moreover, these two options are certainly not mutually exclusive.

The authors of the Veldhoven-Habraken report suggest that the houses were large enough to provide shelter to livestock and humans under the same roof, even though there are no positive indications to support the occurrence of livestock within the house.⁸⁹⁴ Alternatively, (or in addition) it could very well be possible that these houses give shelter to large multi-generation households or to extended families.

Apart from comparing the houses at Veldhoven-Habraken houses to the Zeewijk house plan, one could also compare them with contemporaneous plans outside the Netherlands. Arnoldussen shows a number of plans from amongst other Germany, for instance in Germany, that also has a more or less trapezoidal shape or an 'annexe' on one of the short sides, like is the case with house 2, and possibly 4 at Veldhoven-Habraken. Moreover, several of these also have bedding trenches.⁸⁹⁵ An almost identical plan was discovered in a native Roman settlement at Oerle-Zuid, just a few hundred meters north of the Veldhoven-Habraken (Fig. 7.211). The plan was not recognised as such during the excavation, but discovered in the post-excavation phase.⁸⁹⁶ The post pits contained no pottery or other dating material; the nearest pottery from the period was found in a pit 175 m away.⁸⁹⁷

Finds

Many of the post pits holes belonging to the above-mentioned house plans yielded pot sherds, but many sherds derive also came from the layer above the house plans. In total, all 2331 potsherds were found, 1875 of which were large enough to study. The complex as a whole was very fragmented, which made it difficult to classify the pot forms in the scheme presented by Beckerman and Raemaekers for Vlaardingen ceramics.⁸⁹⁸ There was only one complete pot in the assemblage. Most of the material is undecorated and is tempered with features mineral temper (Fig. 7.210).

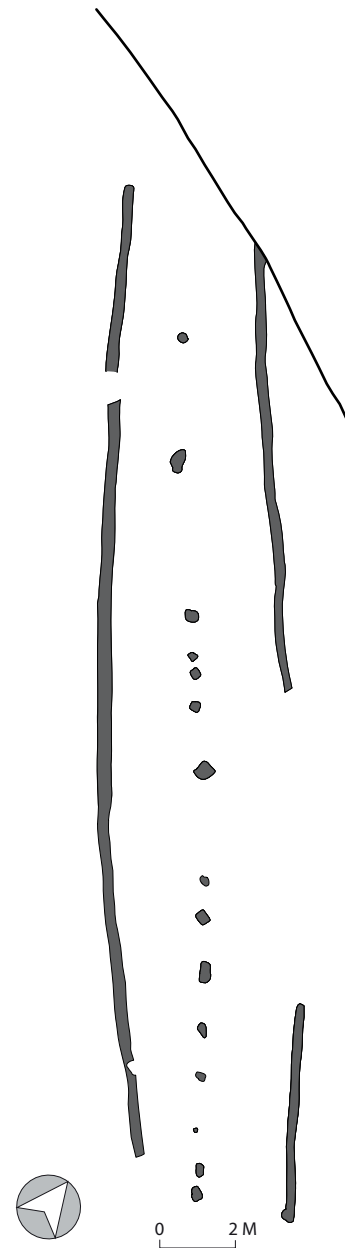


Figure 7.211 Vlaardingen plan discovered in Oerle-Zuid (after Hissel 2011, 166).

The pottery fits in well with the dating range of the houses, although we would have expected more SGC pottery on the site. A SGC beaker sherd was found in the layer above the house, and a possible Bell Beaker sherd was found in a pit. The flint from the site is mainly from southern origin.⁸⁹⁹ There are several scrapers, which includes three scrapers made from flakes obtained from polished axes. Many fragments of polished axes, three polished flints chisels)

⁸⁹⁴ Van Kampen & Koot 2013, 2013, 48.

⁸⁹⁵ Arnoldussen 2008, 170; see Section 8.2.3 this volume.

⁸⁹⁶ Hissel 2012, 167.

⁸⁹⁷ Hendriks 2012, 179.

⁸⁹⁸ Beckerman & Raemaekers 2009; Van Kampen *et al.* 2013, 88.

⁸⁹⁹ Devriendt 2013, 111.

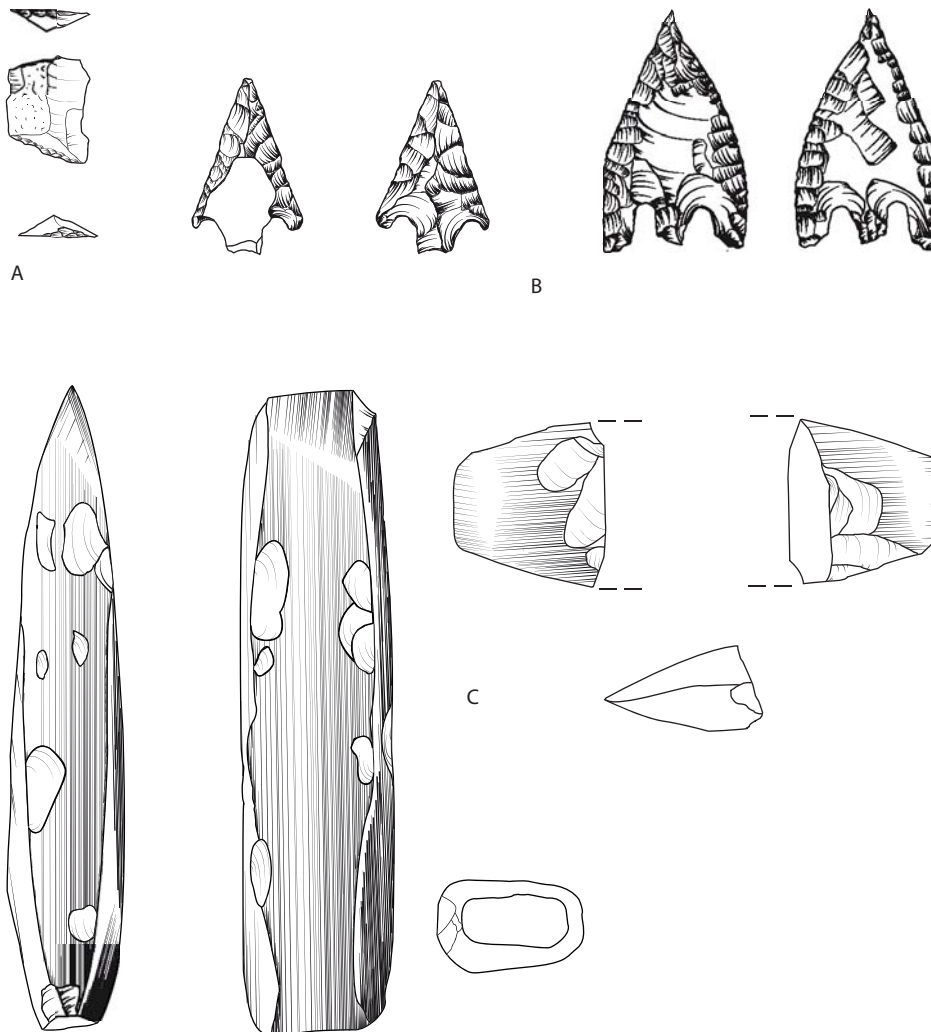


Figure 7.212 Selection of flint objects from Veldhoven-Habraken. A: Late Mesolithic trapeze; B: Late Neolithic arrow heads, C: two polished flint chisels, scale 1:1 (compiled after Devriendt 2013, 121).

and some arrow heads are present as well (Fig. 7.212).

7.47.3 Comments

Veldhoven-Habraken is an important site that has enriched our knowledge of the Late Neolithic considerably, especially of in relation to VLC settlements. The four houses presented here should not be seen as a one off occurrence. A comparison with other contemporaneous houses⁹⁰⁰ has demonstrates that they definitely fit a pattern. We are convinced that these houses were only discovered, because a large

scale excavation was conducted on the site.

This means that we may have to re-think the standard methodology for the excavation of Late Neolithic sites.⁹⁰¹ But that is more or less a devils dilemma, because that probably also implies a loss of finds. Well argued choices will have to be made, as was indeed done at Veldhoven-Habraken.

⁹⁰⁰ Cf. Section 8.2.3.

⁹⁰¹ Cf. Chapter 9.

7.48 Tilburg-Surfplas-Zuid

The excavated area is situated on a coversand ridge in between two stream valleys (Fig. 7.213).

7.48.1 Research history

Excavations south of a man-made lake ('de surfplas') preceded the construction of a business area south of the city of Tilburg. The prospection phase consisted of auguring and test trenches. On that basis it was expected to find Late Bronze Age to Early Iron Age settlement remains in the area. On that basis an excavation of about 1.6 ha was conducted by BAAC bv.

7.48.2 Excavation Results

Despite the expectations, the excavation yielded mostly Roman Period settlement remains.⁹⁰² However, Late Neolithic to Middle Bronze Age pottery sherds were found dispersed throughout the excavated area. None of these sherds were associated with features. Late Neolithic pottery

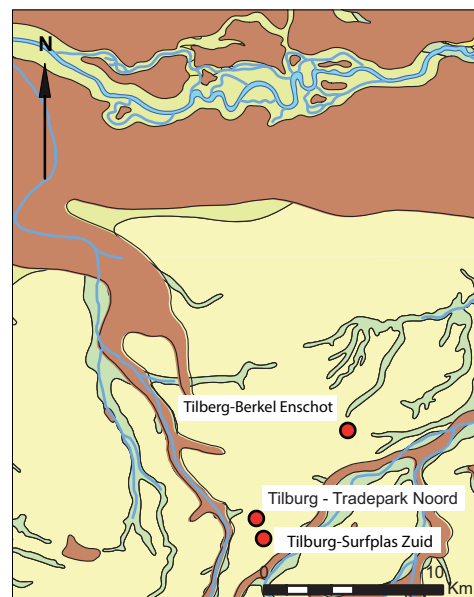


Figure 7.213 Location of Tilburg-Surfplas and Tilburg-Tradepark on the palaeogeographic map of 2750 cal BC (based on Vos & De Vries 2013).

was divided over five concentrations, probably belonging to five separate vessels.⁹⁰³ Most of these appear to originate from Late Neolithic pot beakers, although at least one Bell Beaker might also be present amongst the sherds. A Middle Bronze Age A assemblage is present as



Figure 7.214 Late Neolithic and Early Bronze Age pottery, scale 1:3 (after Van Putten & Ter Wal 2006, 45,46).

⁹⁰² Van Putten & Ter Wal 2006, 18.

⁹⁰³ Van Putten and Ter Wal 2006, 44-45.

well, composed of Early Hilversum sherds (Fig. 7.214). These were indicated as Late Bronze Age sherds in the original report.⁹⁰⁴ However, in our opinion the occurrence of raised cordons with fingertip impressions along with vertical rows of fingertip impressions points at a Middle Bronze Age A Early Hilversum classification.

7.48.3 Comments

Though this complex is small and not consistent in terms of context, we present the sherds since on the sandy plateaus of Brabant this material is relatively rare, apart from complete deposited pots.

7.49 Tilburg-Tradepark Noord

Most of the excavated terrain at Tilburg-Tradepark Noord is located on a cover-sand ridge (Fig. 7.213). A fluvio-periglacial valley borders this ridge directly to the south. The site is less than a kilometre removed from stream valleys to the east and west.⁹⁰⁵

7.49.1 Research history

The archaeological research at Tilburg-Tradepark Noord preceded the construction of a business park. The first phase of research in 2007 involved an auguring campaign, which indicated that archaeological remains in the area were most likely well preserved.⁹⁰⁶ Test trenches dug in 2008 mostly yielded remains from the Bronze and Iron Ages on the highest parts of the ridge (Fig. 7.215).⁹⁰⁷ The final phase of excavation took place in the summer of 2009.⁹⁰⁸ Amongst the research aims formulated for this phase of research, was the desire to gain further understanding of the structuration of Middle Bronze Age farmyards and settlements.⁹⁰⁹ Bronze and Iron Age object depositions were also identified as a focal point of the research. Because the results include possible Middle Bronze Age A farmsteads, the excavation is treated as research targeted at the period Late Neolithic to Middle Bronze Age A.

7.49.2 Excavation results

The most relevant results take the form of several houses that are all thought to date to the period between 1800 and 1500 cal BC. Of the six Middle Bronze Age houses discussed by the excavators, most attention is awarded to structure 7 (Fig. 7.216). This structure was found on the highest parts of the cover-sand ridge in a dense cluster of features. The excavators postulate that in this cluster two separate building phases can be recognised.⁹¹⁰ Most clearly visible are two rows of paired posts in the centre of the structure, constituting the main roof bearing elements. The walls are less well visible, especially in the eastern end. The structure is 20–25 m long and 6 m wide depending on what one decides is the eastern end. Of particular interest are the four elongated features that appear to have been used as foundation trenches for dividing walls inside the house. If this interpretation is correct, the house seems to have been divided into three sections. This is similar to the Middle Bronze Age B Emmerhout type houses found in the northern Netherlands.

The structure was dated using direct dates from two post pits, indirect ¹⁴C dates from features thought to be associated with the houses and through typological dating of the associated find material (Fig. 7.216). ¹⁴C samples of charred grain from two post pits gave largely overlapping calibrated date ranges in the 17th century BC. The indirect ¹⁴C dates were taken from various pits found in the same area as the house plan. These were interpreted as storage pits inside the houses, but the excavators make clear that the majority is probably younger than the house. The table of ¹⁴C dates clearly indicates this.⁹¹¹ The excavators assigned both dated post pits to the first habitation phase of the site in the first half of the 17th century BC. They suggest that the second habitation phase would have taken place during the 16th to 15th century BC. However, the excavators also forward an alternative interpretation.⁹¹² This interpretation departs from the idea that so many pits clustered inside a house, hardly seem a practical place for storage pits. Since the pits have different dates, it might be more plausible to interpret them as pits dug in an abandoned

⁹⁰⁴ Van Putten & Ter Wal 2006, 46.

⁹⁰⁵ Heunks 2015, 17.

⁹⁰⁶ Heunks 2015, 25.

⁹⁰⁷ Van Neunen 2007.

⁹⁰⁸ Tol 2015, 7.

⁹⁰⁹ Heunks 2015, 28.

⁹¹⁰ Tol 2015, 80; in our opinion there is only one phase.

⁹¹¹ Tol 2015, 126.

⁹¹² Tol 2015, 126.

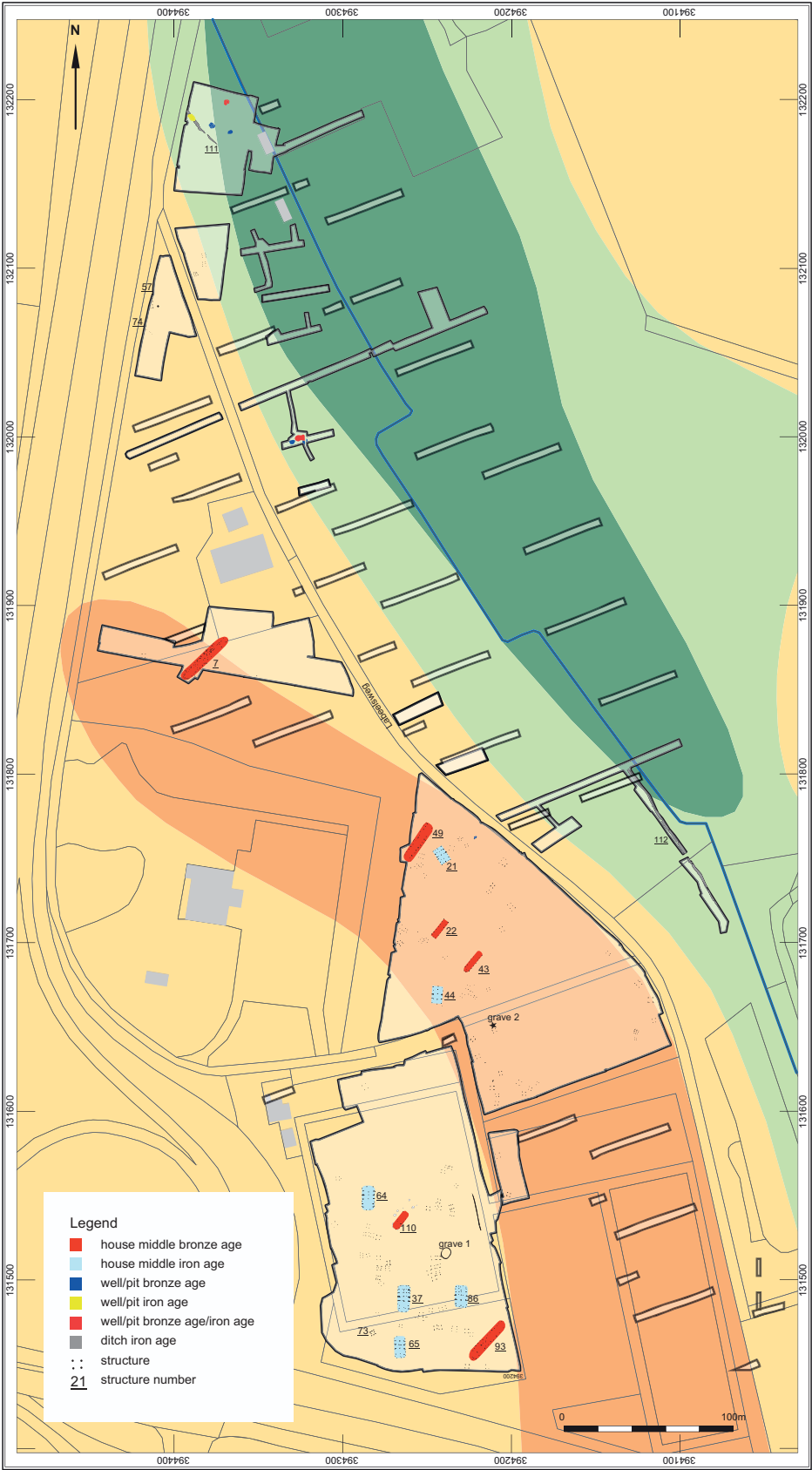
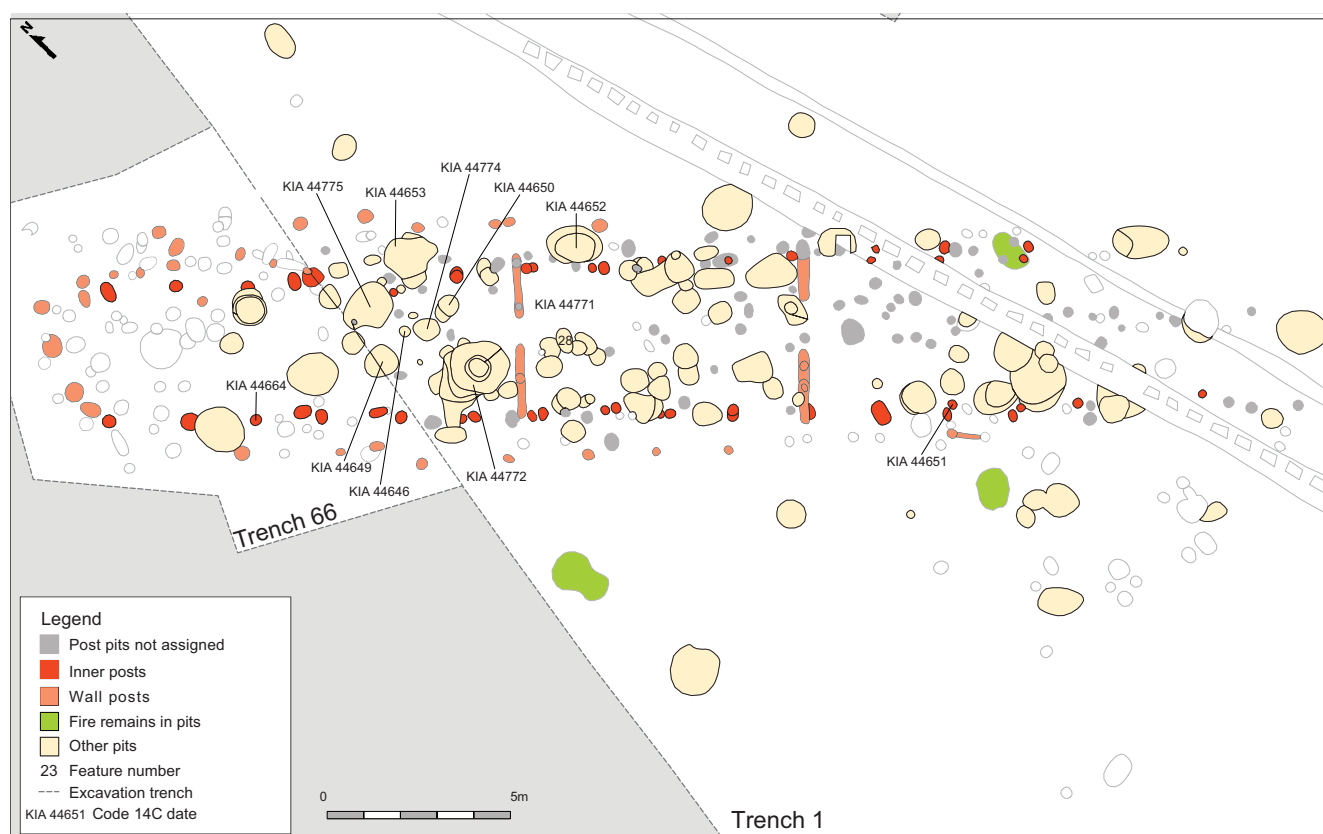


Figure 7.215 Plan of the test and excavation trenches, projected on the plan of high (orange) and low areas (green). In red structures are indicated, structure 7 is located in the centre (after Tol *et al.* 2015, 42, 81).



| | Trench | Feature | 2 s date range | <1900 | <1850 | <1800 | <1750 | <1700 | <1650 | <1600 | <1550 | <1500 | <1450 | <1400 | <1350> |
|-----------|--------|---------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KIA 44651 | 1 | 289 | 1738—1640 | | | | | | | | | | | | |
| KIA 44664 | 66 | 33 | 1689—1618 | | | | | | | | | | | | |
| KIA 44653 | 1 | 13 | 1889—1774 | | | | | | | | | | | | |
| KIA 44650 | 1 | 19 | 1745—1691 | | | | | | | | | | | | |
| KIA 44774 | 1 | 20 | 1732—1636 | | | | | | | | | | | | |
| KIA 44649 | 1 | 22 | 1608—1527 | | | | | | | | | | | | |
| KIA 44772 | 1 | 24 | 1501—1450 | | | | | | | | | | | | |
| KIA 44646 | 1 | 21 | 1453—1407 | | | | | | | | | | | | |
| KIA 44771 | 1 | 28 | 1452—1408 | | | | | | | | | | | | |
| KIA 44775 | 1 | 11 | 1441—1396 | | | | | | | | | | | | |
| KIA 44652 | 1 | 16 | 1431—1386 | | | | | | | | | | | | |
| Pottery | | | | | | | | | | | | | | | |

Figure 7.216 Structure 7 at Tilburg-Tradepark Noord with the table of ^{14}C dates and the location of the samples for these dates. The direct dates of posts are highlighted in the table (after Tol *et al.* 2015, 125).

house, or on a house site. We do not know how the house was abandoned, because no information was published on the abandonment of the posts. Two of the pits in the centre of the structure contained indications of fire. One of these contained the remains of three or four crucibles which had been used to smelt copper and tin (Figure 7.217).⁹¹³ Another large pit that

partially cut through a roof-bearing post of the houses contained burnt sediments.⁹¹⁴ This may suggest that the associated activities took place when the house had been abandoned.

Apart from structure 7, five other structures were postulated to have been in use during the Middle Bronze Age A (Fig. 7.217). Three of these structures are located c. 200 m south of

⁹¹³ Drenth 2015c, 192.

⁹¹⁴ Indicated in green in Figure 7.110.



Figure 7.217 Remains of four crucibles found in feature 28 (indicated in Fig. 7.109) (from Drenth 2015c, 192).

structure 7. Two more are located on the cover-sand flanks somewhat to the west (Fig. 7.217). Of these structures, structures 93 and 110 are not very reliable in our opinion, but structures 22, 43, and 49 conform to known schemes. Structure 43 is the only house plan of which a post hole was directly dated,⁹¹⁵ the other two houses were dated using samples from pits thought to be associated with the houses. In our view, this implies that only structure 43 could date to the last part of the Middle Bronze Age A.

The finds associated with the features are mostly ceramics. As a part of the pottery analysis, an ambitious new chronological framework for Middle Bronze Age pottery was proposed by Drenth.⁹¹⁶ He argues that the existing framework does not provide enough temporal resolution,

especially with respect to Drakenstein pottery, i.e. pottery decorated with a plastic cord around the neck. On the basis of form and decoration of the ceramic assemblage, Drenth distinguishes four HVC types, thirteen Drakenstein types, and five Laren (undecorated) types. He tries to anchor these assemblages in time by taking all known ¹⁴C dated complexes, but in our view does not succeed in his brave attempt to provide more resolution, even if some of the Tilburg-Tradepark Noord complexes are well dated.

When applying this newly formulated chronology to the Tilburg-Tradepark Noord pottery assemblage, the pottery used to date the house site gives a surprisingly broad date: between c. 1700-1650 and 1500 BC (Fig. 7.219).⁹¹⁷ The excavators explain this long time span by

⁹¹⁵ KIA44659: 3373 ± 27 BP: 1742-1709 (16.7%) or 1700-1615 (83%) calibrated at 2 sigma.

⁹¹⁶ Drenth 2015b, 127-144.

⁹¹⁷ Tol 2015, 125.

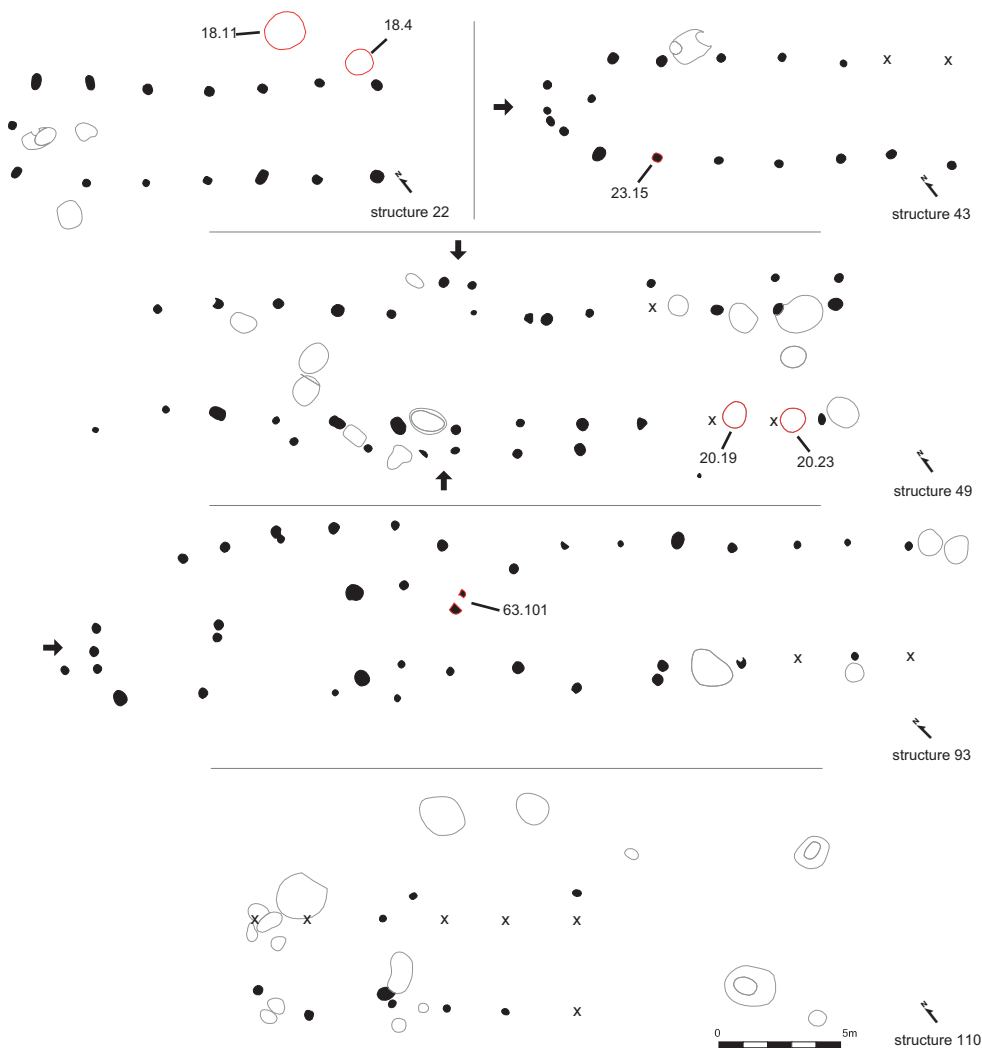


Figure 7.218 Structures attributed to the Middle Bronze Age A at Tilburg-Tradepark Noord (after Tol *et al.* 2015, 83 ff.).

the estimate that the two house phases that they recognised, lasted about 100 years each. All pits that they discuss are thought to have been dug during use phases of these two houses. Only the youngest pits would have been dug after abandonment, around 1400 cal BC.⁹¹⁸ However, in our view the second house phase did not exist and most pits have been dug after abandonment of the first phase.

7.49.3 Comments

Time will tell whether or not the new typology by Drenth will survive. What is important about this site is that an abandoned house site was

used for several hundred years, or so it seems, over and over again for the same kind of activities. This demonstrates the deep history of these local communities and the attachment to place. An Early Bronze-Middle Bronze Age B structure became a persistent place and even if the pits were filled in again, and maybe were not visible anymore, the general place seems to have been ‘remembered’. This is one example of how the study of abandonment can bring us further in understanding other aspects of settlement that just dates and phases.

⁹¹⁸ Tol 2015, 125.

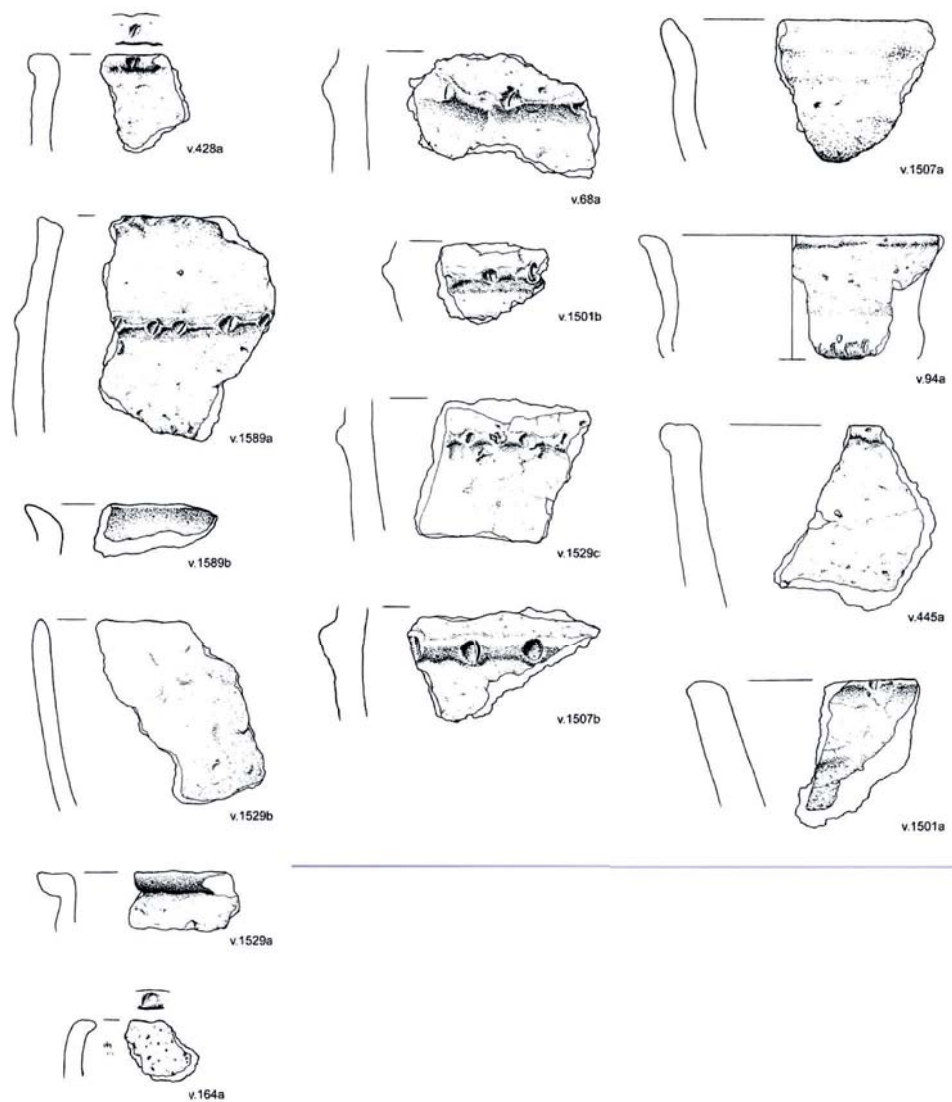


Figure 7.219 Pottery from Tilburg-TradePark Noord dating to the transition between the Early and the Middle Bronze Age, i.e. the 16th Century cal BC, scale 1:3 (from Drenth 2015b, 151). Drenth uses the definition by Lanting & Van der Plicht (2001) for the Early Bronze Age (1900-1575 cal BC).

7.50 Tilburg-Berkel Enschoot

The site is located on a coversand plateau with podsollic soils (Fig. 7.213).

7.50.1 Research history

In 2011 and 2012 Archol bv carried out a watching brief for the digging of a water transport line of 4750 m length.⁹¹⁹ Heijmans bv, the contractor, excavated the transport line. Archaeologists supervised and surveyed the digging of the trench and documented any finds that were encountered.

7.50.2 Excavation results

At the very western end of the research area, in trench 500, a large pot was discovered. The contractor had probably already removed a large part of the pot, as only 6 cm of the pot

remained. Feature 500.1 was a narrow pit in which an Early Hilversum pot was placed upside-down (Fig. 7.220). The pit was still 18 cm deep.⁹²⁰ According to the excavator, the pit was only a few centimetres wider than the pot itself, which has a diameter of 30 cm. According to Drenth, the pit probably was filled in directly after deposition.⁹²¹

Drenth continues his analysis of the pot with a summary of all Late Neolithic, Early Bronze Age and Early Hilversum pots and the context of their deposition. His conclusion is that the Tilburg-Berkel Enschoot possibly was associated with part of a human skeleton, especially with a skull.⁹²²

7.50.3 Comments

As a comment on Drenth's analysis we would add that virtually none of the Early Hilversum pots, BWB pots or pot beakers that we have described in Chapter 7, are actually associated with human remains. Following the famous burial of Metzendorf-Woxdorf,⁹²³ and examples cited by Louwe Kooijmans,⁹²⁴ Drenth tries to

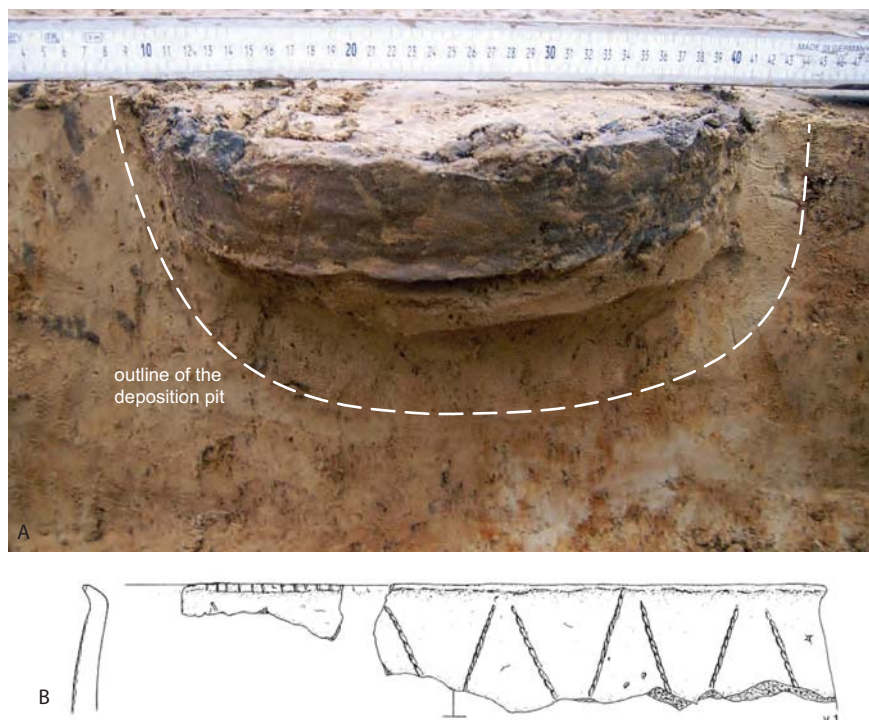


Figure 7.220 The Early Hilversum pot found at Tilburg-Berkel Enschoot. A. the situation during excavation; B. reconstruction of the pot, scale unknown; the diameter of the pot is c. 30 cm (from Drenth 2015a, 43 and 57).

⁹¹⁹ Van der Leije 2015, 7.

⁹²⁰ Drenth 2015a, 43.

⁹²¹ Drenth 2015a, 43.

⁹²² Drenth 2015a, 62.

⁹²³ Wegewitz 1960.

⁹²⁴ Louwe Kooijmans 1974.

reason that most upside-down deposited pots were burials of some kind. So far, however, we have encountered no data that can support that interpretation. It is an option, but one which needs to be substantiated with further finds before it is accepted. Careful analysis of pot and pit contents with methods that could detect decomposed bone, is definitely necessary.⁹²⁵

7.51 Geleen-Hof van Limburg

Geleen is located on the *Graetheide* plateau, which is a Pleistocene terrace created by sedimentation of the river Meuse (Fig. 7.221). The Late Neolithic remains at Geleen-Hof van Limburg were situated in a lower area and protected by a layer of colluvium.

7.51.1 Research history

The site was originally discovered in 1985 as an Early Iron Age site; the construction of a business park was to disturb these features, and therefore led to the excavation of the terrain. These excavations took place in multiple stages. The prospective phase of research consisted of field walking, auguring⁹²⁶ and test trenches.⁹²⁷ Half of the area that was selected for further research during these stages was excavated in 2003 and the other half in 2010. The results of the test trenches and the two phases of excavation were published together.⁹²⁸

During the field surveys flint artefacts were discovered that were spatially separated from the Iron Age remains found previously at the site.⁹²⁹ Several of these artefacts dated to the Middle or Late Neolithic, suggesting prehistoric occupation of the area that preceded the Iron Age site. This suggestion was confirmed when the test trenches were dug. In total, test trenches were dug covering a surface of 1623 m².⁹³⁰ One of these trenches yielded a feature that was originally thought to be (sub-)recent. Therefore, the feature was excavated with the use of the mechanical excavator. However, it proved to contain Middle to Late Neolithic Vlaardingen Culture / Stein group pottery.⁹³¹ Apart from this larger pit, several post pits at the site were also thought to date to the Neolithic. This

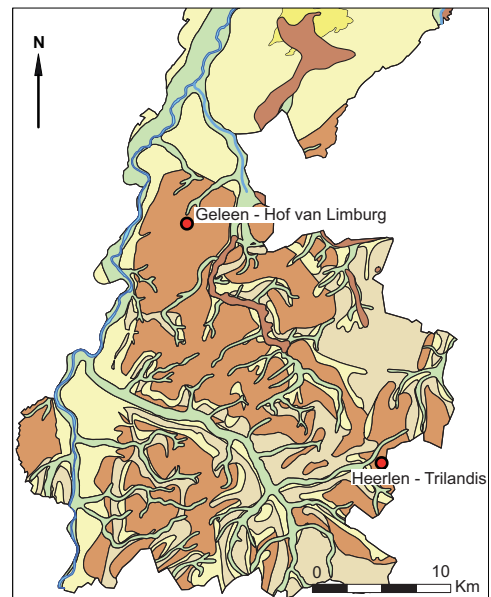


Figure 7.221 The palaeogeographic situation of Geleen-Hof van Limburg in 2750 cal BC (based on Vos & De Vries 2013).

interpretation was based on their colour, and their close proximity to the former Neolithic pit. The discovery of these finds played a large part in the decision to fully excavate the area prior to the initiation of construction works.

7.51.2 Excavation results

Features

A total area of just over a hectare was excavated in two phases. In the first phase, the excavation surface was directly at the level on which features became visible. However, during the excavation it became apparent that many finds were lost in this manner. Therefore, the second phase of the excavations proceeded to excavate two surfaces: one surface at the depth at which finds were expected to be encountered, and a second surface at the at which feature could be observed.⁹³²

With regard to the period under discussion, the results of the above-mentioned excavations are limited to a single cluster of small pits. Some of which are encompassed by one larger feature measuring c. 5.7 × 7.7 m (Fig. 7.222). This larger pit contained two or three pits that are interpreted as having been dug after the first pit

⁹²⁵ Cf. Section 8.6.3.

⁹²⁶ Conducted by RAAP in 2001; Geraeds 2002.

⁹²⁷ Conducted by Archol BV. in 2003.

⁹²⁸ Van Hoof, Van Wijk & Van der Linde 2013.

⁹²⁹ Geraeds 2002, 17.

⁹³⁰ Van Wijk 2013, 24.

⁹³¹ Van Hoof, Van Wijk & Van der Linde 2013, 64.

⁹³² Van Hoof, Van Wijk & Van der Linde 2013, 25-26.



Figure 7.222 Late Neolithic pit cluster at Geleen-Hof van Limburg (after Van Hoof, Van Wijk & Van der Linde 2013, 75).

had been filled in.⁹³³ The fill of this first phase suggests that the pit had been filled by hand, rather than as the result of natural processes. Furthermore, it is suggested that the feature was filled in relatively quickly after it had been dug, since there appears to be no evidence of soil or vegetation being trodden at the bottom of the pit, or colluvium entering the pit.⁹³⁴ The pits that were dug later into the fill of the first phase did remain open for a longer period, as colluvium had filled these pits up completely.

The largest of the pits that had been dug into the older pit had an irregular shape and measured c. 3.3 m × 1.8 m. The bottom of this pit has a charcoal rich fill, and a layer of Vlaardingse Culture potsherds. These sherds were deposited in a rectangular shape, with two to three of them being stacked on top of each other. The excavators suggest that these sherds might have been deposited to reinforce the otherwise muddy floor of the pit, which implies that people would have frequently walked into the pit.

Micro-morphological research indicated that the charcoal rich layer at the bottom of the pit was not formed by fires that burned inside the pit, rather that the charcoal originated elsewhere.⁹³⁵ The layer of sherds appears to have been added as a stable base for the pit floor. The pit itself has been filled in in a natural way allowing slake

layers to form at different levels.⁹³⁶ The sampled charcoal was also analysed in order to ascertain what trees had been burnt. The charcoal mostly consisted of hazel (*Corylus avellana*) and maple (*Acer spec.*) remains; both species would have served as excellent fire wood.

Apart from this cluster of pits, a possible structure was uncovered. A post configuration consisting of eight to eleven features was interpreted as a granary dating to a period contemporaneous to the cluster of pits (Fig. 7.223).⁹³⁷ The argument for this contemporaneity consisted of the observation that the fill and colour of the features are comparable, but no finds were encountered that might support a Late Neolithic date for the granary. The excavators keep their reservation about the interpretation of these features as a structure, because the configuration of posts seems irregular. We share this reservation, also because a granary at Veldhoven-Habraken which would be roughly comparable in terms of dating is hardly comparable to the granary from this site.⁹³⁸

Finds

The various pits encountered at Geleen-Hof van Limburg yielded a total of 528 Stein Group pot sherds.⁹³⁹ Most of these sherds were too small to contribute to any analyses, leaving 194 sherds for more detailed studies. Almost all of

⁹³³ Van Hoof, Van Wijk & Van der Linde 2013, 74.

⁹³⁴ Van Hoof, Van Wijk & Van der Linde 2013, 74.

⁹³⁵ Exaltus 2013, 77-79.

⁹³⁶ Exaltus 2013, 77-79.

⁹³⁷ Van Hoof, Van Wijk & Van der Linde 2013, 83-84.

⁹³⁸ Van Kampen & Van den Brink 2013, 51; Cf. Section 7.47.

⁹³⁹ Meurkens 2013, 85-89.

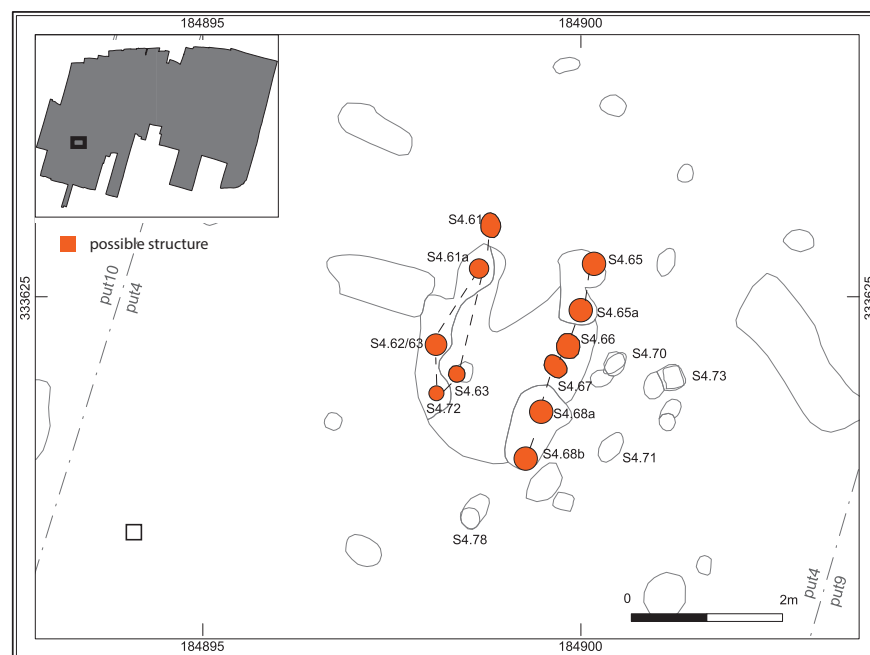


Figure 7.223 Proposed granary of contemporaneous date to the Late Neolithic cluster of pits at Geleen-Hof van Limburg (after Van Hoof, Van Wijk & Van der Linde 2013, 83).

these sherds were found as part of the packing in one of the pits. These sherds originated from at least three vessels, of which parts were spread throughout the pit (Fig. 7.224). According to the excavators, this implies that the vessels had been broken before they were deposited, strengthening the argument that the deposition of these sherds is both intentional and functional.

The excavators assign the pottery to the Stein Group. However this classification is only based on the location of the site outside the Rhine-Meuse delta which is seen as the homeland of the Vlaardingen Culture. The difference between both archaeological cultures in terms of ceramics is non-existent, therefore we are dealing with a deposit of the Vlaardingen Culture.⁹⁴⁰

Apart from the pottery, several flint tools and flakes were found during the excavation. The flint was almost exclusively found outside its original context, as it was found during the digging of trenches and in Iron Age features. Therefore, the material has no value as a coherent assemblage.

The charcoal found on the bottom of the pit containing the Stein pottery was ¹⁴C dated to the Late Neolithic A (most probable ranges between c. 2890 and 2567 cal BC)⁹⁴¹ which implies that

the assemblage represents the late phase of the Vlaardingen Culture. It is important to realise that there is no additional Corded Ware Culture pottery at the site, so the pits may represent a phase before Corded Ware Culture pottery was introduced in Vlaardingen contexts.

7.51.3 Comments

The cluster of pits that was excavated at Geleen-Hof van Limburg helps us understand what short-term habitation looks like in the archaeological record. The convincingly argued re-use of the pit after it had originally been back-filled shows how these activities-however hard to understand-repeatedly took place at the same location. This is reiterated further by the investment of breaking pots in order to create a stable surface within the pit, possibly in order to retain its intended functionality. A further important aspect of the site is that the pottery and ¹⁴C dates show that the assemblage is to be placed before the transitional phase of the late Vlaardingen Culture in which SGC elements are incorporated. This is the only example of such a site among the excavations that took place after 2001.

⁹⁴⁰ Cf. Section 8.2.

⁹⁴¹ GrN-27837: 4140 ± 60: 2886-2572 (99.5%), 2511-2505 (0.5%) calibrated at 2 sigma. Poz-14566: 4095 ± 35: 2864-2805 (21.6%), 2760-2567 (74.7%), 2521-2498 (0.03%) calibrated at 2 sigma.

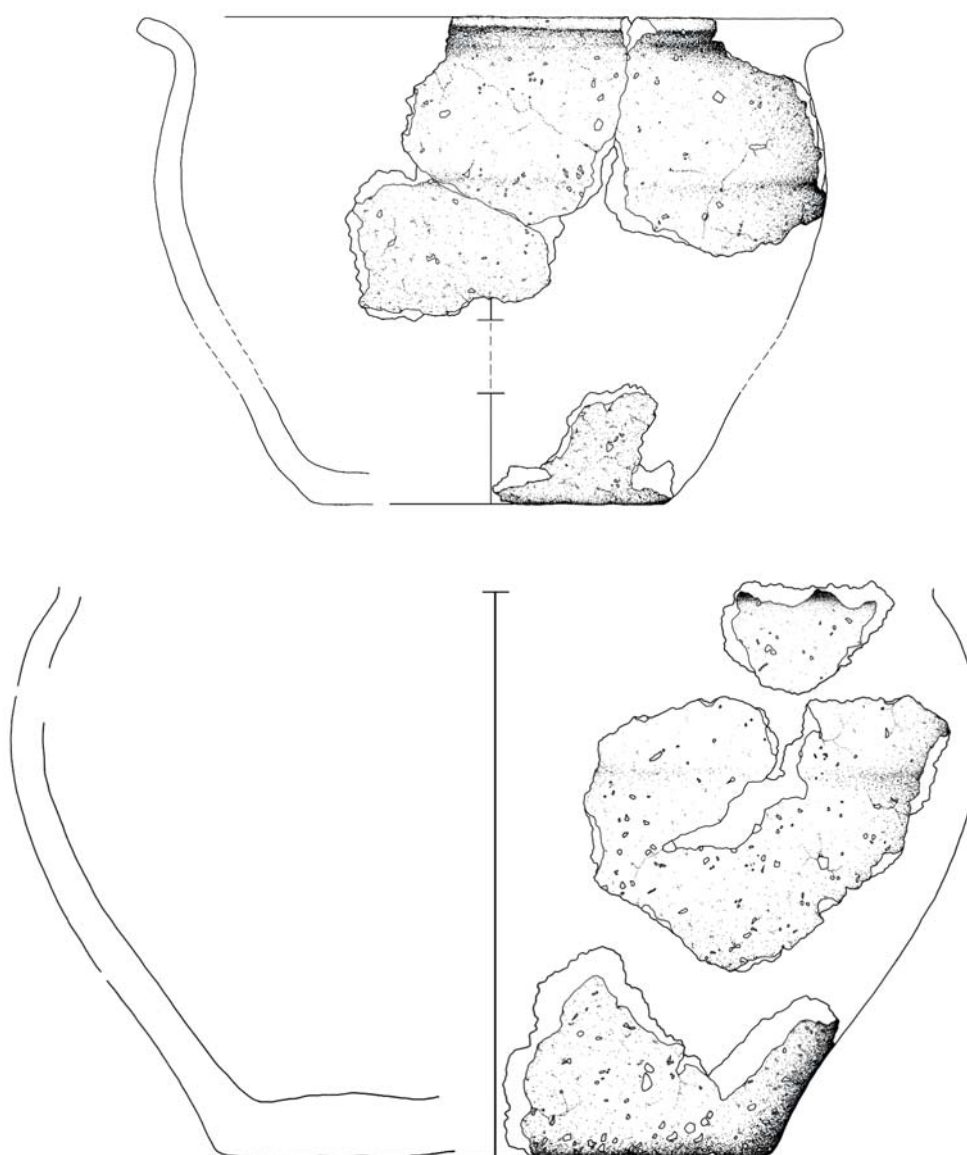


Figure 7.224 Two out of a total of three Vlaardingen/Stein Group pottery vessels of which sherds were used to pack the bottom of the pit, scale 1:3 (compiled after Meurkens 2013, 87-88).

7.52 Heerlen-Trilandis

Heerlen is located on loess soils on the Simpelveld terrace of the River Meuse. At a local level, the environment of the site is characterised by dry valleys through which water used to flow under periglacial conditions during the Pleistocene. There is a considerable (for Dutch standards) difference in height within the site ranging from +173 to +180 m OD (above NAP). Site 5, where the Late Neolithic

remains were found that are described here, is situated on a transitional zone between a high point in the landscape and a dry valley (Fig. 7.221).

7.52.1 Research history

The site Heerlen-Trilandis was excavated as a settlement site from the Roman period, but during the prospective phase of research in preparation of the construction of a business



Figure 7.225 The AOO beaker found at Heerlen Trilandis during the prospective phase of research and in the lab (compiled after Tichelman 2014, 71, 72).

park, a pit containing an AOO beaker was uncovered. Because Late Neolithic remains are rare in Southern Limburg, it was decided that the area surrounding the pit had to be excavated.

very well have been part of a burial, but in that case the inhumation has decayed beyond recognition. There are no settlement features or burials anywhere around it.

7.52.2 Excavation results

The pit that yielded the AOO beaker during the prospective phase was excavated further during the excavation (Fig. 7.225). Burial remains were absent; but the feature was nevertheless interpreted as a burial pit due to its long rectangular shape. A piece of unworked sandstone was found next to the AOO beaker.⁹⁴² Charcoal from the pit was dated to 2705-2563 cal BC.⁹⁴³

7.52.3 Comments

This site demonstrates the difficulty of using chance finds to get more information on the Late Neolithic. This beaker deposition could

⁹⁴² Tichelman 2009, 70, Cf. Drenth, Keijzers & Tichelman 2011.

⁹⁴³ Poz-39308: 4085 ± 35 : 2861-2807 (18.7%), 2757-2718 (0.07%), 2705-2563 (66.2%), 2534-2493 (0.08%), calibrated at 2 sigma.

8.1 Introduction

In the previous chapters we summarised the data that have become available in the last 15 years of development-led research. The aim was to find out whether (and how) Malta-research has improved our knowledge of the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A (c. 2900 to 1500 cal BC) in the Netherlands. In this chapter we try to assess that knowledge and present a *status quaestionis* based on new data, but also on insights that have been generated by PhD-theses and other scientific contributions published in the last 15 years. In chapter 3 we outlined a number of themes, and it is important to investigate how development-led archaeological research has advanced our understanding of the Late Neolithic, the Early Bronze Age and the Middle Bronze Age A with respect to these themes. These themes are: chronology and periodisation (Section 8.2), settlement structure and organisation (Section 8.4), the economic basis (Section 8.5), burial and other ritual practices (Section 8.6), and social structure and social organisation (Section 8.7). We have added one theme that so far has had little attention, but in our view is crucial for understanding why and how archaeological traditions in the Netherlands developed. That is the discussion of how the Netherlands can be divided into more or less coherent archaeological landscapes and how that can be translated into prehistoric communication networks (Section 8.3). It is not easy to summarise in which of these themes development-led archaeology has advanced our knowledge of the past. We have discovered many more sites, but the actual gain in knowledge is a matter of discussion. We will try to do that in the next paragraphs, but a few indications can already be given by looking at the summarised data in Table 8.1. In this table we have tried to indicate to what extent every site has contributed to gain in knowledge. The list is organised according to region and landscape zones, following the order in Chapter 7. The list shows that in fact a few sites have contributed in most themes indicated. If we leave out the sites excavated before developer-led archaeology started, we are left with Emmeloord, Hattemerbroek, the coastal barrier

sites near The Hague, and in potential also Hazerswoude. Next also the river area sites have yielded important data, especially on economy. These sites have yielded pottery assemblages as well, but less coherent than in other sites. Even though this would have been a really interesting line of approach, we have refrained from comparing the Dutch data to similar manifestations outside the Netherlands. The reasons are twofold. One is that the assignment for the book clearly focused on the gain of knowledge of the Dutch version of developer-led archaeology. The second is that the topics that are treated are so diverse and sometimes detailed that a good comparative study would take too much effort in the context of the present book. Moreover much of the data we discuss is about settlements, in which respect the Rhine-Meuse basin, the Vecht-IJssel basin and their connecting uplands are rather unique with respect to the quality of data.

8.2 Chronology and periodisation

In paragraph 3.1 we discussed some of the peculiarities of the Dutch periodisation, especially with regard to the Early Bronze Age. Traditionally, we distinguish an Early Bronze Age from 2000-1800 cal BC, and a Middle Bronze Age A from 1800-1500 cal BC. The start of the Early Bronze Age used to be defined by the first occurrence of bronzes⁹⁴⁴, but is now defined by the occurrence of pottery with barbed wire decoration.⁹⁴⁵ Based on an analysis of ¹⁴C-dates and the southern German chronology, Lanting and van der Plicht have proposed to date the Early Bronze Age from 1900-1575 cal BC.⁹⁴⁶ However, this poses a real problem, because we have no indications that Barbed Wire Beaker pottery occurs much later than 1700 cal BC.⁹⁴⁷ The Dutch periodisation leads to other discussions as well. Traditionally, the Late Neolithic A starts with the Single Grave Culture in the northern, central and eastern Netherlands, while in the southern and western Netherlands the Stein Group and Vlaardingen Culture traditions continue from the Middle Neolithic. Between 2600 and 2500 cal BC in the western and central Netherlands, SGC 'mixes' with Vlaardingen culture to form the diffuse entity that is called VI2b.⁹⁴⁸ Around 2500 cal BC the Bell

⁹⁴⁴ Cf. Fokkens 2001 for definitions and a discussion of the traditional periodisation.

⁹⁴⁵ Lanting & Van der Plicht 2003, 157.

⁹⁴⁶ Lanting & Van der Plicht 2003, 157.

⁹⁴⁷ Cf. Ten Anscher 2012.

⁹⁴⁸ Van den Broeke, Fokkens & Van Gijn 2005, 28

Table 8.1 The contribution of the sites discussed in Chapter 7 to the gain in knowledge about the Late Neolithic (LN), the Early Bronze Age (EBA) and the Middle Bronze Age A (MBA A) in the Netherlands

| Section (7) | Place | Landscape | Location | Period | Periodisation | economy | Burial | Settlement | Tillage | Depositions |
|-------------|--------------------------|---------------------------|-----------------|------------|---------------|---------|--------|------------|---------|-------------|
| 7.2 | Mienakker | West-Frisia / Vecht basin | levee | LN A | ++ | - | + | ++ | - | - |
| 7.3 | Zeewijk | West-Frisia / Vecht basin | levee | LN A | ++ | - | + | ++ | ++ | - |
| 7.4 | Keinsmerbrug | West-Frisia / Vecht basin | crevasse splay | LN A | ++ | - | - | ++ | - | - |
| 7.5 | Zwaagdijk | West-Frisia / Vecht basin | levee | LN A-EBA | ± | - | - | - | ++ | - |
| 7.6 | Emmeloord | Vecht basin | crevasse | MN B-MBA A | - | ++ | - | + | - | - |
| 7.7 | Schokland | Vecht basin | river dune | LN A-MBA A | ++ | ++ | ++ | + | - | - |
| 7.8 | Oldeboorn | Drenthe plateau | river dune | LN B-MBA A | ± | ++ | - | ++ | - | - |
| 7.9 | Steenendam | Drenthe plateau | coversand | LN A | ± | - | - | + | - | - |
| 7.10 | Leek | Drenthe plateau | coversand | LN A | - | - | + | - | - | - |
| 7.11 | Hattermerbroek | IJssel valley + upland | river valley | LN A-MBA A | + | ++ | ++ | ++ | - | - |
| 7.12 | Deventer | IJssel valley + upland | coversand | LN A | - | - | + | - | - | - |
| 7.13 | Twello | IJssel valley + upland | coversand | LN A | - | - | + | - | - | - |
| 7.14 | Buren | eastern plateau | coversand | EBA | - | - | - | + | - | - |
| 7.15 | Vasse | eastern plateau | coversand | LN B-EBA | - | - | - | + | - | - |
| 7.16 | Hasselo | eastern plateau | coversand | LN B-EBA | - | - | - | + | - | - |
| 7.17 | Zutphen | IJssel valley + upland | coversand | LN B | - | - | + | + | - | - |
| 7.18 | Hengelo | eastern plateau | coversand | LN B | - | - | - | - | - | ++ |
| 7.19 | Groenlo | eastern plateau | coversand | LN A | - | - | + | - | - | - |
| 7.20 | Kilder | eastern plateau | coversand | MBA A | - | - | + | - | - | - |
| 7.21 | Didam | eastern plateau | coversand | LN B | - | - | - | - | - | + |
| 7.22 | Warmond | coastal barriers | coastal barrier | LN A | ++ | + | - | ++ | - | - |
| 7.23 | Den Haag-Bronovo | coastal barriers | coastal barrier | LN A | ++ | ++ | + | ++ | + | - |
| 7.24 | Den Haag-Wateringse veld | coastal barriers | coastal barrier | LN A | ++ | ++ | - | ++ | - | - |
| 7.25 | Den Haag-Binnentuinen | coastal barriers | coastal barrier | MBA A | ++ | | + | ++ | + | - |
| 7.26 | Hazerswoude | Rhine delta | crevasse splay | LN A | ++ | ++ | + | ++ | - | - |
| 7.27 | Barendrecht | Meuse delta | levee | LNB-MBA A | ++ | ++ | - | ++ | - | - |
| 7.28 | Houten | Rhine-Meuse river area | crevasse splay | EBA | ++ | ++ | + | ++ | - | - |
| 7.29 | Amerongen | southern Veluwe | coversand | LN B | - | - | - | - | - | + |
| 7.30 | Rhenen-Remmerden | southern Veluwe | coversand | EBA | - | - | - | ++ | - | - |
| 7.31 | Rhenen-Fietspad | southern Veluwe | coversand | LN B | - | - | - | - | - | ++ |
| 7.32 | Wageningen | southern Veluwe | meander belt | LN B | - | - | - | - | - | - |
| 7.33 | Heteren | Rhine-Meuse river area | crevasse splay | LN B | - | ++ | + | + | - | - |
| 7.34 | Culemborg | Rhine-Meuse river area | meander belt | EBA | + | | - | + | - | - |
| 7.35 | Meteren | Rhine-Meuse river area | crevasse splay | LN B-MBA A | + | ++ | + | + | - | - |
| 7.36 | Geldermalsen | Rhine-Meuse river area | crevasse splay | MB A | + | ++ | + | + | - | - |
| 7.37 | Geldermalsen | Rhine-Meuse river area | crevasse splay | LN B | + | - | - | + | - | - |
| 7.38 | Beuningen Gld | Meuse valley | meander belt | LN B | - | - | + | + | - | - |
| 7.39 | Wijchen | Meuse valley | river dune | LNB-MBA A | - | + | + | + | - | - |

Table 8.1 The contribution of the sites discussed in Chapter 7 to the gain in knowledge about the Late Neolithic (LN), the Early Bronze Age (EBA) and the Middle Bronze Age A (MBA A) in the Netherlands

| Section (7) | Place | Landscape | Location | Period | Periodisation | economy | Burial | Settlement | Tillage | Depositions |
|-------------|-------------------|-------------------|---------------|-----------|---------------|---------|--------|------------|---------|-------------|
| 7.40 | Cuijk | Meuse valley | river dune | LN B-EBA | - | - | - | + | - | + |
| 7.41 | Afferden | Meuse valley | river terrace | EBA | - | - | - | - | - | + |
| 7.42 | Rosmalen | Brabant coversand | coversand | LN B | - | - | - | - | - | + |
| 7.43 | Vorstenbosch | Brabant coversand | coversand | MBA A | - | - | - | - | - | + |
| 7.44 | Nistelrode | Brabant coversand | coversand | LNB-MBA A | - | - | + | - | - | + |
| 7.45 | Boekel | Brabant coversand | coversand | MBA A | - | - | - | - | - | ++ |
| 7.46 | Son en Breugel | Brabant coversand | coversand | MBA A | - | + | - | + | - | - |
| 7.47 | Veldhoven | Brabant coversand | coversand | LN A | - | - | - | + | - | - |
| 7.48 | Tilburg-Surfplas | Brabant coversand | coversand | EBA-MBA A | - | - | - | + | - | - |
| 7.49 | Tilburg-Tradepark | Brabant coversand | coversand | MBA A | - | + | - | ++ | - | - |
| 7.50 | Tilburg-Berkel | Brabant coversand | coversand | MBA A | - | - | - | - | - | + |
| 7.51 | Geleen | Limburg plateau | river terrace | LN A | - | + | - | + | - | - |
| 7.52 | Heerlen | Limburg plateau | river terrace | LN A | - | - | + | - | - | - |

++ indicates a considerable contribution, + indicates a moderate contribution, ± indicates a little or no contribution, - indicates no contribution.

Beaker Culture appears in the entire country. Having presented the traditional view, it is important to note that ideas have changed since 2001, especially because of the settlement evidence from recently published sites and syntheses in West Frisia. The most influential development, in our view, is the awareness that ¹⁴C-dating cannot, or only to a very small extent, help us in placing pottery and other artefact categories on a refined typochronological timescale.⁹⁴⁹ The second development that has changed our ideas is the awareness that data from funerary contexts tell an entirely different story than settlement data in terms of cultural complexes and connections. Given that development-led archaeology has yielded several new settlements and that the Valletta Harvest projects have resulted in the publication of many old settlement excavations, our view of these complexes and connections has dramatically changed.

We divide the following discussion of periodisation into two sections. Firstly, we discuss the problems with ¹⁴C-chronology and the implications of those problems for the traditional periodisation (Section 8.2.1).

Secondly, we discuss how settlement evidence has changed our views on periodisation and cultural connections (Section 8.2.2).

8.2.1 Radiocarbon dating and wiggle platforms

In the Netherlands, J. Lanting's opinion on ¹⁴C-dating, typology and periodisation always has been fundamental. In co-authorship with others, his work has continuously built and refined the Dutch ¹⁴C chronologies.⁹⁵⁰

However, its consequences for periodisation and typochronology are now under discussion, especially because of the effect of wiggle platforms. We think this discussion is essential for a correct understanding of the value of the traditional typochronology. Therefore it has direct implications for future Research Agendas. The work of scholars like Furholt and Włodarczak is crucial in understanding this.⁹⁵¹ Furholt explains that the wiggle platforms in the period under discussion in the present work prohibit accurate assessment of individual

⁹⁴⁹ Cf. Section 8.2.1 for arguments.

⁹⁵⁰ Lanting & Van der Waals 1976; Lanting & Mook 1977; Lanting & Van der Plicht 2002; Lanting & Van der Plicht 2003; Lanting 2008.

⁹⁵¹ Furholt 2003; Włodarczak 2009.

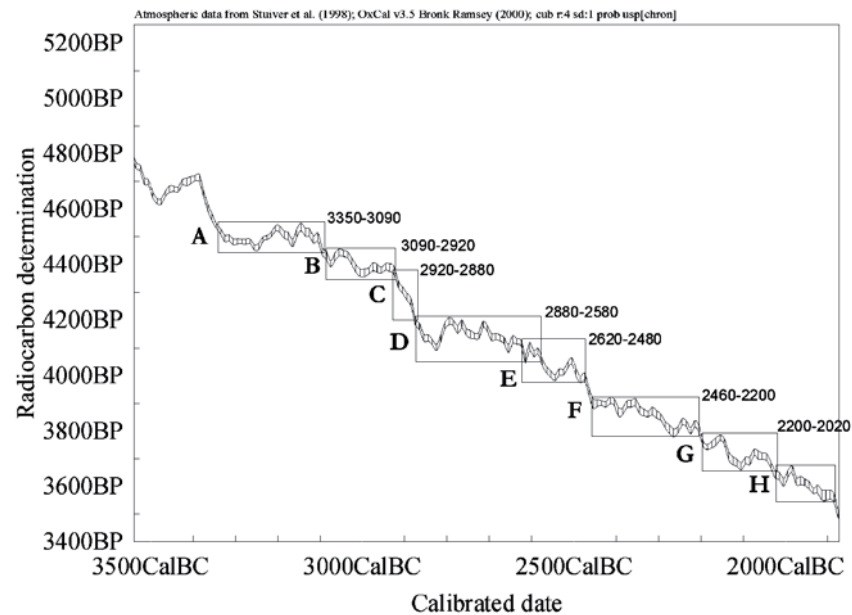


Figure 8.1 Platforms in the ^{14}C -calibration curve as identified by Furholt (from Furholt 2003b, 5).

types or periods on the basis ^{14}C -dates (Fig. 8.1). Especially the Dutch sequence is influenced by this phenomenon because many of the Dutch samples are based on charcoal. Beckerman uses Furholt's ideas to re-discuss the Dutch Beaker dates and comes to the same conclusion: the Dutch typological sequence for SGC and BBC ceramics that we are so familiar with, finds no basis in ^{14}C -data.⁹⁵²

What does this mean for the existing typochronology? To begin with, it implies that nor the 1a-1f (SGC), nor the 2II (All Over Ornamented Beaker) or the 2I (BBC) typological sequences can be supported by ^{14}C -dates. Consequently, it is impossible to maintain that All Over Ornamented Beakers developed in the Netherlands out of SGC beakers and that BBC beakers developed from All Over Ornamented beakers.⁹⁵³ Not everyone is yet aware of this development: none of the reports that we have read refers to Furholt, even though his study is relevant for the entire period under study in this book. In general, commercial archaeologists in the Netherlands still refer to the standard beaker typology as a fact. In the last 15 years development-led archaeology has produced absolutely no advance in this respect, because the problem of the wiggly platforms has been completely ignored so far.

Yet, a number of accepted 'truths' have disappeared through wiggly platform problems.

For instance, there is no ground any longer for the Beaker sequence published by Lanting and Van der Waals⁹⁵⁴, nor for the four-phase division of the SGC by Drenth and Lanting.⁹⁵⁵ Virtually all SGC ^{14}C -dates fall into Furholt's phase D (2880-2560 cal BC), which spans almost the entire SGC Period. This implies that any SGC Beaker type has about the same date range, including AOO beakers.⁹⁵⁶

In chapter 3, we have briefly explained the rather strange typological situation (compared to the remainder of Western Europe) of All Over Ornamented pottery in the Netherlands as the end of the Corded Ware Culture rather than as the start of the Bell Beaker Culture.⁹⁵⁷ Yet there are several arguments in favour of this position of AOO Beakers in the Dutch sequence. Even though these are not the result of the analysis of development-led research, we present them below. The first is they are associated with Grand-Pressigny knives that in burial contexts.⁹⁵⁸ These can be seen as a continuation of the use of the large flint blades as grave gifts in the Corded Ware Culture, but have no successor in Bell Beaker Culture burials.

A second argument to interpret AOO Beakers as part of the SGC, rather than the start of the BBC, is its frequent association with VLC/SGC pottery in settlements.⁹⁵⁹ Bell Beakers in general are not part of that assemblage. Thirdly, the archers' set of objects that is so typical for the BBC burials, is

⁹⁵² Beckerman 2015.

⁹⁵³ Beckerman 2012, Fokkens 2012a.

⁹⁵⁴ Lanting & Van der Waals 1976.

⁹⁵⁵ Drenth & Lanting 1991; for a concise

version see Drenth 2005.

⁹⁵⁶ Beckerman 2015.

⁹⁵⁷ Cf. Fokkens 2012a for a full discussion;

Lanting & Van der Plicht 2002, 80.

⁹⁵⁸ Generally referred to as GP daggers. However, since it is highly unlikely that these artefacts really were used for stabbing, we prefer the more neutral term 'knife'.

⁹⁵⁹ Cf. the discussion in Section 8.1.2.

not yet present in association with AOO Beakers, neither do copper daggers occur in association with AOO pottery. Therefore our conclusion is that, even if elsewhere AOO pottery is connected to the start of the BBC, we prefer to keep the Dutch manifestation connected to the end of the SGC and to the end of the Late Neolithic A. Even if ¹⁴C-dates of pottery cannot help us here, we suggest that AOO Beakers and the end of the Late Neolithic A are positioned at Furholt's platform E (2620-2480 cal BC). The Late Neolithic B coincides (and begins) with platform F (2460-2200). So if we want to propose a date for the Late Neolithic A-Late Neolithic B transition 2500 cal BC is as good as any.

8.2.2 Changing views on archaeological cultures

Did development-led archaeology contribute to a better understanding of the relation between different 'overlapping' cultural traditions, like the relation between the Vlaardingen and the Corded Ware Culture, between Corded Ware and the Bell Beaker Culture, etc.? Has settlement evidence, for instance, changed our views on how new traditions were introduced? We think it has, but not as a direct result. But development-led research has produced some data that can be used in ongoing debates about these cultural traditions.

There is, for instance, a debate about the 'relation' between the Vlaardingen Culture and Stein Culture.⁹⁶⁰ Traditionally they are seen as different entities. Vlaardingen Culture sites are located in the Rhine-Meuse basin, but further south the Stein Culture is thought to have existed. Even though the data gathered in the last decennia have not contributed much to this question, the experts now seem to agree that the Stein Culture and Vlaardingen Culture are *not* two different cultural entities. At the Reuvensdagen conference in 2014 one of the established Vlaardingen / Stein Culture specialists (L. Verhart) said: 'Without a flint assemblage, Vlaardingen Culture cannot be distinguished from Stein.'. Raemaekers, one of the other Middle Neolithic and Vlaardingen Culture experts states: 'It is remarkable that the pottery of the Stein group can be placed within the band width of the Vlaardingen Culture

without any problems. There are also clear similarities with regard to the use of flint. One could argue that the Vlaardingen Culture and the Stein Culture are in fact a single archaeological entity.'⁹⁶¹ Therefore, even though development-led research has brought no new evidence in this respect, we should confer with these specialists, and abandon the term Stein Culture as a distinct entity.

Another debate concerns the VLC-SGC relations. The traditional view is that in late phase of the Vlaardingen Culture (VI2b) SGC beaker pottery is added to the standard repertoire of undecorated VLC pottery. The general idea appears to be that VLC people started using Corded Ware pottery in a kind of mysterious cultural mix towards the end of the Late Neolithic A, or in other words: in Furholt's phase D (2880-2560 cal BC).

Development-led archaeology has produced few sites with VLC and SGC material, notably Hazerswoude-Rijndijk Windturbinepark and Wijchen.⁹⁶² Only the Hazerswoude-Rijndijk Windturbinepark site potentially could have shed some light on this issue, but the resolution of the stratigraphy apparently was not fine enough. In our opinion this site shows a mix of late VLC and SGC pottery and finds, but the excavators assumed that this was not the case. They suggest a separate SGC phase was present at the site. However, in her recent study of most known Vlaardingen and Corded Ware sites in the western Netherlands, Beckerman does not support that interpretation.⁹⁶³ Her view is based on the analysis of many settlement site data in the western Netherlands, but also on an assessment of the validity of ¹⁴C samples so far used for the construction of the chronology. The ceramic sequences shows developments in form and to some extent in decoration, but these are diffuse. Complexes can only be dated roughly with a combination of characteristics (Fig. 8.2). The most radical conclusion of Beckerman's analysis is that at least in West Frisia, VLC and SGC pottery are part of the same settlement assemblages, possibly right from the start of the SGC. In the west, a 'pure' Vlaardingen phase remains (VI2a), and the admixture with SGC elements only starts in phase E. In the west, this late Vlaardingen Culture phase appears to be predominantly grog tempered pottery, while perforations below the rim are generally absent.⁹⁶⁴

The consequence of her analysis is that what

⁹⁶⁰ Cf. Chapter 3.

⁹⁶¹ Raemaekers 2005, 274; our translation.

⁹⁶² Chapter 7.1; 7.7.

⁹⁶³ Beckerman 2015.

⁹⁶⁴ Phase F is included by Beckerman, because technically it cannot be excluded for separate pottery types on the basis of ¹⁴C-dates. However, we think that it is not realistic to propose that Corded Ware Culture and late Vlaardingen Culture continue until 2200 BCE, not even in West Frisia. But indeed, this possibility remains open on the basis of the available ¹⁴C-dates.

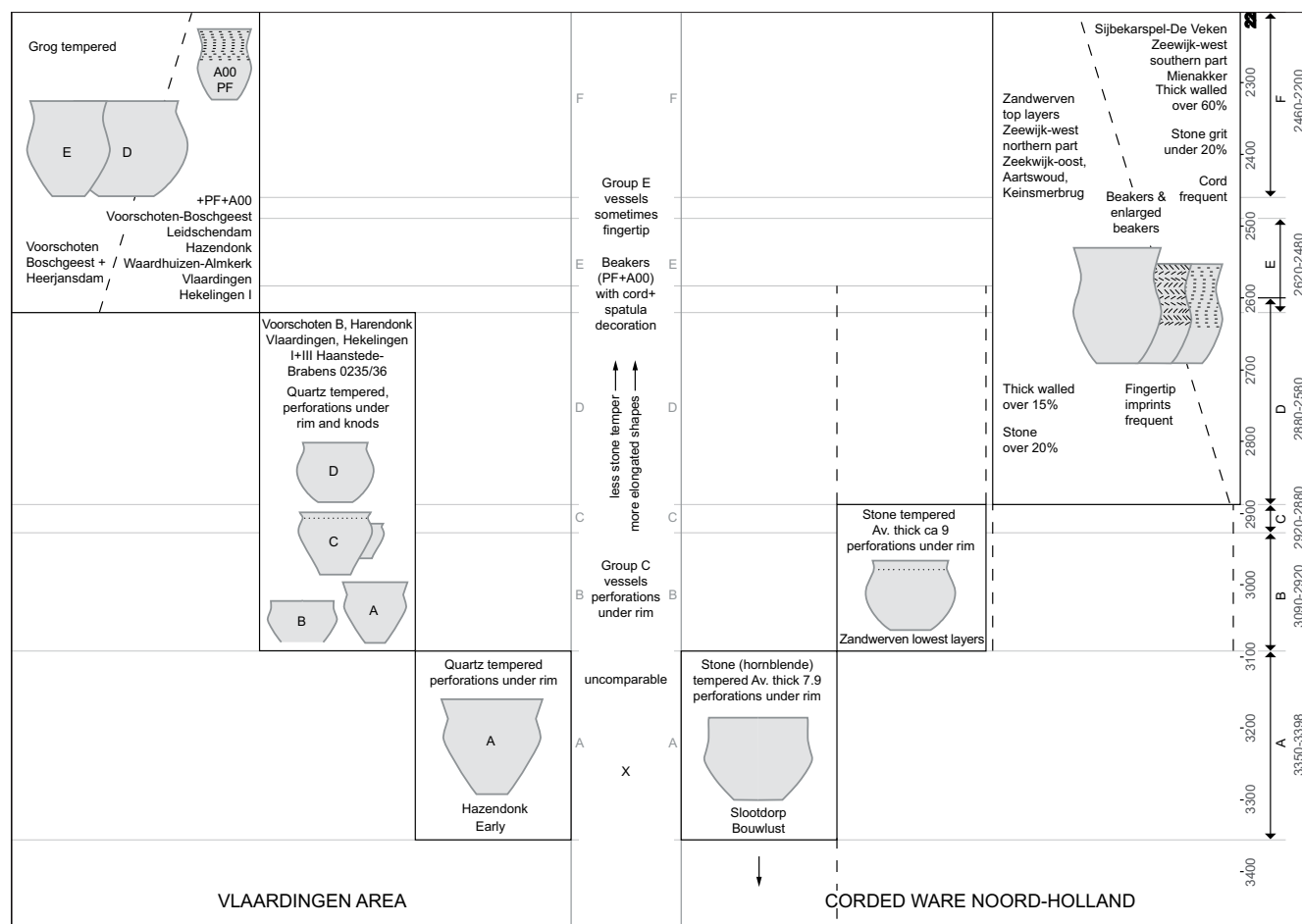


Figure 8.2 Developments in Late Neolithic A ceramics according to Beckerman (from Beckerman 2015, 190).

in the western Netherlands is called late Vlaardingen, in West Frisia is called Late Single Grave Culture. Beckerman distinguishes between an early and a late group within the West Frisian SGC sites, (Fig. 8.3), but it is not possible for her to tell at what point in time these groups begin or end in the period between phases D-F (2880–2200 cal BC).⁹⁶⁵ It is clear that what we used to call VLC pottery, mainly the undecorated thick-walled pottery, is present at every site, and therefore part of the SGC repertoire. Or, *vice versa*, that SGC pottery is generally an element of what we call the (late) Vlaardingen Culture. The Hazerswoude-Rijndijk Windturbinepark assemblage fits that picture very well, though there an older VLC phase-without SGC pottery-is probably present as well.⁹⁶⁶

8.2.3 Towards a new model for the Late Neolithic A

It is still difficult to understand how the Vlaardingen-Single Grave can be explained in terms of cultural groups and formation. We are still very much thinking in terms of archaeological cultures in the sense of Childe: indications of material culture traditions, houses, burial traditions that co-occur in persistent patterns. Childe initially equated such assemblages with 'a people'⁹⁶⁷, but later realised that such notions could be used to wrong ends: to claim specific areas in present-day politics as an original homeland and as such legitimise annexations.⁹⁶⁸

In Dutch archaeological practice, there hardly has been discussion about the concept of

⁹⁶⁵ Beckerman 2015, 173.

⁹⁶⁶ Cf. Chapter 8.

⁹⁶⁷ Childe 1929, v-vi.

⁹⁶⁸ Childe 1958.

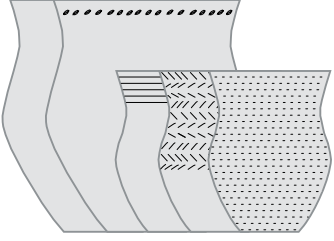
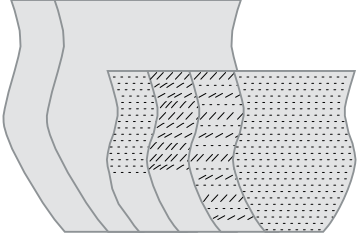
| | | |
|---|--|---|
| |  |  |
| Shape | Group 1, Early Corded Ware | Group 2, Late Corded Ware |
| Sites | Zandwerven (top), northern part of Zeewijk-west, Zeewijk-oost, Aartswoud, Keinsmerbrug | Southern part of Zeewijk-west, Mienakker, Sijbekarspel-De Veken |
| Technological characteristics | 20% or more stone grit tempering, 15% or more 9-10.5 mm, less than 60% 5-7.5 mm average thickness 7.5-8.5 mm | Less than 20% stone grit tempering, less than 15% 9-10.5 mm, 60% or more 5-7.5 mm, average thickness 6.8-6.9 mm |
| Decoration | Spatula decoration most common | Cord decoration most common |
| Types | 1a, 1b, 1d, 1e, zigzag, 1a/2IIb, 2IIb, 2IIc 1b just group 1, 2IIc mainly group 1 | 1a, 1d, 1e, zigzag, 1a/2IIb, 2IIc, 2IIa, 2Ia, AOO more common in group 2, 2IIa and 2Ia just in group 2 |
| Medium thick-walled and thick-walled shapes | Enlarged beakers, short wave moulded vessels just in this group, fingertip decoration | Enlarged beakers, fingertip decoration (less common) |

Figure 8.3 Two groups of ceramics according to Beckerman (from Beckerman 2015, 174).

culture. We still use the term ‘culture’ as an indicator for regional cultural traditions. These cultures do have a connotation of cultural ‘identity’: labels such as Vlaardingen Culture or Vlaardingen group and Single Grave Culture all suggest a regional identity symbolised by the use of distinct types of pottery and other objects, as well as specific rituals, such as funerals. However, the discussion raised by Beckerman demonstrates that these cultural traditions are not straightforward entities. More and more, it becomes clear that these so-called cultures do not follow clear chronological and geographical boundaries.

Moreover, sociologists and anthropologists emphasize that there is not such a thing as ‘a’ or ‘the’ identity.⁹⁶⁹ People experience different identities in different contexts, which implies identity is per definition plural. Material culture provides symbols for the many identities that people can have at the same time and that are played-out in different situations. Consequently, identity and cultural identity are hard to access through material culture. As a concept to approach regional communities from the past, culture is actually not a very useful concept. Alternatively, anthropologists now refer to

learning, especially communal learning, as an important structuring element in society. By extension, one makes distinction in ‘communities of practice’.⁹⁷⁰ A community of practice is defined as: ‘.... groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.’⁹⁷¹ Communication and communication networks are important elements of such communities. If we use this approach in relation to the structure of the Dutch physical landscape, we may arrive at a different version of past social realities than those we have accepted for the past 50 years. What does this mean for our understanding of the VLC-SGC communities? We think that it is important to analyse how these communities developed in similar environments and landscapes and within close contact to each other. If we, for instance, see how AOO and SGC pottery in general becomes part of the existing Vlaardingen traditions in the western Netherlands, we can see how traditions persist. This is clear from the ceramic evidence (the continued use of thick-walled pottery, but also from a number of other factors. The West Frisian VLC-SGC sites, for instance, follow

⁹⁶⁹ E.g. Cohen 1994.

⁹⁷⁰ Lave & Wenger 1991, 98.

⁹⁷¹ Wenger-Trayner 2015: <http://wenger-trayner.com/>

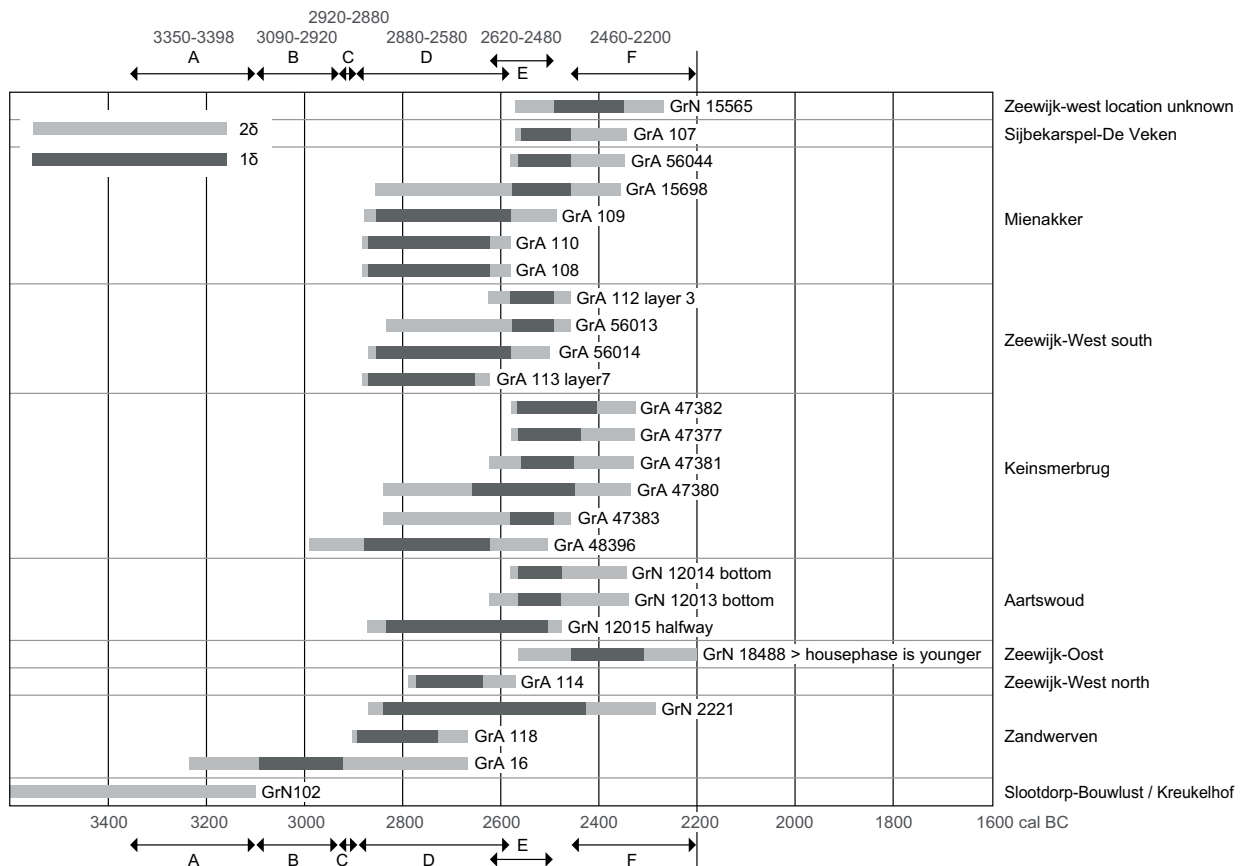


Figure 8.4 ^{14}C -dates of the West Frisian sites (after: Beckerman 2015, 169).

traditions that already existed for a long time: traditions in settlement location, subsistence and in burial of the dead. The crouched position of the skeletons is generally seen as a Beaker Culture element, but the Ypenburg cemetery⁹⁷² demonstrates that this was a feature of early Vlaardingen Culture as well. In none of the West Frisian sites (fragments) of hammer axes have been discovered, but flint axes are frequently present. Even in West Frisia, flint sources were not restricted to northern flint alone. The analysis by García-Díaz shows that at Mienakker 40% of the material has a northern origin, but 35.3% a southern origin, including even Grand-Pressigny flint (3.3% of the lithic assemblage).⁹⁷³ Also at Twello, at the eastern side of the Veluwe, a large beaker blade that was found as a part of a grave gift, turned out to be of southern flint.⁹⁷⁴ Finally, the Zeewijk-Oost and Veldhoven-Habraken houses are very much comparable and date to the same period. They also point at a comparable traditions and maybe even intensive contacts throughout the whole region.

Therefore, our conclusion is that in the Rhine-Meuse and in the IJssel-Vecht basin, SGC and All Over Ornamented pottery became an integral part of the existing VLC traditions without migrants necessarily being the catalysts of this development.⁹⁷⁵

How communities that had developed in the western and central Netherlands related to other communities on the Drenthe Plateau and in the Eastern Netherlands, is still unclear. According to the traditional model, the Funnel Beaker Culture ends around 2850 cal BC at the start of the SGC in the region. But in all honesty, we do not even know whether there is a gap between the youngest Funnel Beaker Culture occupation and the earliest SGC Beaker occupation of the area, since the resolution of the ^{14}C -data is too low (Fig. 8.4). Research of the last 15 years has not changed that picture, even though we now know a few more sites in the east. There are virtually no sites where both TRB and SGC traditions are present. Yet at Late Neolithic A sites like Steenendam⁹⁷⁶ and Bornwird⁹⁷⁷ there definitely

⁹⁷² Koot *et al.* 2008.

⁹⁷³ García-Díaz 2013, 62.

⁹⁷⁴ Meurkens *et al.* 2015.

⁹⁷⁵ Cf. also Beckerman 2015 for a similar conclusion.

⁹⁷⁶ Cf. Section 7.13.

⁹⁷⁷ Fokkens 1982.

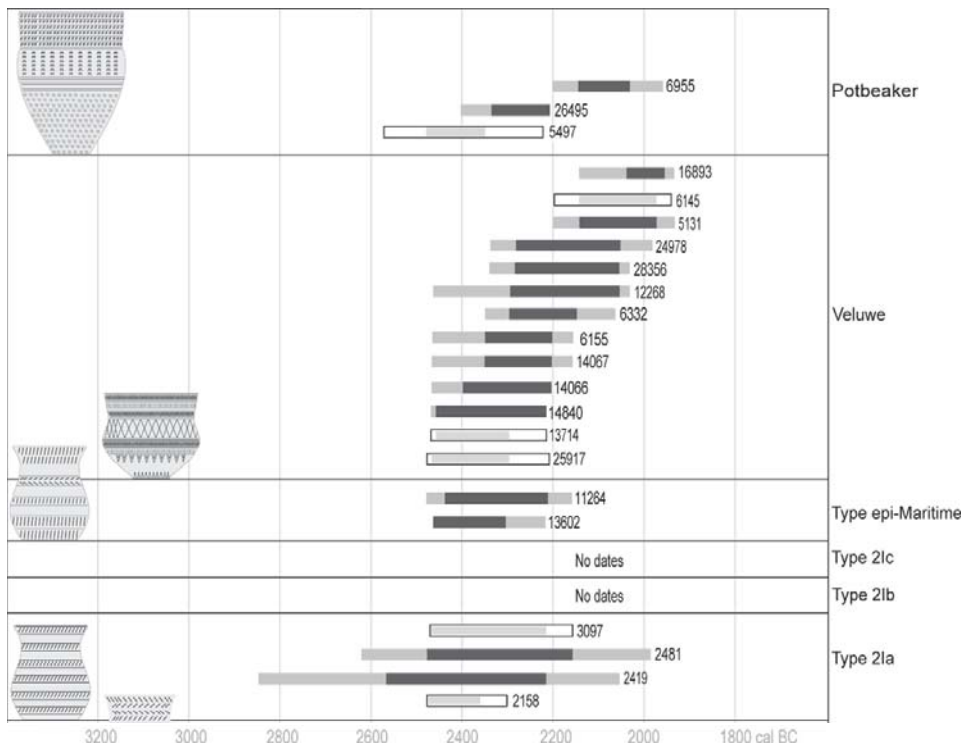


Figure 8.5 Dates for Bell Beakers in the Netherlands as presented by Beckerman (2015, 150).

is an undecorated, thick-walled, component in the pottery assemblages, just like at Schokland-P14.⁹⁷⁸ However, apart from these examples, settlement sites from this period are absent in the Eastern and Northern Netherlands, so we can only speculate.

8.2.4 The Late Neolithic B

Since 2001 only very few Bell Beaker sites have been excavated. Hattermerbroek⁹⁷⁹ yielded a few graves, but no settlement material. The river area sites in general had some Bell Beaker occupation, but none of those sites really contributed to a better understanding of the periodisation. That does not mean that the ideas about periodisation and typology have not changed. Especially the ¹⁴C basis for the typological sequence of Bell Beakers is now under discussion, for the same reasons as the Corded Ware sequence has lost its meaning. We may expect almost all BBC related finds to date to Furholt's phase F (2460–2200 cal BC) and G (2200–2020 cal BC). Lanting and Van der Waals have proposed a typological series of 21a to 21f,

or the maritime to the Veluwe style beakers.

The typology itself still is used everywhere, but it is not possible any longer to anchor separate types in time (Fig. 8.5). According to the present interpretation, the BBC spans in the Netherlands the period between 2500 and 2000 cal BC.

According to Beckerman, a separate maritime phase with only maritime beakers is unlikely.⁹⁸⁰

So far, we know very few maritime beaker sherds from settlement context. Zoned beakers do occur in settlements, for instance at Schokland-P14,⁹⁸¹ but these are also scarce. In contrast, we know many beakers that are decorated in Veluwe style from settlement contexts. Most of the pot beakers that have been found follow that tradition as well. Settlement evidence demonstrates that the Veluwe style is most common, and also widely distributed. It is not clear when this style developed and there is no evidence that it is only a late development (Fig. 8.5).

With respect to Bell Beakers, Lanting distinguishes separate regional styles for the central north-eastern parts of the Netherlands.⁹⁸² However, the number of vessels in the north-eastern style is rather small, and so far they only originate from funerary contexts.

⁹⁷⁸ Cf. Section 7.7.

⁹⁷⁹ Section 7.11.

⁹⁸⁰ Beckerman 2015, 167.

⁹⁸¹ Cf. Section 7.7.

⁹⁸² Lanting 2008.

Therefore it is not clear whether we can really speak of a regional style. The settlement evidence has not produced anything to support a north-eastern style. Whenever beaker material turns up, in the north and east, it is the Veluwe style of beakers and pot beakers that we can recognise.

8.2.5 The Early Bronze Age

At the beginning of this chapter, we mentioned the dilemma that there are now different periodisations for the Dutch Early Bronze Age: that the first was published in the Prehistory of the Netherlands (2000–1800 cal BC), and the second was proposed by Lanting and Van der Plicht (1900–1575 cal BC). These periodisations are based both on different definitions of the Early Bronze Age. The traditional definition was based on the first occurrence of bronzes and burial forms.⁹⁸³ Lanting proposed to base the range of the Early Bronze Age on the regional occurrence of Barbed Wire Beaker pottery.⁹⁸⁴ Lanting, however, argues that BWB pottery in the Netherlands continues to be used until 1575 cal BC instead of 1800 cal BC.⁹⁸⁵ For him, the Middle Bronze Age A no longer exists. We will not repeat all arguments pro- en contra these periodisations, but ask the question ‘Has research of the last 15 years been able to shed any light on this discussion?’ In our opinion the answer to this question is ‘Yes, it has’. Several of the settlement sites excavated in the last 15–20 years have yielded ceramic assemblages that shed a different light on the traditional sequence that was virtually only based on funerary evidence (Table 8.2).⁹⁸⁶ Many excavations yielded Early Bronze Age (*sensu* Lanting) pottery assemblages, even though not all of these are from a really closed context. But a site like Houten-Vleugel 20 has yielded stratigraphically separated layers with Early Bronze Age assemblages. Also sites like Rhenen-Remmerden, and Boekel-Parkweg have contributed to a better understanding. From sites excavated before 2001, but published more recently, especially Barendrecht-Carnisselande, Schokland-P14 and Den Haag-Bronovo were important. The distribution of these sites shows that especially for the Rhine-Meuse basin and the IJssel-Vecht basin, development-led

archaeology has produced new data, less so for the Drents Plateau and the eastern Netherlands. We have tried to summarise especially the evidence of pottery assemblages, because these can be used to position sites in a relative chronology (Table 8.2). We emphasise here that we focus on assemblages rather than on individual types. ¹⁴C dates are used to support this, but it is, for instance, very difficult to determine whether the last use of barbed wire decoration occurred around c. 1800 BC or whether this was 1700 BC, as the ranges of individual dates are often large and cluster in wiggle platforms. Therefore the date ranges in Table 8.2 are estimates and not clearly defined date ranges.

This periodisation for the Early Bronze Age is only regional to some extent, even though barbed wire decorated pottery has a distribution over the entire Netherlands, like its BBC predecessors.⁹⁸⁷ We agree with Ten Anscher⁹⁸⁸ that the distribution of decorated material is not the only similarity that pottery assemblages in these periods share, but our periodisation differs in several respects from his. We have tentatively attributed date ranges to the phases, but these are explicitly tentative indeed, and can never be precised by dating individual types, but only by dating assemblages.

We recognize an early BWBC pottery phase where Barbed Wire impressed material occurred alongside typical Bell Beaker elements and BWB decoration in Bell Beaker decorative patterns like hanging triangle patterns bordered with linear elements (EBA 1). Schokland-P14 is a very important site for recognizing this phase, as pottery assemblages containing both BBC and BWBC elements occurred in layers positioned beneath later BWBC layers lacking a BBC component. A clearly distinguishable phase where BBC and BWBC elements are combined is also present at Barendrecht-Carnisselande. During this EBA 1 phase, Barbed Wire decoration was applied in motives typical for Bell Beakers. The vessel shapes of late Bell Beakers and early Barbed Wire beakers are also comparable. This phase is followed by a period in which Barbed Wire impressed pottery occurred without BBC components (EBA 2). Ten Anscher distinguishes two later BWBC phases, but we see no indications for this in assemblages outside of Schokland-P14. Besides Schokland-P14, assemblages like the first phase

⁹⁸³ Cf. Fokkens 2001.

⁹⁸⁴ Lanting & Van der Plicht 2003.

⁹⁸⁵ Alternatively, one might argue that the period of the Barbed Wire Bakers represents a continuation of Late Neolithic traditions in so many aspects that we should call it the Late Neolithic C, rather than Early Bronze Age (Fokkens 2001, 258).

⁹⁸⁶ We refer to Table 18.1. also for the Section numbers of the different sites.

⁹⁸⁷ Since Elp pottery lacks decoration, this periodisation is especially relevant for the area where the BWBC is followed by the Hilversum Culture.

⁹⁸⁸ Ten Anscher 2012, 242.

Table 8.2 Proposed pottery phases from the start of the Early Bronze Age to the Middle Bronze Age A. The ¹⁴C ranges are based on estimates (cf. text).

| | |
|---|---|
| Phase 1: approx. 2000 – 1900 (Ten Anscher BWB 1) Bell Beaker components in assemblage Barbed wire stamps in Bell Beaker motives Bell Beaker vessel shapes Multiple decoration types on one vessel Pseudo Barbed Wire impressions Perforations beneath the rim No decoration inside of the rim Hollow reed / bird bone impressions (?) | 7.27 Barendrecht-Carnisselande 5 (2202-1903 cal BC) 7.7 Schokland-P14 layer complex A (c. 2000-1700 cal BC) 7.11 Hattemerbroek Hanzelijn/Bedrijventerrein (Barbed Wire assemblage) 7.14 Buren-De Haar 7.35 Meteren-De Bogen (Barbed Wire assemblage) |
| Phase 2: approx. 1900 – 1800 (Ten Anscher BWB 2/3) No Bell Beaker components in assemblage Egg shaped vessels with neck protruding outwards Vessels type 'Molenaarsgraaf' Perforations beneath the rim Pseudo Barbed Wire impressions Barbed Wire impressions in (mostly) horizontal lines Barbed Wire or cord impressions inside of the rim Hollow reed / bird bone impressions | 7.28 Houten-Vleugelzo 1 (2140-1910 cal BC) 7.7 Schokland-P14 layer complex B (c. 2000-1700 cal BC) 7.30 Rhenen-Remmerden 7.6 Emmeloord-J97 (Barbed Wire assemblage; 2023-1750 cal BC) 7.34 Culemborg-Lanxmeer (1947-1779 cal BC) 7.35 Meteren-de Bogen |
| Phase 3: approx. 1800 – 1700 (BWB / Early Hilversum) Barbed Wire impressions in (mostly) horizontal lines Cord impressions all over the vessel Pseudo Barbed Wire impressions Rim types A (cf. Ten Anscher 1990) occur in assemblages Nail impressions on top of the rim No punctuations beneath the rim Nail impressions on the outside of the vessel | 7.27 Barendrecht 4 (c. 1900-1680 BC) 7.40 Cuijk-Grootheiligenberg (1831-1688 cal BC) 7.28 Houten 2 7.27 Barendrecht-Carnisselande 6 (1886-1744 cal BC) |
| Phase 4: approx. 1700-1600 (Early Hilversum) (More) barrel shapes within the assemblage Raised cordons Fingertip or cord impressions on cordons No more (Pseudo) Barbed Wire impressions Zig-zag cord impressions between rim and cordon Vertical rows of paired nail impressions between rim and cordon Nail impressions on the rim | 7.45 Boekel-Parkweg (1940-1632 cal BC) 7.6 Emmeloord-J97 (Hilversum assemblage; > 1700 BC) 7.25 Den Haag-Bronovo 7.39 Wijchen-Bijsterhuizen 7.50 Tilburg-Berkel Enschoot 7.43 Vorstenbosch-De Helling |
| Phase 5: approx. 1600 – c. 1400 (Late Hilversum) Rough quartz tempering Applique cordons Fewer to no decorations on vessels outside of cordons and nail impressions on top of rims | 7.46 Son en Breugel-Ekkersrijt (c. 1600 – 1500 BC) 7.6 Heteren-Uilenburg (c. 1600 – 1450 BC) 7.20 Tilburg-Tradepark Noord (c. 1700 – 1400 BC) |

of habitation at Houten and the assemblage of Rhenen-Remmerden also indicate that a BWBC phase occurred distinctive from the phase which included a BBC component. The pottery itself no longer contains Bell Beaker like motives, and often features barbed-wire decoration on the inside of the rim. The combination of cord impressions and barbed wire impressions might already belong to this phase, although this is more indicative of EBA 3 assemblages like those at Barendrecht-Carnisselande 4. The latter is seen as a clear example of an assemblage with both BWBC and multiple early HVC elements. Typical for EBA2, possibly continuing in EBA3, are also vessels of type 'Molenaarsgraaf' (Fig. 8.6) with perforation just below the rim a raised cordon.⁹⁸⁹ Often the rim is bent outwards. Decoration of the body can be carried out as paired fingernail impressions, like in pot

beakers, sometimes in combination with barbed wire stamp impressions, like at Meteren-De Bogen.

From the settlement evidence it is clear that early Hilversum elements like cord decoration, decoration on the inside of the rim and horse-shoe shaped handles, can occur together with pots decorated with barbed wire stamps. The well-known Vorstenbosch urn is also a good example of this kind of 'hybrid', even if the decoration in its neck is not cord-impressed. When Barbed Wire pottery disappears completely, new and regional styles appear. In the north and east the Elp tradition develops and in the south the Hilversum tradition. The Elp tradition appears to have been connected to the IJssel-Vecht basin, the Drents Plateau and the eastern Netherlands, the Hilversum tradition to the Rhine-Meuse Basin and associated uplands.

⁹⁸⁹ Cf. Louwe Kooijmans 1974, 222; at Molenaarsgraaf there is also a clear association with BWBC pottery.

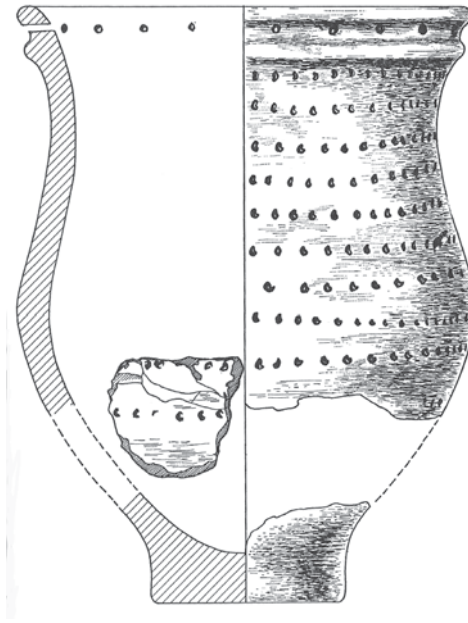


Figure 8.6 EBA 2 pottery of type 'Molenaarsgraaf'. Scale approx. 1:3 (from Louwe Kooijmans 1974, 222).

Hilversum pots then are defined as pottery with the same types of decoration (generally the neck only), but without barbed wire ornaments. This has been addressed as the Early Hilversum phase of the Hilversum Culture (EBA 4).⁹⁹⁰ Characteristic are also a bi-conical shape, decoration on the inside of the rim, and a rim-type 1A.⁹⁹¹ Fingertip impressed cordons (Drakenstein type pottery) on otherwise undecorated pots do not yet seem to be represented in those assemblages.⁹⁹² The Wijchen-Bijsterhuizen ceramic complex may be an example of the transition to assemblages without barbed wire decoration and with cordons. Therefore we think that these cordons are a later development that post-dates 1700 cal BC (MBA). In the traditional periodisation, these were part of the Middle Bronze Age A repertoire. In our opinion, Hilversum-style pottery replaces Barbed Wire pottery in the southern and central parts of the Netherlands around 1700 cal BC, but it is important to note that we have nothing to go on for real dates. Nevertheless, this leaves very little 'time' for a Middle Bronze Age A. We suggest, as does Lanting,⁹⁹³ to skip the Middle Bronze Age A altogether. It is impossible to attach a real date to this transition. If we extend the Early Bronze Age to include the Early Hilversum phase, then the end of the Early Bronze Age is somewhere between 1700 and 1600 cal BC. In the northern Netherlands, the

start of the Middle Bronze Age then coincides with the occurrence of burials with a Sögel-Wohlde signature, in the southern and central parts of the Netherlands with complexes in which only Drakenstein or Laren style pottery occurs, and Hilversum pots are absent.⁹⁹⁴

8.3 Communication networks and archaeological landscapes

In Section 8.2.2 we discussed the idea that instead of with 'cultures', we are dealing with different communities of practice that through regular communication were structured around learned practices. This notion shifts the focus of study from objects to communication networks and different way of 'doing things'. Many of the sites excavated the last 15 years and before were located in dynamic landscapes and near rivers or lakes, even near the sea.⁹⁹⁵ Therefore we expect water ways to have structured the cultural palette and the transmission of ideas. From that perspective we predict that river deltas and upstream their catchment areas constituted the natural routes for transport of objects and people and the foremost connections in the communication networks. Land-based connections should of course not be ignored, but they may not have been of primary importance for structuring and maintaining local communities.

Following the principles mentioned above, we distinguish the following landscapes (Fig. 8.7):

- the Scheldt basin and Demer-Scheldt catchment area;
- the Rhine-Meuse basin and the A and Meuse catchment areas;
- the IJssel-Vecht basin and the Veluwe (Rhine) catchment area;
- the Drents Plateau and Beilerstroom and Vecht catchment areas.

In the following we briefly describe these archaeological landscapes in order to be able to think more coherently about ecological zones, landscapes, site locations and cultural affinities.

⁹⁹⁰ Fokkens 2001.

⁹⁹¹ Ten Anscher 1990.

⁹⁹² Cf. also Arnoldussen 2008, Table 5.1 for definitions and discussion.

⁹⁹³ Lanting & Van der Plicht 2003.

⁹⁹⁴ For definitions see Fokkens 2001; Arnoldussen 2008, 178.

⁹⁹⁵ Cf. Table 8.2. In principle all sites not located on coversand according to Table 8.1. Even those are often situated near rivers or streams.



Figure 8.7 Archaeological landscapes in the Late Neolithic and the Early Bronze Age (palaeogeographic map from Vos & De Vries 2013).

8.3.1 The Scheldt basin and Demer-Scheldt catchment area

The Scheldt basin is actually not included in our analysis. Our knowledge of this region is limited, especially with respect to the Late Neolithic and the Early Bronze Age.⁹⁹⁶ We think that the Scheldt area, draining the north-western flanks of the Ardennes massive, was related especially to the area where the Seine-Oise Marne (SOM) culture 'flourished' in the Late Neolithic.

8.3.2 The Rhine-Meuse basin and the A and Meuse catchment areas

The Rhine-Meuse basin is well known as an regional entity, but few will have realised that the southern uplands are connected to this area through tributary rivers such as the A, the Dommel, the Mark, the Dintel and others. Development-led archaeological research, especially the Veldhoven-Habraken site, has made this most clear in our view. Here we find houses and material culture that fit perfectly in the VLC tradition of the western and central parts of the Netherlands. At the time this was totally unexpected, but if we take the river systems as a focus for interaction networks, this becomes perfectly understandable. When discussing sites in this area, we should be aware of the fact that the river area is a highly dynamic environment. The Betuwe route excavations, for instance, have yielded very little to no evidence for Vlaardingen Culture / Single Grave Culture presence, but that does not necessarily mean these people were not there. Many of these connections will have been eroded by later channel belts. The channel belts on which Late Neolithic B and Early Bronze Age sites were located during the Betuweroute excavations, have been better preserved in some regions. We do find Late Neolithic A sites on beach barriers, near the river mouths, and on the *donken*, the Pleistocene river dunes in the central Netherlands.

8.3.3 The IJssel-Vecht basin and the Veluwe (Rhine) catchment area

The IJssel-Vecht basin refers to the rivers IJssel and Vecht. The Vecht was indeed an important river, but the IJssel as a did not yet exist in the Late Neolithic, or the Bronze Age. It only became connected to the Rhine in Medieval times.⁹⁹⁷ Nevertheless, in the period under discussion it must have already been a peat-filled depression between the Veluwe and Salland ice-pushed ridges, with a small stream. Therefore, we retained the IJssel-Vecht basin as name.

The IJssel-Vecht basin includes the West Frisian sites in the west and sites like Hattemerbroek in the east. These sites show these show comparable practices in pottery production and burial ritual during the Late Neolithic. In the Early Bronze Age, the IJssel-Vecht basin shows a pottery tradition different from the Rhine-Meuse and the Veluwe / Utrechtse Heuvelrug. For instance, Early Hilversum Culture elements are absent in this region. Hilversum-style elements are also absent in the Hoogkarspel pottery of West Frisia. Hoogkarspel-Old pottery may be more related to the Elp Culture pottery from the Drents Plateau.⁹⁹⁸ Burial customs show practices that are related to Sögel-Wohlde tradition rather than the Hilversum Culture tradition.⁹⁹⁹ Finally, the IJssel-Vecht basin also appears to have been connected to northern exchange networks with respect to bronzes, whereas the area south of the IJ-Utrechtse Vecht is thought to be connected to the Atlantic trade networks.¹⁰⁰⁰

The position of the Veluwe in exchange networks, positioned in between the Vecht and Rhine-Meuse basins and connected to the eastern Netherlands is difficult to assess. Single Grave Culture barrows are present on the Veluwe, but not in the river area proper. We know a number of Middle and Late Havelte sites on the Veluwe dated to the beginning of the third millennium cal BC.¹⁰⁰¹ But Vlaardingen Culture / Single Grave Culture settlement sites are as yet unknown, even though we have clear evidence for SGC burial traditions. It seems plausible to suggest that that the communities living on the southern parts of the Veluwe were connected to people living in the Rhine-Meuse basin, while people on the northern

⁹⁹⁶ Cf. Fokkens & Fontijn 2012.

⁹⁹⁷ Cohen 2009.

⁹⁹⁸ Brandt 1988; Fokkens 2007.

⁹⁹⁹ Fokkens & Fontijn 2012.

¹⁰⁰⁰ Fokkens & Fontijn 2012.

¹⁰⁰¹ Bakker 1979.

side were connected to communities living in the IJssel-Vecht basin. It is also unsure in which communication networks the Achterhoek, between the Schipbeek and the Rhine, fits as well as the catchment area of the Oude IJssel. We know very little of this area, which impedes further discussion of its situation in the archaeological landscapes.

It is difficult also to determine the position of the eastern Netherlands. In none of the sites material has been found that can be associated with Early Hilversum pottery as is the case for sites in the river area and in the western parts of the Netherlands. Since that is an aspect that ‘unites’ sites in the Rhine-Meuse basin, but that is absent in the IJssel-Vecht basin and the Drents Plateau, we have taken that as a dividing criterion, even if it is a much ‘stipulated’ criterion. However, whether the Vecht catchment area is part of the Drents Plateau or of the IJssel-Vecht basin is more difficult to decide. The Vecht proper originates in Münsterland in Germany, where it is called die Vechte (Fig. 8.7). Its catchment area includes the rivers Dinkel and Regge that drain the ice-pushed ridges of Salland and Twente. These rivers were connected with the Bergen inlet in the West through the IJssel-Vecht basin, but overland connections with the German Münsterland probably played a role as well for this region.

8.3.4 The Drents Plateau, Beilerstroom and Vecht catchment areas

The Drents Plateau is in fact the most difficult entity because we know very little about settlements in this area. There are many Bronze Age settlements in the region, but virtually none that can be ascribed to older periods. On the western and northern fringes of the Plateau, a few sites were excavated (Chapter 7), like Steenendam, Oldeboorn and Bornwird, but it is difficult to derive a clear picture from them. It appears that on the Drents Plateau a slightly different tradition developed in the Late Neolithic A: first in the context of the Late Havelte tradition, and later as a SGC tradition. Settlement sites from this period are absent on the Drents Plateau. They must be there, but we have not yet located them. The same goes for BBC and Barbed Wire Beaker Culture

settlements. The site of Oldeboorn is the only one that has remains from the Bell Beaker period and the Middle Bronze Age A (Early Elp Culture). Clear Barbed Wire Beaker Culture settlement sites are so far unknown from the Drents Plateau or the Vecht catchment area, but isolated pits are common.

8.4 Settlement structure and organisation

Chapter 7 demonstrates that development-led archaeology has yielded a lot of new information on settlements and settlement systems. Consequently, it has altered our view on the period considerably. This does not mean that we have developed completely new images of the past. Much of what has become more clear now was already to some extent visible in the work of Louwe Kooijmans, for instance at the site Molenaarsgraaf.¹⁰⁰² In Chapter 3, we have seen how Louwe Kooijmans developed his settlement systems model based on sites like Molenaarsgraaf and others in the river area.¹⁰⁰³ Those models are now being challenged by the new data of sites like the sites excavated near The Hague, Hazerswoude and Zwaagdijk, supplemented by the results of recent synthetic research. Very important are the publications of the *Noord-Hollands Treasure Chest* project¹⁰⁰⁴, and the dissertations of Ten Anscher and Gehasse about Schokland-P14.¹⁰⁰⁵

In Section 3.2 we have sketched Louwe Kooijmans’ model for different site locations and associated exploitation patterns. The question is to what extent this model is supported by data that were collected in the last 15 years.

Louwe Kooijmans proposed several scenarios for site locations (C1–C5). He distinguishes between settlements in wetlands (C1), between settlements in the uplands exploiting wetlands on a daily basis (C2), and upland settlements with various kinds of satellite camps in wetlands (C3–5). What has become clear, however, is that very few sites actually had an up-land location. Even at Hattemerbroek the sites are not located on up-lands, but in a near wetland situation, near the IJssel valley. Most sites from the Late Neolithic to the Early Bronze Age were located in such situations (Table 8.1). We see no difference in development here.

¹⁰⁰² Louwe Kooijmans 1993.

¹⁰⁰³ Cf. Chapter 3.

¹⁰⁰⁴ Section 7.2, 7.3, 7.4.

¹⁰⁰⁵ Section 7.7.

Louwe Kooijmans' idea that in bone spectra wild animals are nearly absent for sites of this periods, has not proven right. Nor is there much evidence for special activity or satellite sites. In most environments we find also ard marks or cow hoof marks as evidence for farming, notably in West-Frisia and on the beach barriers near The Hague (Table 8.4). That is not restricted to uplands. Zwaagdijk-Noordeboekert¹⁰⁰⁶ is a very convincing point in case.

From the evidence, it seems clear that Late VLC, SGC, BBC, Barbed Wire Beaker Culture and Early Hilversum Culture sites were situated in locations that enabled the exploitation of different eco-zones. Moreover, these sites are often located in dynamic landscapes, i.e. in landscapes with active sedimentation, or near rivers or small streams on the border of river valleys (Table 8.1). At the same time, we must admit that upland-sites are as yet very scarce. The evidence demonstrates that apart from arable farming and husbandry hunting, fishing, fowling and gathering were still very much part of the subsistence economy until the Middle Bronze Age. In West Frisia even Middle Bronze Age 'fully agricultural' sites show the same mix of subsistence activities.¹⁰⁰⁷

Louwe Kooijmans observes a difference between sites in the tidal fresh water zones and the peat district on the one hand and sites in the river clay area and the dunes on the other during the Late Neolithic A.¹⁰⁰⁸ The former sites show less permanent settlements and a semi-agrarian economy, while the latter sites show a mixed farming economy and permanent sites with some arable land, but still also long fallow periods. In the Late Neolithic B and Early Bronze Age, the extraction activities of the subsistence economy are in his view restricted to small seasonal camps, sometimes located far away from the permanent farms.

Nor this difference, nor the development, can in our view be supported by the present evidence. It is more likely that specialised fishing and hunting sites were part and parcel of all communities in all landscapes. Development-led archaeology yielded no examples of possible extraction camps, but some of the sites published after 2001 were claimed to be extraction camps or special activity sites. For example, Keinsmerbrug was interpreted as a site for special gatherings and duck catching.¹⁰⁰⁹ But even in that site domesticated animal remains

were found, even hoof imprints. Therefore one could argue that at least a palimpsest of different use-phases of that site were present, and that at one point in time it was not an extraction camp.

All in all there does not seem to be a clear development towards less exploitation of natural resources. Nor was Late Neolithic arable land only used for the occasional grazing of livestock, as stated by Louwe Kooijmans.¹⁰¹⁰ Recent research at Noorderboekert demonstrates that household waste was probably used for fertilising arable land during the Late Neolithic B.¹⁰¹¹ With respect to flint and raw material sources, it is clear that the exchange networks were much more extensive than once thought. For example, the people living in West Frisia during the Late Neolithic A had access to northern and southern flint sources.¹⁰¹²

A reliable indication of the location of upland sites is still difficult to provide. So far, only a small number of settlement sites have been found in the eastern Netherlands, on the Veluwe or the Drents Plateau. The bycatch evidence demonstrates that there certainly are sites, also that people dug pits, even pits with heated stones, but what these features represent in terms of settlement systems, is not clear. Clarifying this situation needs to be one of the research targets in the coming years. In our view, the location of many settlements in the dynamic landscapes and on the borders of wetlands may also imply that transport and travel by boats and canoes was far more important than with land-based vehicles. Wheels and carts were known, but long-distance communication over land seems unviable because these burdens were probably too heavy.¹⁰¹³ We suggest that instead waterways were by far the most important means of transport and communication. This directly influences our ideas about the constitution of regional groups as communities of practice.¹⁰¹⁴

8.4.1 Settlement size and structure

Louwe Kooijmans' discussion of settlement systems relies heavily depends on site location and faunal remains. Furthermore, seasonality plays a large role in this analysis. But about

¹⁰⁰⁶ Cf. Section 7.5.

¹⁰⁰⁷ Van Amerongen 2016.

¹⁰⁰⁸ Cf. Section 3.2.

¹⁰⁰⁹ Section 7.4; Smit *et al.* 2012.

¹⁰¹⁰ Cf. Bakels 2016.

¹⁰¹¹ Knippenberg 2014.

¹⁰¹² García-Díaz 2013.

¹⁰¹³ Cf. Uckelman 2013.

¹⁰¹⁴ Cf. Section 8.1.2.



Figure 8.8 Examples of two-aisled Late Neolithic to Early Bronze Age house plans from different areas of Europe (top right, clockwise: Hemmed (Boas 1991), Limensgård (Nielsen 1999), Esbeck (Thieme 1985), Bezingerode (Brauer 2006), Brezno (Pleinerová 1992), Pavlov (Krause 1997a), Franzhausen (Neugebauer & Blesl 1998), Zuchering (Schefzik 2001), Bopfingen (Krause 1997), Greding (Schefzik 2001), Veldhoven-Habraken (Van Kampen and Van den Brink 2013), Zeewijk-Oost (Hogestijn 1997), Hesel (Schwartz 2004), Kvåle (Børshiem 2005) (compiled after Arnoldussen 2008, 170).

settlement size there is little information. In the last 15 years that has not changed. If settlements were targeted, the excavation limits generally prevented a view on the entire settled landscape. Only at Veldhoven-Habraken a larger area was excavated.¹⁰¹⁵ At that site only one house may have constituted that settlement. Translated into people, that would imply one household. Other similarly structured dispersed settlement sites would be expected at some distance, maybe a few hundred meters or more.

8.4.2 Farms and houses

We have discussed settlement sites in general in the previous section, but what new information is available on houses? Over 70 house plans are documented in the ARCHIS files and DANS database, but in Chapter 7 we have rejected most of the claimed plans as too 'unstructured'. An exception was made for the VLC houses recognised at Veldhoven-Habraken. That discovery in fact changed our views considerably. Before 2001 we had little evidence for

substantial houses from Late Neolithic sites. To cite Louwe Kooijmans again: 'This very restricted evidence on housing in Late Beaker/ Early Bronze Age times suggests that the Late Neolithic small-house tradition continued and that longhouses, implying cattle stalling, came into use not earlier than the end of this phase.'¹⁰¹⁶ In Section 3.3 we outlined that before the start of development-led archaeology the Haamstede and Vlaardingen houses were seen as the 'norm' for houses during this period. These houses are small (c. 4 x 10 m), sometimes with clearly visible walls, sometimes possibly with sod walls supporting the wall plates. The Zeewijk-Oost house, excavated in the 1990's, was until 2001 considered an anomaly, possibly a 'community' building.¹⁰¹⁷ Development-led archaeological research, in our view has changed that image. The Zeewijk-Oost, Veldhoven-Habraken and Oerle-Zuid houses have the same structure as the Vlaardingen houses that we already knew, although they are larger. The roof structure is in all cases based on a central row of posts that are heavier than the wall posts, because the buildings have gable ends and much of their structural rigidity is based

¹⁰¹⁵ Van Kampen *et al.* 2013.

¹⁰¹⁶ Louwe Kooijmans 1993, 88.

¹⁰¹⁷ Hogestijn 1997; 2005; Section 7.3.

Table 8.3 Sites with crop remains preserved.

| Site | Period | Situation | Emmer | Barley | Wild plants |
|-------------------|------------|----------------|-------|--------|-------------|
| Hazerswoude | LN A | crevasse splay | + | + | + |
| Barendrecht 3 | LN B | levee | + | + | + |
| Barendrecht 4 | EBA-MBA A | levee | + | + | + |
| Barendrecht 5 | EBA | levee | + | + | + |
| Eigenblok | LN B-EBA | crevasse splay | + | + | - |
| Eigenblok | MBA A | crevasse splay | + | + | + |
| Meteren | LN B-MBA A | crevasse splay | + | + | + |
| Amerongen | EBA-MBA A | coversand | ? | ? | + |
| Mienakker | LN A | levee | + | + | + |
| Zeewijk | LN A | levee | + | + | + |
| Veldhoven | LN A | coversand | + | + | + |
| Son en Breugel | MBA A | coversand | + | ? | + |
| Tilburg-Tradepark | MBA A | coversand | + | - | + |

LN = Late Neolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age.

on digging in the central posts. The question is: do these houses represent normal houses and not 'community' buildings in hindsight? We think that we have to answer this question with 'yes'. Both the Haamstede/Vlaardingen and the Zeewijk/Veldhoven houses are parts of the same spectrum. We do not yet know whether either one was the norm in terms of size. We cannot connect them to a particular type of site.

For guidance we can also look at data gathered in the neighbouring countries (Fig. 8.8). A two-aisled house tradition appears to have been present in several regions, though the construction methods vary.¹⁰¹⁸ The Scandinavian ground plans of, for example, Hemmed,¹⁰¹⁹ Limensgård¹⁰²⁰ and Kvåle¹⁰²¹ show a ground plan that can justly be classified as a regular two-aisled building.¹⁰²² The outer posts presumably carried a considerable part of the weight of the roof in these structures. The Early Bronze Age house plans in the southern parts of Germany and the adjacent central West European area also display a regular, two-aisled building tradition in which densely spaced outer posts carried part of the weight of the roof.

Late Beaker and Early Bronze Age houses from the Netherlands are hardly known. Every now and then pits or wells containing pottery dating to these periods come to light, but these are seldom accompanied by other features like post holes. The few claimed houses that were

attributed to the Early Bronze Age or Middle Bronze Age A have been discussed in Chapter 7, for instance the sites of Ekkersrijt, Tilburg and Rhenen, but none of these claims have survived our analysis. That leaves us with just as little evidence for houses of this period as before development-led archaeology started. The scarcity of house plans from the Late Neolithic and Early Bronze Age is not only typical for the Netherlands; also from the countries surrounding the Netherlands very few house plans from this period are known.¹⁰²³

8.5 The economic basis

The discussion of settlement locations and house plans bring different aspects of the settlement system into view. It is already clear that farming was not the only basis for subsistence. Instead, we might speak of an 'extended farming economy': an economy based on farming, extended with hunting, fishing, fowling and gathering. We have proposed that the site locations in most regions reflect a conscious choice for this type of subsistence economy: sites are located in places that enable subsistence activities other than farming in an optimal way. Nevertheless, farming was a stable element, even on the beach barriers and in West

¹⁰¹⁸ Arnoldussen 2008, 170.

¹⁰¹⁹ Boas 1991; Rasmussen 1991.

¹⁰²⁰ Nielsen & Nielsen 1985; Nielsen 1999.

¹⁰²¹ Børsheim 2005.

¹⁰²² Cf. Boas 1983; 2000; Nielsen 1997;

Ethelberg 2000; Artursson 2005.

¹⁰²³ Cf. Arnoldussen 2008.

Table 8.4 Sites with faunal remains preserved, divided into domesticated and wild animals.

| Site | Date | Situation | Domesticated animals | | | Wild animals | | |
|-------------------------|------------|-----------------|----------------------|-------|-----|--------------|-------|------|
| | | | cattle | sheep | pig | wild mammals | birds | fish |
| Den Haag-Bronovo | MBA | coastal barrier | + | + | + | + | + | + |
| Den Haag-Wateringseveld | LN A | coastal barrier | + | + | + | + | - | + |
| Hazerswoude | LN A | crevasse splay | + | - | + | + | + | + |
| Barendrecht 1 | LN A | levee | + | + | + | + | - | - |
| Barendrecht 2 | LN B | levee | + | + | + | + | - | + |
| Barendrecht 3 | LN B | levee | + | + | + | + | + | + |
| Barendrecht 4 | EBA-MBA A | levee | + | + | + | + | + | + |
| Barendrecht 5 | EBA | levee | + | + | + | + | + | + |
| Barendrecht 6 | EBA-MBA A | levee | + | + | + | + | - | - |
| Houten 1 & 2 | EBA | crevasse splay | + | + | + | + | - | + |
| Houten 3 | EBA | crevasse splay | + | + | + | + | - | - |
| Eigenblok | LN B-EBA | crevasse splay | + | + | + | + | + | + |
| Eigenblok | MBA A | crevasse splay | + | + | + | + | + | + |
| Meteren-De Bogen | LN B-MBA A | crevasse splay | + | + | + | + | + | + |
| Heteren | LN B-MBAA | crevasse splay | + | + | + | + | - | + |
| Wijchen | LN A | river dune | + | + | - | - | - | - |
| Emmeloord | MN B-MBA A | crevasse splay | + | + | + | + | + | + |
| Schokland | LN A-MBA A | river dune | + | + | + | + | + | + |
| Oldeboorn | LN B-MBA A | levee | + | + | + | - | - | + |
| Mienakker | LN A | levee | + | + | + | + | + | + |
| Zeewijk | LN A | levee | + | + | + | + | + | + |
| Keinsmerbrug | LN A | crevasse splay | + | + | + | + | + | + |

LN = Late Neolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age.

Frisia as is demonstrated by ard marks and the faunal spectra (Table 8.4).

One of the problems in recognising the flexible extended farming economy, is the traditional idea that in the Late Neolithic B, but certainly in the Bronze Age, farming determined the subsistence basis for the proverbial 99%.¹⁰²⁴ This has led to a biased interpretation of sites in that the importance of wild animals and plants was often played down. In one of the most comprehensive studies about Late Neolithic and Bronze economy in the Holocene delta by Gehasse one reads, for instance: 'The real importance of meat relative to fish is not quantifiable. On the one hand, fish remains will be underrepresented with relative to mammal remains, on the other hand: one head of cattle has a considerably higher nutritional

value than one catfish (our translation)'.¹⁰²⁵

The point of departure for such discussions is that bone spectra are translated into consumption patterns, regardless of other social factors. Consequently, the relation between hunted, fished and domesticated animals is supposed to tell us about the nature of the food economy and diet, even though the samples can seldom or never be considered representative for food preferences, diet or economy. But that discussion is hardly ever part of the analysis.

In our opinion, more innovative approaches are necessary and will result in quite different views on Late Neolithic and Early Bronze Age societies. A holistic view on the combination of landscape, economy, and settlement should form the basis of such an approach. This asks for a much closer

¹⁰²⁴ Cf. Section 8.2.1.; Louwe Kooijmans 1993.

¹⁰²⁵ Gehasse 1995, 97.

cooperation between archaeologists, palaeo-botanists, archaeo-zoologists and physical anthropologists than is now customary.

8.5.1 Farming

The remains of emmer wheat (*Triticum dicoccum*) and naked barley (*Hordeum vulgare* var. *nudum*) have been attested at most sites in which these data were preserved (Table 8.3). This should not surprise us, because these crops were grown everywhere and on all kinds of soils since in the Middle Neolithic.¹⁰²⁶ Both crops can be sown as summer and winter grain, even though often a use as summer grain is mostly assumed.¹⁰²⁷ According to De Hingh barley was the most common crop grown in northwest Europe. A reason for its popularity possible is that it is not very demanding as soil conditions are concerned and it is even grown in brackish environments.¹⁰²⁸ This makes barley suited very much for the kinds of environments in which Late Neolithic and Early Bronze Age people lived and farmed.

Emmer wheat is more demanding for the soil. According to De Hingh, it 'requires a humus-rich loamy soil. It does not thrive on loose sandy soils or peaty or wet clayey soils.'¹⁰²⁹ Yet, emmer wheat is present in almost all assemblages. Therefore, we must assume that suitable soils could be found everywhere, even if these may not seem optimal to us.

Cattle, sheep and pig are among the most encountered animals at settlement sites (Table 8.4). Since the samples are generally small, very little can be said about their relative quantities. We have reproduced several lists in Chapter 7, but a synthetic study of different dimensions than we can offer here is needed to put patterns recognised in perspective.

Arable land has been attested at several sites in West Frisia, but also at sites on the beach barriers and at the flanks of the Drents Plateau. Development-led archaeological research has targeted one of these sites at Zwaagdijk-Noorderboekert¹⁰³⁰, but the results are not yet available. Bakels' recent study of nitrogen ratios in prehistoric grain demonstrates that prehistoric arable land was manured.¹⁰³¹ How this was done is yet another matter and there are several options. One of those is mixing

household waste or sods with animal manure. The potsherds found at the Late Neolithic B arable land of Zwaagdijk-Noorderboekert¹⁰³² could indicate this kind of practice.

We have gained some insight in the size of these arable plots. The Late Neolithic arable land excavated at Zwaagdijk-Noorderboekert probably covers more than one hectare.¹⁰³³ This is in line with older research. At Bornwird, the length of the arable suggested a substantial field of at least 60 x 60 m.¹⁰³⁴ The Late Neolithic arable land at Oostwoud stretched out at least 60 m.¹⁰³⁵ Such a cultivated area could be enough to support a family of six persons.¹⁰³⁶ But whether this can be seen as a standard or not, and how animal husbandry and arable farming were practised as mixed farming, is still a matter that needs much more study in all landscapes.

8.5.2 Hunting and fowling

On all sites that had a reliable stratigraphy, remains of wild animals were found (Table 8.4). However, we have to realise that many of the assemblages discussed in excavation reports are palimpsests from different periods. More or less reliable assemblages were collected at VleuGelzo, at the Betuweroute sites, and to some extent at Hazerswoude-Windturbinepark. The pre-Malta sites yielded more information, in this respect. Especially Barendrecht-Carnisselande and the West Frisian sites were rich in fauna. At Barendrecht-Carnisselande deer, roe-deer, elk, beaver, otter, marten, wild cat and pole cat were found, next to birds like woodcock and garganey.¹⁰³⁷ Some of those bones show cut marks that relate to the skinning or consumption of the animals. Even though the absolute numbers may not be that large, we suspect that they represent far more common practices than are presently assumed on the basis of very few samples.

In West Frisia, the site of Keinsmerbrug has yielded a large amount (27,000+) of duck bones. These bones are estimated to represent at least 5,000-10,000 birds.¹⁰³⁸ There has been a discussion about how these birds were caught, because no arrow heads have been found on the site, nor remains of decoys and nets. According to Zeiler and Brinkkemper, 'the answer might

¹⁰²⁶ De Hingh 2000, 179; Bakels and Zeiler 2005, 77; Gehasse 1995.

¹⁰²⁷ E.g. Gehasse 1995, 111.

¹⁰²⁸ De Hingh 2000, 179, referring to work of Körber-Grohne (1987), and Brinkkemper (1991).

¹⁰²⁹ De Hingh 2000, 186, referring to work of Körber-Grohne (1987).

¹⁰³⁰ Section 7.5.

¹⁰³¹ Bakels 2016.

¹⁰³² Cf. Section 7.5.

¹⁰³³ Cf. Section 7.5.

¹⁰³⁴ Fokkens 1982.

¹⁰³⁵ Based on unpublished field documents now present at the Provincial depot in Castricum, photographs at the Groningen Institute for Archaeology and personal documentation of the first author.

¹⁰³⁶ Fokkens 1998, Van Amerongen 2016.

¹⁰³⁷ Moree et al. 2011, 49.

¹⁰³⁸ Zeiler & Brinkhuizen 2014, 138.

lie in the life cycle of the birds. In summer (July-August) ducks and geese moult, and during that period they are unable to fly. This makes them relatively easy to catch, and moreover they can be caught in relatively large numbers.¹⁰³⁹

8.5.3 Fishing

A site like Emmeloord-Jg7¹⁰⁴⁰, has in our view demonstrated that fishing was an important element of Late Neolithic and bronze Age subsistence economies. This site testifies to well-planned fishing activities with weirs and fykes over a long period of time. Admittedly, this is only one site, but locations like this are never excavated. The site demonstrates what the potential is of the excavation of creeks and gullies. We are convinced that if we would target such sites more often, such practices would come into better view.¹⁰⁴¹ The species of fish that are caught seem to reflect the environment of the site and the season in which fishing took place, but not a preference in taste. For the Middle Bronze Age in West Frisia, Van Amerongen also demonstrated that fish and wild animals represent what was available in the environment at certain places and seasons.¹⁰⁴²

8.5.4 Special activities?

At some sites pits have been found with broken stones in them that show signs of heating. Sometimes also only charcoal-filled pits were found (Den Haag-Bronovo, Amerongen, Heteren, Schokland and Hattemerbroek). Especially at Hattemerbroek a cluster of these pits was excavated.¹⁰⁴³ These pits seem to be restricted to the Late Neolithic, especially the Late Neolithic A. Such pits also occur in Vlaardingen context, as was attested by the Geleen-Hof van Limburg site.¹⁰⁴⁴ If we want to find out what the function of such pits was, we will have the sample them systematically and test these samples for all kinds of material.

8.5.5 Subsistence basis: concluding remarks

In the above analysis, we have made little distinction in period or archaeological culture. In our view that is almost impossible because of the small amount of sites that have yielded reliable data from well-stratified deposits. Moreover, the question is whether a comparative chronological approach related to differences in ‘cultures’ is really useful. We still know very little about the way in which farmers in the Late Neolithic and the Early Bronze Age were using the environment around their sites, and how they organised their daily to yearly routines. We do know they organised special bird-catching events, sea fishing trips, or boar hunting parties next to cultivating arable land and tending livestock. However, rather than listing the activities that took place, it would be interesting to know how people organised these activities and what was needed in terms of time, tools and knowledge for these activities. In our view we do not have enough evidence to build models like the one put forward by Louwe Kooijmans in 1993. Neither do we feel that we should aim to make such models. That will lead to categorisation rather than a real understanding of the enormous variability that was obviously present through time and per region.

8.6 Burial and other ‘ritual’ practices

Ritual has been placed between inverted commas in the title, because there is a fundamental discussion going on about the question whether or not the ritual realm was seen as separate from daily reality. We are convinced that this separation is artificial, and that in reality everyday life is a constant platform for all kinds of rituals that are inextricably bound to what we do and how we perform actions.¹⁰⁴⁵ This is also the line of reasoning that we take in the assessment of Late Neolithic, Early Bronze Age and Middle Bronze Age A daily life. However, such ideas are difficult to translate into research questions for fieldwork and excavation, as we will see.

¹⁰³⁹ Zeiler & Brinkhuizen 2014, 138.

¹⁰⁴⁰ Section 7.6.

¹⁰⁴¹ Cf. Section 9.5.4.

¹⁰⁴² Van Amerongen 2016.

¹⁰⁴³ Cf. Section 7.11.

¹⁰⁴⁴ Cf. Section 7.51.

¹⁰⁴⁵ Cf. Bradley 2005, Brück & Fontijn 2013.

Moreover, 'ritual' practices like burial, hoards or intentional depots in pits are nearly always chance finds. In the last 20 years, these find categories have not been targeted in any excavation. This is likely to be the reason that the growth of our knowledge about the ritual aspects of daily life remains limited. We discuss the evidence for funerary rituals and bronze depositions in separate paragraphs, because the find circumstances and situations of these two activities differ completely.

8.6.1 Ritual practices in relation to burials

In Chapter 7, we have seen that several burials were encountered during settlement research, nearly always as bycatch (Table 8.5). Has development-led archaeology has changed our views on burial ritual in general? Especially sites like Hattemerbroek have yielded quite a few burials from the Late Neolithic A and B, but also isolated burials were found. Virtually no new burials from the Early Bronze Age or the Middle Bronze Age A have been found during the past 15 years. This may indicate that during the Early Bronze Age practices changed, or that beakers were less frequently added to burials. The settlement burials from the Late Neolithic A at Hattemerbroek, but also at Schokland-P14, show a comparable pattern with respect to the fact that these are often inhumation burials. The dead were buried in rectangular pits, often laid on a kind of matting or bark in a crouched position (Schokland-P14, Hattemerbroek). At Schokland-P14, Mienakker and Sijbekarspel burial gifts were absent, but at Hattemerbroek the situation was different. There the burial gifts and the construction of the graves are entirely similar to the mortuary practices that we are so familiar with through burial mound excavations. Burial pits are generally rectangular and in the Late Neolithic B lined with planks and probably covered with a lid. The dead were deposited in these wooden cists in a crouched position and often given a beaker, one or more flint blades and sometimes a polished flint axe. In several cases these burial pits are surrounded by a narrow circle of posts or stakes, like at Hattemerbroek, Twello-De Schaker and Schokland-P14. This practice is again in line with what we know from barrow burials. What

cultural rules guide burial in settlement context or in a separate burial mound, is not clear at all. There appears to be little difference between the two settings in the way that bodies are treated or in the accompanying grave gifts.

At Hattemerbroek and Wijchen-Bijsterhuizen, several Bell Beaker burials were found, some of these cremation graves. Bell Beaker cremation burials are also known from other regions, so these burials fit previously known patterns. Some of these isolated burials had not pottery at all: only ¹⁴C-dates indicated a Late Neolithic date. This appears to be especially true for the Late Neolithic B.

Interestingly, both at Hattemerbroek and at Schokland-P14 there are indications that burials somehow remained visible or were 'remembered' over long periods of time, because old burial grounds were re-used in later periods time and time again. There are also indications that individuals were added to older burials, like at Hattemerbroek-Bedrijventerrein-Zuid 2. Therefore, the impression arises that formal burial areas were present and were respected and curated over very long time, in these cases hundreds of years. We read this as an indication of the important position of the dead in these communities. This prominence of the dead took on such an importance that many, many generations later these or burials were still respected. The question whether these graves were indeed flat graves without any markers or whether they were covered by (low) barrows that were later levelled, is still a matter of much debate. Nearly every report 'that mentions a 'flat grave also includes a lengthy discussion about that interpretation. Micromorphology has been tried as a means to answer such questions, but so far with little real success. However, from the burials at Hattemerbroek and Schokland-P14, it is clear that even flat graves were still visible or at least 'remembered' after decennia.

Apart from these settlement burials, there were obviously also barrow burials outside settlements. Many barrows have been found on the Veluwe and the Drents Plateau. None of these barrows has been targeted by development-led research however. That does not imply that there were no new research was done. The NWO Barrow Landscapes Project from Leiden University, under supervision of D. Fontijn and C.C. Bakels, has yielded two

Table 8.5 Late Neolithic and Bronze Age A burials found in settlement context or isolated.

| Place | Period | Situation | Interment | Context |
|----------------|--------|----------------|-------------|------------|
| Mienakker | LN A | levee | inhumation | settlement |
| Zeewijk | LN A | levee | inhumation | settlement |
| Schokland | LN A | river dune | inhumation | settlement |
| Leek | LN A | coversand | inhumation? | isolated? |
| Hattermerbroek | LN A | river valley | inhumation | settlement |
| Deventer | LN A | coversand | inhumation? | isolated? |
| Twello | LN A | coversand | inhumation | isolated? |
| Groenlo | LN A | coversand | inhumation? | isolated? |
| Heerlen | LN A | river terrace | inhumation? | isolated? |
| Zutphen | LN B | coversand | cremation | settlement |
| Meteren | LN B | crevasse splay | inhumation | settlement |
| Beuningen Gld | LN B | meander belt | cremation | isolated? |
| Wijchen | LN B | river dune | cremation | isolated? |
| Nistelrode | LN B | coversand | ? | isolated? |
| Kilder | MBA A | coversand | cremation | isolated? |

LN = Late Neolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age.

Table 8.6 Sites with depositions of pot beakers, BWB pots or Early Hilversum (HVS) pots.

| Place | Toponym | Period | Situation | Type |
|--------------|--------------------------|------------|---------------|------------------------|
| Hengelo | Ekkerinkweg | LN B | coversand | Bell Beaker stones |
| Didam | Kerkwijk en Randweg-Zuid | LN B | coversand | potbeaker |
| Amerongen | Bedrijventerrein Leersum | LN B | coversand | potbeaker |
| Rosmalen | De Driehoek | LN B | coversand | potbeaker |
| Afferden | Spitsbrug | EBA | river terrace | Barbed Wire Beaker pot |
| Cuijk | Groot-Heiligenberg | EBA | river dune | EBA / early Hilversum |
| Vorstenbosch | De Helling | MBA A | coversand | early Hilversum |
| Nistelrode | Mortel | LN B-MBA A | coversand | early Hilversum |
| Boekel | Parkweg | MBA | coversand | early Hilversum |
| Tilburg | Berkel-Enschot | MBA | coversand | early Hilversum |

LN = Late Neolithic, EBA = Early Bronze Age, MBA = Middle Bronze Age.

dissertations about the barrow landscapes of the Veluwe.¹⁰⁴⁶ Several small scale excavations by the barrow landscapes team have added even more information and have set an agenda for future research.¹⁰⁴⁷

8.6.2 Ritual practices with respect to bronze production and circulation

In the Early Bronze Age bronze depositional practice starts to take shape. We have already discussed some of the new evidence (Chapter 5) generated by metal detectors. However, this

¹⁰⁴⁶ Bourgeois 2013; Doorenbosch 2014.
¹⁰⁴⁷ Fontijn, Bourgeois & Louwen 2012. We refer to these results for more details.



Figure 8.9 The skull deposition of Metzendorf-Woxdorf (source photo: Archäologisches Museum Hamburg).

discussion has not given us new insights into the questions about the where or what kinds of objects were found. Due to more attention for river valleys, however, a targeted research strategy is starting to pay-off.¹⁰⁴⁸

In settlement context virtually no bronze objects are found. Only in the river area a few object have been retrieved, for instance at Houtenvleugel 20.¹⁰⁴⁹ At Tilburg-Tradepark-Noord an interesting complex of pits was found, clustering in and around an (abandoned?) structure from the Early Bronze Age.¹⁰⁵⁰ In one of the pits the remains of crucibles were found. It is quite well possible that such pits are the remains of often repeated casting or bronze production activities over a long period of time. At Tilburg the intensive dating programme was able to demonstrate that this location had been used for centuries time after time again for the same kind of activities.

8.6.3 Depositions

A strange phenomenon that is often interpreted as part of an (unknown) deposition practice, is the burial of complete pot beakers, barbed wire beaker-pots, and Early Hilversum pots, in pits, often upside down. We now know quite a few of these finds (Table 8.6). They are generally found in isolation, and are often thought to be associated with burials or partial internments. Since several of these were placed in a bottom-

up position in the ground, they are thought to have covered something. For the Netherlands, several authors have described these kinds of pottery depositions and also pointed out that there might be a connection with a special type of burial rite even if no bone fragments were recovered.¹⁰⁵¹ There is in fact one clear example of such a deposition from Metzendorf-Woxdorf. At this site, an undecorated *Riesennebecher* of *Bentheimer Typ* covered a barbed wire stamp decorated bowl (Fig. 8.9). A part of a human skull was placed in the bowl.¹⁰⁵² Comparable finds of Barbed Wire Beaker Culture style vessels covering human skeletal remains have been made in the United Kingdom.¹⁰⁵³

Research of the last 15 years has yielded quite a few examples pots that were buried upside-down. It is a practice that appears to have been more or less common in the Late Neolithic B, the Early Bronze Age and the Middle Bronze Age A, at least in the Netherlands. SGC pots are absent in the list, therefore it appears that this practice started in the Late Neolithic B.

Since most scholars know the publication of Wegewitz and the summarizing overview of Louwe Kooijmans cited above, pots found this way are often interpreted as burial deposits. The most recent survey and interpretation of all of these pots as depositions covering body parts, was published by Drenth.¹⁰⁵⁴ However, the evidence for such an interpretation is very thin, or rather none-existent. None of the pots that we have presented in Chapter 7 actually was associated with human remains. Drenth lists only one find, a Middle Bronze Age 'Drakenstein' pot from Den Dungen, which was associated with cremation remains.¹⁰⁵⁵ But these pots were also used as urns, and are found in graves as well as containers for cremations; that is never the case with pot beakers or barbed wire beakers. Most vessels were not found in the direct vicinity of any other type of features from the same period.

In terms of distribution in the Netherlands, most of the finds from this type appear to cluster in the central and southern Netherlands, but a few examples are also known from the eastern regions. Late Hilversum pots or Elp vessels have never been found in these depositions, therefore, we conclude that this depositional practice does not continue in the Middle Bronze Age B. We also can conclude that it is a frequent practice in the central and southern Netherlands.

¹⁰⁴⁸ Rensink 2008; Fontijn 2004.

¹⁰⁴⁹ Section 7.28.

¹⁰⁵⁰ Section 7.48.

¹⁰⁵¹ For an early overview Cf. Louwe Kooijmans 1974, 291-292; for a recent overview, Cf. Drenth 2015a, 56-62. Wegewitz 1960.

¹⁰⁵² Cf. Louwe Kooijmans 1974, 291-292 for further literary references.

¹⁰⁵⁴ Drenth 2015a.

¹⁰⁵⁵ Drenth 2015a, 118.

If we include older finds in the argument this only become clearer. Especially on the Veluwe several complete pot beakers and BWB pots have been found.

It is difficult to interpret these depositions, especially since their context is not always clear and the deposition character is recognised too late. ‘True’ beakers are never found this way, nor have SGC pots or beakers been found in an isolated upside-down position. In order to find out more, we will need as much samples as possible, not just for pollen, but for a multi-proxy analysis.¹⁰⁵⁶

Apart from pottery depositions, there is also one deposition of stone tools, possibly related to Bell Beaker forging activities.¹⁰⁵⁷ In Bell Beaker burials cushion stones have been found, but here we are dealing with a larger variety of tools, some of which may have changed function since also a stone axe appears to have been used for metal working. We can only guess at its precise meaning; in general such depositions indicate that these objects were valued and had a meaning that went beyond just functional use.

8.7 Social structure

The international discussion on the trade and exchange of copper, tin and bronzes and has led to a general idea that the Late Neolithic and Early Bronze Age are the stage for increasing social complexity. This discussion occurs less often in relation to the Corded Ware Culture, but it is very prominent in debates about the BBC; for the Bronze Age this is epitomised in the work of Kristiansen and Earle.¹⁰⁵⁸ In general precious metals (including copper and bronze) and wrist guards are interpreted as possessions of elites. The problem with this approach is that there is very little or no discussion of the social processes behind these ‘prestige goods economies’, rather they are seen as a fact. This implies that that Corded Ware Culture, BBC and Barbed Wire Beaker Culture communities all over Europe were similarly structured everywhere. However, if one thing has become clear, a.o. through research in the last 15 years, it is that Late Neolithic and Early Bronze Age communities in the Low Countries followed their own traditions. Traditions that were probably deeply rooted in the past. Development-led

archaeological research of settlements, has in our view demonstrated that the image generated by decennia of burial research is not at all in compliance with the recently generated settlement evidence.

The settlement evidence has not been able to corroborate the grand narratives of chiefly elites that supposedly reined in Bronze Age and Late Neolithic Europe. We do not have any evidence for the development of local elites or chiefs who would have commanded communications and bronze trade, or demanded surplus production for trade and exchange. This does not mean that Late Neolithic and Early Bronze Age communities in the Netherlands were egalitarian and autarchic. The opposite is more probable. However, we have no indication for higher status settlements or buildings within settlements. We believe that from the Early bronze Age onwards bronzes were not prestigious objects per se, and that every man possessed them. A more fundamental discussion is needed about the subject. Such a discussion could depart from, for instance, different approaches towards value and the constitution and maintenance of values in society¹⁰⁵⁹, but that is beyond the scope of this study.

8.8 Concluding remarks

In Chapter 8, we have investigated how development-led archaeology has advanced our understanding of the Late Neolithic and the Early Bronze Age in relation to several issues. Much knowledge has been gained, especially through the excavation of settlements. We have seen that our mental template of upland farmers may have to be changed into farmers that choose site location in lower areas, on levees and crevasse splays of river valley (Fig. 8.10). Locations that enabled them not only to farm on extensive plots of arable, but also to complement their diets with fish, birds, game and collected plants. However, it is also clear that we are still mostly dependant on bycatch. Only the sites of Emmeloord-J97, Hattermerbroek, Veldhoven-Habraken, and Noorderboekert are examples of projects that were specifically aimed at the excavation of settlement sites from this period. And even in those cases the research briefs

¹⁰⁵⁶ Cf. Chapter 9.

¹⁰⁵⁷ Cf. Section 7.18: Hengelo-Ekkerinkweg: Drenth, Freudentberg & Harz 2009.

¹⁰⁵⁸ Kristiansen 2008; Earle 2007; Earle & Kristiansen 2010.

¹⁰⁵⁹ Cf. Parry & Bloch 1989; Graeber 2001.



Figure 8.10 An imaginary late Neolithic or Early Bronze Age landscape envisaging farmsteads and their arable land in a wetland situation. The site in the centre is situated on a crevasse splay, while other sites are situated on levees and coastal barriers in the far distance. This environment asks for boats as a means of communication (drawing by Mikko Kriek).

were barely addressing relevant research issues, generally because they were not referring to the National Research Agenda Archaeology, or had

not enough knowledge of research problems for the period under consideration. In Chapter 9 we briefly outline several such topics.

9 Towards a new research agenda for archaeology

9.1 Introduction

In the previous chapters we discussed the National Research Agenda Archaeology of 2005 and the results of development-led archaeological research in the last 15 years, much of which built on that agenda. In this chapter we evaluate those results and answer the question how we should proceed in the next 10–15 years. Was the old Research Agenda Archaeology effective in producing relevant research problems? How was this Research Agenda Archaeology translated into research questions at a site-level? Are the results of these excavations useful when trying to relate site-specific questions back to these overarching research themes? Do we need new, and possibly other kinds of questions? What problems should we try to solve in the next 15 years? These are the kind of issues that we address in the following sections.

9.2 Did the National Research Agenda Archaeology 1.0 address relevant problems?

The National Research Agenda Archaeology version 1.0 of 2005 was divided into different chapters, each targeting different periods and regions. For the period under consideration, these were: the northern Holocene areas,¹⁰⁶⁰ the western Holocene areas,¹⁰⁶¹ and the northern, eastern and southern Pleistocene areas and the river area.¹⁰⁶² The authors of the agenda had been assigned to structure the work according to the following themes: 1) a short history of research; 2) current research themes; 3) archaeological ‘phenomena’. Within this structure, the then current research themes were supposed to address the following: the development of the cultural landscape, the production, distribution and use of mobilia, the subsistence basis, ritual practices, social organisation and social structure, the construction of personal, local, and supra-local identities, and issues of heritage management (the abundance and the state of archaeological remains). Part three of each chapter was focussed on formulating research questions that

could guide written schemes of investigation (WSI) for commercial excavations.¹⁰⁶³ These question were supposed to address topics like: paleogeography;

- the cultural landscape;
- post-depositional processes;
- methods and techniques;
- chronology;
- households and local communities;
- cult places and depositions in natural places;
- burial ritual and monuments;
- supra regional communities;
- production, distribution and use of mobilia;
- production and distribution of food;
- heritage issues.

In essence, the set-up was well conceived, with part 2 providing framework and validity of research themes and a problem orientation, whereas part three formulated the resulting research questions. In general, these research questions provided a method for answering the questions framed within the research question itself. The agenda followed a *why-what-how* structure in its presentation of the basis for future research. This set-up was productive, but-with hindsight-the division of the country into different ‘archeo-regions’ has not been the best of choices. Because different authors were involved for each region, the resulting chapters were quite different in quality and scope: other research problems were addressed and from different theoretical perspectives in the various regions.

Most comprehensive, and in our view very well formulated and argued, was the agenda for the Pleistocene Netherlands and the river area.¹⁰⁶⁴ The translation of research themes into research questions was excellent as well in this part of the agenda. To give one example of the differences: the ‘biography of the landscape’ was presented as a key theme in all chapters: ‘how did communities structure their environment and were remains of the past possibly used as structuring elements in this process? The meaning of deserted houses in the landscape is worth studying in relation to these questions?’¹⁰⁶⁵ This is a relevant research theme indeed, and it was also addressed by the other authors. However, only Gerritsen, Jongste & Theunissen translated these questions into a series of approaches that could be applied in the field. A number of the practical aspects that Gerritsen, Jongste & Theunissen present are:¹⁰⁶⁶

¹⁰⁶⁰ NRA chapter 12: Bazelmans, Groenendijk & De Langen 2006
¹⁰⁶¹ NRA chapter 14: van Heeringen & Koot 2005.
¹⁰⁶² NRA chapter 17: Gerritsen, Jongste & Theunissen 2005.
¹⁰⁶³ WSI; Programma van Eisen (PvE).
¹⁰⁶⁴ Gerritsen, Jongste & Theunissen 2005.
¹⁰⁶⁵ Van Heeringen & Koot 2005, 10 (our translation).
¹⁰⁶⁶ Gerritsen, Jongste & Theunissen 2005, 23. Van Heeringen & Koot (2005, 10) do not formulate a question, but simply state that ‘... (abandoned) houses may have had a function as beacons in the landscape...’.

- special attention to signs of repairs, extensions or the abandonment of house plans and associated buildings, and depositions in post holes and pits;
- whether or not it can be observed if material was deposited before the placement of a post or when it was removed upon abandonment;
- what are indications for the way in which a house or an ancillary structure was abandoned (e.g. was it left to decay, dismantled or burnt down)?;
- what kinds of wood were used?;
- what was the life span of the house?;
- in order to document the biography of houses, not only its features need to be studied, but also an substantial area around the house in order to document the farmyard;
- in the case of burials near houses, these should be carefully excavated and dated in order to find out whether they are contemporary with the houses or not.

So, the answer to the question posed in this paragraph is: 'Yes, the National Research Agenda Archaeology did address relevant themes, but these themes were not evenly distributed over the country. Moreover, the translation of themes into research questions in WSI's was very diverse. In the following we will return to the research themes that were addressed.

9.3 What kind of research questions were asked in the last 15 years?

We have just stated that the National Research Agenda Archaeology defined a number of research themes. These themes were provided with good arguments for their relevance, and with well-argued research questions. However, from our discussion on various Late Neolithic to Middle Bronze Age sites in Chapter 7, we can conclude that the WSI's of the last 15 years have not been able to follow-up on these research themes. Even though the National Research Agenda Archaeology is generally mentioned as a source of questions in the WSI's, the questions that the WSI's asks never have the same *why-what-how* structure as the National Research Agenda Archaeology. Nor is it apparent how the answering of these questions would relate back to any of the overarching research themes discussed in the National Research Agenda

Archaeology. WSI questions in general are only *what* or *how* questions in the sense that they ask what occurred in the past or how it occurred in the past, without specifying why this is relevant or how this question should be answered.

This leads to two mayor problems. Firstly, the excavator who has to conduct fieldwork in accordance with the WSI has no clue why a specific question is asked, and how an answer to that question can contribute to the solution of major research problems. Consequently, he or she is unable to tailor the research or sampling strategy to these larger issues.

Secondly, a question that only consists of how and what questions invite descriptive rather than explanatory approaches. Questions like 'What is the extent of the site?', or 'How old is the site?' and 'How many different periods of use can be distinguished?' invite to produce descriptive knowledge: lists, measurements, etc. In principle, these questions can be asked and answered without any prior knowledge of the period or the type of site in question.¹⁰⁶⁷ Consequently, how and what questions do not generate new knowledge. These questions just produce more data and those data are not collected to solve questions. They are supposed to result in 'conservation *ex situ*', but in our view, excavation without proper targets destroys more than we gain. Therefore, we have to rethink the form of the questions we're asking, and provide better links between research problems, research questions and methodology than was common practice until now.

9.4 Can we improve the way research questions are formulated?

How can we formulate questions that *do* generate more than descriptive knowledge? The ideal form, in our perception, is the *why-what-how* sequence that was already demonstrated in the original National Research Agenda Archaeology. According to this scheme, one first formulates *why* one wants to know something (reason) and *what* one expects to find (hypothesis) and what will be studied in order to find out about this topic (research question). Subsequently, one formulates a plan of *how* to study this topic (a research strategy or methodology). The latter part of

¹⁰⁶⁷ In practice questions are simply copy-pasted from other WSI's that already have been approved for other research elsewhere by local, provincial or national authorities.

research questions is seldom formulated for every different question in Dutch WSI's, but only for the whole set of questions discussed in general terms. For instance, a typical question in several WSI's that we have read is: 'If burial remains are encountered, what is the relation between the burials and the settlement?'. Without further explanation, the person who needs to answer this question with a targeted research and sampling strategy will want to know what kind of relation is actually implied in the question. Would this be a physical relation? Do we have to look for actual connections in the form of ditches? A cosmological relation? A chronological relation? How do you recognise a relation from archaeological remains? And perhaps even more importantly: why is this question relevant. What is the problem addressed by looking for these relationships? Why is this question asked?

A better way to formulate this specific question might be: Previous research has demonstrated that in some occasions burials were encountered in settlement context (a statement accompanied by references to relevant publications). In none of these cases, has it been established whether the settlement was contemporaneous with the burials or whether the burials belong to a phase during which no houses stood in the direct vicinity. Therefore, we would like to establish whether the buried persons could possibly be people that were at one time living in the farms nearby, or whether they were buried on a deserted settlement area. In the latter case, there may be indications that a specific spot or abandoned features had become persistent places and therefore were chosen for burial location. This question can be studied through an analysis of horizontal stratigraphy and through an analysis of the way features of older phases were abandoned: were they left to decay or dismantled? The latter implies that careful documentation and registration is needed of the way features (post pits, larger pits) were abandoned and filled in (as a natural process or otherwise).

When we formulate the research questions in this manner, the research problem and the method become part of the question. It is evident that such questions cannot be asked without knowledge of the period, the type of site and the problems we would like to solve. These problems link to several research themes,

that in fact are not that much different from the ones formulated by Gerritsen, Jongste & Theunissen for the National Research Agenda Archaeology 1.0.¹⁰⁶⁸ Therefore, we use these themes as guidance in the following sections.

9.5 Which research problems do we want to target in the next 15 years, and how?

The overall goal of our research should be to find out how prehistoric societies were constituted as coherent wholes through integrated realms of economy, ideology, cosmology and daily life. It is possible to achieve this goal by analysing societal transformations and material and spatial developments.¹⁰⁶⁹ This kind of approach is epitomised in the term cultural landscape, which is defined as: the landscape that is inhabited, and given structure (in terms of economy, settlement structure, infra structure) and meaning (relating to ideology, ritual sites, persistent places,¹⁰⁷⁰ and cosmology) by its inhabitants). According to Gerritsen, Jongste & Theunissen, this focus implies that we should not only study settlements and cemeteries, but also more extensively used zones of the landscape that in social, ritual and cosmological sense formed an integral part of the cultural landscape.¹⁰⁷¹ This implies, for instance, the need for studies of brooks and small river valleys, which indeed has become a more or less standard after the launch of National Research Agenda Archaeology 1.0.¹⁰⁷²

We fully agree with this approach and in a broad sense we will follow the themes identified in the 2006- version of the National Research Agenda Archaeology. In the following sections we discuss how these themes can be modified and extended to fit current research problems. Our comments focus on questions that can be derived from research themes, and on methods that can be employed in order to answer them. We have distinguished the following broad research themes:

- chronology and periodisation (9.5.1);
- the physical landscape (9.5.2);
- the cultural landscape (9.5.3);
- settlement and subsistence (9.5.4);
- settlement structure and organisation (9.5.5);
- farms and houses (9.5.6);
- craft and exchange (9.5.7);

¹⁰⁶⁸ Gerritsen, Jongste & Theunissen 2005, part 2.

¹⁰⁶⁹ Gerritsen, Jongste & Theunissen 2005, 7-
¹⁰⁷⁰ Schlanger 1992, 92.

¹⁰⁷¹ Gerritsen, Jongste & Theunissen 2005, 7-.

¹⁰⁷² Gerritsen, Jongste & Theunissen 2005, 7; Rensink 2008.

- ritual landscapes (9.5.8);
- socio-political organisation (9.5.9).

9.5.1 Chronology and periodisation

In the National Research Agenda Archaeology 1.0, typo-chronology of metalwork, pottery, houses, was advocated as one of the research goals with respect to periodisation. Furthermore, the use of wiggle matching was proposed as a means to obtain more accurate ¹⁴C-dates where platforms are present in the calibration curves. In chapter 8, we have argued why typo-chronology should no longer be a focus of archaeological research. We have devoted decennia of research to the typo-chronology of barrows and burial gifts, but the conclusion has to be that this does not result in accurate chronologies useful for dating or discussing the periods discussed here. That is not only the result of platforms in the calibration curves, but there are also theoretical problems with typology itself. For pottery, for instance, detailed typologies that fit large regions or even supra-regional entities are hardly to be expected from a societal point of view. How should we explain such developments in terms of the social processes? One might expect people to choose from a range of options, and adopt them to fit their regional communities of practice, and that is indeed what we think happened. That consideration poses a challenge at the same time, a challenge that commercial archaeology can meet if our aim is to describe variability, rather than only to identify types that place the sites in a chronological sequence.

This does not mean that we should not try to anchor certain developments in time, but we have to be far more selective in this effort. We have to consider what kind of typological changes would be triggered by different kinds of social processes. For instance, technological aspects may have been passed on through generations and within communities in quite a different way than decorative patterns. Especially in the Late Neolithic and the Early Bronze Age decorative patterns and techniques follow a European style, but are probably regionally and even locally applied in a slightly different manner.¹⁰⁷³ Consequently, if we discuss typology, we have

to be aware of different social contexts in which ideas and innovations result in different practices. One of the methods of distinguishing between these practices, is a *chaîne opératoire* approach that we discuss in more detail in Section 9.5.7. Specialists studying different kinds of materials and structures (house plans, for instance) should realise that social processes are different for every kind of material. Until now, such considerations are totally missing from Dutch archaeological reports. Closer cooperation between specialists, discussions about the social process behind transformations are crucial for understanding why culture changed. We still can make enormous progress in this realm of enquiry.

Even if the discussion of individual artefact typologies is considered to be not very productive, one of the methods that might work is the comparative assemblage method, or seriation, that Van den Broeke used for the Iron Age of the Southern Netherlands.¹⁰⁷⁴ Van den Broeke has documented the relative frequency of different forms and decorations within site assemblages. Even though this method may not be applicable in the same way to the Late Neolithic and the Early Bronze Age, the study of artefact associations is something that is missing from the discussion almost entirely. These approaches should not be taken with the purpose of making new typo-chronologies, but rather with the purpose of defining and explaining general trends in technical procedures and decorative styles. These analyses should involve all types of pottery, the undecorated thick-walled ware just as much as the decorated ‘Beaker’ wares. The resulting trends should then be discussed in terms of communities of practice and contact zones, rather than in terms of ‘cultures’. In our view, studies that identify regional patterns are more interesting than studies that fit a site or material culture in a traditional cultural sequence. Moreover, such a comparative perspective is probably more relevant to understanding past communities and the ways in which they interacted.

Radiocarbon dating can be useful in situations where several dates from a stratigraphical sequence can be analysed with Bayesian statistics. This statistical method could help to get a better idea of, for instance, of continuity and discontinuity in the use of a site and of particular assemblages.¹⁰⁷⁵ This way ¹⁴C-dating

¹⁰⁷³ Cf. Furholt 2014 for an extensive discussion.

¹⁰⁷⁴ Van den Broeke 2012.

¹⁰⁷⁵ Bourgeois & Fontijn 2015.

can contribute to the creation of a better insight in major changes and transitions in the cultural landscape. However, it is important to note that dating such transitions is less important than understanding how they came about, which social mechanisms were responsible for the change and new traditions or innovations.

9.5.2 The physical landscape

In the National Research Agenda Archaeology 1.0 the landscape is discussed as an entity with physical and inherently social qualities. People identify themselves with physical landscapes and therefore the landscape is part of their 'being'.¹⁰⁷⁶ The physical landscape determined where people could live and which resources were available to them. Therefore discussions about site location and regional identity should begin with the landscape, the palaeogeographic setting, because this factor is essential for understanding settlements. This palaeogeographic setting should be known prior to the excavation of site. This is what is meant with a 'predictive model' in the Dutch Archaeology Quality Standard, but most people read this term as a prediction of where sites are, not how the landscape has developed. As an example, before the excavation in the Betuweroute started, there was no idea that sites could be situated on crevasse splays.¹⁰⁷⁷ Sites were thought to be restricted to levees. Therefore, prospection by auguring focussed on these landscape elements. Crevasse splays were not targeted and only during excavations it became clear that these were the most prominent places for settlements. If a better landscape model would have been made, different sites might have been found and different research strategies could have been used. In order to select the relevant locations for excavation, one should have a clear impression of the past landscape and its possibilities for different kinds of sites, not just settlements. Research questions for the prospective phase should aim to achieve such an understanding of the landscape. Only then, it is possible to make informed decisions on which places are to be prospected and excavated. It is crucial that we also target areas for excavation that have yielded no finds during the prospective

phase. Especially when auguring or field walking is used as a method for prospection, absence of finds is absolutely no evidence for absence of features. Consequently, a research strategy that does not target these 'empty' areas turns these prospection methods into self-fulfilling prophecies: We find more of the sites we can recognise in corings, but none of still unknown nature or poor visibility. The research history of the site Hazerswoude-Rijndijk Windturbinepark is an example of how auguring can fail as a prospection method.¹⁰⁷⁸ Since Late Neolithic and Early Bronze Age sites of any kind are poorly visible in most areas and especially in the Pleistocene regions, we also have to target areas that yielded no finds during prospection. In Chapter 8, we conclude that many sites have been discovered in locations that were not expected to yield any settlements of farming communities. This implies that we will have to adjust the existing predictive maps. For the Late Neolithic and Early Bronze Age, these models should include areas with high potential near river mouths, on coastal barriers, on crevasse splays, on low-lying parts of Pleistocene outcrops, etc. One can easily predict many Late Neolithic and Early Bronze Age sites on the flanks of outcrops at Urk, Nagele, Wieringen, Den Burg. Also crevasse splays and levees of the Vecht, the Meuse, Rhine and other rivers are likely candidates for sites from these periods. In the Pleistocene uplands, we should target similar areas bordering on streams and wetlands.

If we survey for the above-mentioned situations and incorporate these into physical geographical models for our predictive maps, we are one step closer to actually finding them. WSI's for prospective research in such areas should focus on paleogeography rather than on finding sites. Within the areas that are eventually chosen for excavation, we should also select areas that previously might have been avoided because finds are supposed to be no longer *in situ* and therefore less valuable. For example, (residual) channels in the river basins and on crevasse splays are generally ignored, but the excavations of gully at Emmeloord-J97 and at Mienakker demonstrated the enormous potential of these landscape features for obtaining different kinds of evidence than we normally get from sites. If we want to find canoes, let us excavate river channels!

¹⁰⁷⁶ Cf. Ingold 1993; Bender 2002.

¹⁰⁷⁷ Van Dinter & Van Zijverden 2010.

¹⁰⁷⁸ Cf. Section 7.26.

A host of other types of analyses can be applied to aid the reconstruction of landscapes, including foraminifera, diatoms and ostracods.¹⁰⁷⁹ Yet not everything is useful in all situations. It is, for instance, almost standard practice to take pollen samples from pits and wells in settlements. But for a reconstruction of the settled landscape these are not very productive. They reflect the immediate surrounding of that feature: an open settlement environment. But that is already clear from the context. We would advise to restrict the analysis of pollen samples from settlement sites to an absolute minimum.¹⁰⁸⁰ The rule should be that a paleo-botany specialist has to make clear what kind of specific questions can be answered with pollen samples from features or settlement deposits.

9.5.3 The cultural landscape

The cultural landscape has been defined as the landscape that was inhabited, structured and made meaningful by its inhabitants (Section 9.4). This is easily said, but how can we study such a landscape? This question is one of the most difficult parts of our work. ‘One cannot excavate meanings or social processes!’, was a sceptical remark that is still echoing from the 1970’s. Maybe this is one of the reasons that there has been very little follow-up on this research theme since the National Research Agenda Archaeology 1.0, even if Gerritsen, Jongste & Theunissen gave clear directions for how to approach this kind of question during fieldwork (Section 9.1).¹⁰⁸¹

In our view, an important way to approach the above-mentioned themes when excavating settlements, are horizontal stratigraphy and abandonment analysis. As indicated in Section 9.1, this involves conscious consideration and documentation of those particular aspects of post and pits. Recent research has demonstrated that a discussion of abandonment demands a different documentation of feature sections than is currently the standard in Dutch archaeology.¹⁰⁸² The standard methodology only aims to recognise which features might belong to a structure. This does not require an elaborate analysis of how features might have closed up. Consequently, this prohibits us from

asking whether places from the past might have remained visible. In current excavations, sections are drawn with solid lines as if every colour difference is a new ‘fill’. The colours and texture of the fills are described, but an interpretation of how the feature was filled in generally is not part of the analysis. The usefulness of these drawings cannot exceed simple questions regarding feature depth. However, in order to ascertain how abandonment processes occurred, we might have to return to how we documented features at an earlier point (Figure 9.1). Without paying attention to the formation histories of features, making informed statements about abandonment becomes almost impossible. Consequently, in a WSI it should be demanded that all features of structures and larger features (pits) should be documented with drawings, photography and in writing and explicitly studied in relation to how the feature was formed, which goes beyond merely describing the feature in terms of colour and texture. Additionally, the analysis of find material from abandoned features may reveal special deposits, as can be attested readily for several Iron Age contexts.¹⁰⁸³

The above-mentioned analyses of features can help to decide whether or not features remained visible over time, and if these might have structured later habitation. However, even if structures had no evident long-lasting visibility, this does not imply that they were completely fell into oblivion. Cemeteries like at Schokland-P14 or at Hattemerbroek clearly remained ‘known’ long after their last use, despite being invisible. We know from other sources as well that the creation of a flat grave can in many occasions be understood as an act of place-making and that these flat graves developed into persistent places in many occasions.¹⁰⁸⁴ This implies that a contextual analysis of the evidence is always necessary; we cannot rely on standardised interpretation methods when trying to make sense of how places were made relevant in relation to their specific surroundings. However, a standard question for any WSI (for any period) is possible. This question could read as follows: The ways in which features and structures have been left behind after abandonment (i.e. have they been filled in, left open, were posts extracted, were there special depositions) can give us information about how structures and

¹⁰⁷⁹ Cf. Van Zijverden & De Moor 2014, Degryse *et al.* 2015 for a discussion of the methodology, sampling strategies and interpretation of these palaeoenvironmental proxy’s.

¹⁰⁸⁰ This remark was in comments to this Chapter supported by C.C. Bakels.

¹⁰⁸¹ Gerritsen, Jongste & Theunissen 2005, 23.

¹⁰⁸² Cf. Steffens 2016 for an elaborate critique.

¹⁰⁸³ Van den Broeke 2002.

¹⁰⁸⁴ Cf. Bourgeois & Fontijn 2015.

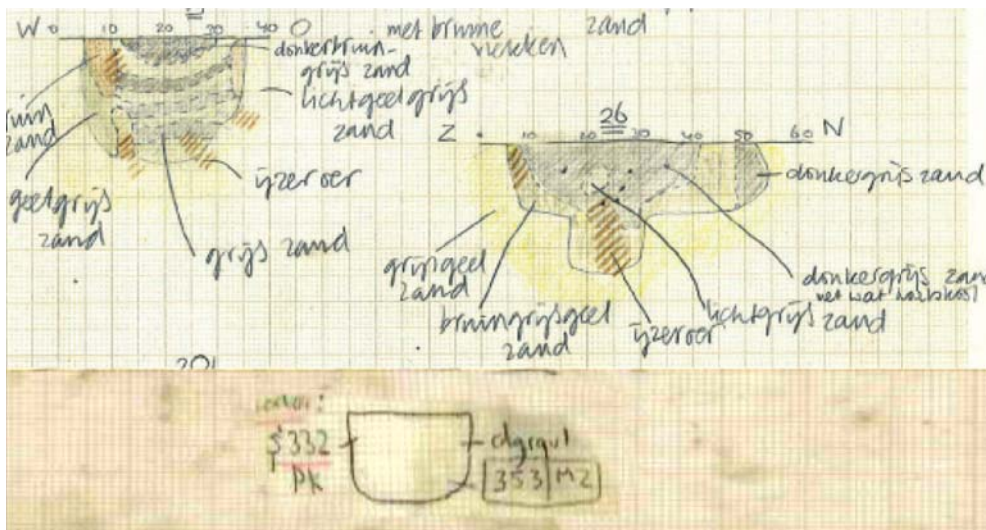


Figure 9.1 Above: features from Oss-Mettegeupel excavated in 1994 (Leiden University). Below: a feature excavated and documented according to current standards (after: Steffens 2016, 166).

features were treated. Consequently, these treatments could provide insight in the ways in which such places kept a meaning and became persistent places: places that people used intermittently, even if these places had become invisible. This implies that of all structures and larger features the interpretation about abandonment has to be explicitly documented in drawing, photography, and described in a well-argued interpretation.

This should become standard practice, not just for the Late Neolithic or the Bronze Age, but for all periods, because the analysis of the cultural landscape as a structured and meaningful landscape is something of all ages. Another way to analyse structure and meaning in the landscape, is to target not just places where people lived or were buried, but also landscapes around these places. The National Research Agenda Archaeology 1.0 recommended choosing between the large scale excavation of vast areas to study the relation between yards, arable fields, cemeteries and deposition locations, and a fine grained approach on a site level for spatial relations within a settlement.¹⁰⁸⁵ However, both approaches require that archaeological projects start in an area that is already known to contain sites. Often, areas with little finds are described as having been subjected to 'off-site activities', and de-selected for further research. However, when trying to answer how people made sense of their surroundings, it would most certainly

seem fruitful to investigate which areas were used less often, and what activities did take place here. Moreover, by continuously de-selecting such areas for further research, new excavations only have the potential to reaffirm existing expectations whilst eradicating the opportunity to challenge established views.

9.5.4 Settlement and subsistence

The National Research Agenda Archaeology 1.0 states that we do not know enough about the relation between farming, and hunting and gathering on the one hand, and on the relation between arable farming and husbandry on the other.¹⁰⁸⁶ Furthermore, it states that there is not enough quantitative information on age distribution and different breeds in relation to animal husbandry. These differences were deemed interesting because they might reveal 'chronological, regional or cultural variation'.¹⁰⁸⁷ In relation to arable farming, the National Research Agenda Archaeology 1.0 emphasises the development of diversity during the Bronze Age, the situation of arable land, the size of the plots of arable land and the fallow period of these plots.¹⁰⁸⁸

An emphasis on the relation between hunted and domesticated animal species was indeed evident from the archaeological reports; one

¹⁰⁸⁵ Gerritsen, Jongste & Theunissen 2005, 18.

¹⁰⁸⁶ Gerritsen, Jongste & Theunissen 2005, 27.

¹⁰⁸⁷ Gerritsen, Jongste & Theunissen 2005, 28.

¹⁰⁸⁸ Gerritsen, Jongste & Theunissen 2005, 28.

of the most often asked questions asked is: 'what was the nature of the food economy?'. The answers to this question focused on issues like the ratio between domesticated and wild animals, the species of grain that were grown at sites, or whether grain was produced locally or imported. The answers to these questions follow standardised lines of interpretation. For instance, the age distribution of cattle is 'automatically' translated into a preference for meat production or traction, but without any consideration of the possible social contexts involved in these patterns. This line of argumentation indicates a preference for an optimal foraging perspective towards subsistence, even though the specialists may not even explicitly be aware of that. The same is true for botanical analyses. An example is the search for chaff as an indication for on-site production of grains, generally with reference to Hillman.¹⁰⁸⁹ If no chaff is found, this is seen as an indication that grain was threshed elsewhere and could have been imported. These are almost 'automatic' inferences, but here too there is little consideration of the processes involved, or of the taphonomic aspects and representativity of the samples. There has been very little discussion about farming and hunting practices and about how a mix of these activities (other than in the form of 'meat on hoof' ratios) shaped daily life.

How can we improve the analyses of subsistence economy for the next decennia? In the first place, we have to utilise a better integrated and more comprehensive approach. A diverse array of specialists on archaeo-botany, archaeo-zoology etc. needs to be consulted before a WSI is written, assuring that overarching research themes can be connected to relevant questions and methodologies. This may mean that we have to move towards insisting that specialists act as co-conceivers of WSI's. Moreover, specialists need to become more ambitious as well. They need to abandon questions like 'what is the nature of the food-economy?' These questions do not challenge researchers to find out what people did and how different elements of the subsistence basis functioned in a coherent whole. For the Late Neolithic and the Bronze Age, we should try to investigate how farmers practiced a mixed strategy of farming, hunting and fowling in different environmental settings. The answer is not simply a matter

of percentages, but should be an approach that integrates diet, food and also resource procurement. Botanical or zoological specialists seldom discuss how animal husbandry is practiced, how agricultural practices were constituted, or how wild animals were hunted and caught. Such interpretations are often left to the archaeologists, but ecological specialists ought to be better equipped for these interpretations, because of their knowledge about the techniques involved in subsistence practices. Thus, an integrated approach to subsistence practices is badly needed. The dissertation of Van Amerongen is one of the first examples of such an approach.¹⁰⁹⁰ A key advantage of this approach is that offers a much more comprehensive image of daily life and the conditions of living.

A coherent sampling strategy is crucial for the above-mentioned integrated approach. Much of the subsistence research in development-led archaeology is based on selective sampling. Sometimes there is even no room for the analysis of samples at all, often the archaeologists, or even consultants, decide which samples can be analysed. Sadly, this is an example of how money can sometimes dictate research problems. Money rules, not research problems! However, despite the obvious fact that every developer would want a low-budget sampling strategy, these research questions can only be studied through the systematic sampling of not just a few features, but by sampling both settled areas and areas outside settlements. Of course, careful consideration of the feasibility is necessary. The most elaborate sampling strategies cannot be applied in every situation. We have seen several examples of detailed analyses and comparisons of samples from undated features or palimpsest sites. In such occasions, even the minimum options can be a waste of time and money. Nevertheless, we are sure that the potential is there for solving questions, and that systematic sampling is crucial in order to obtain representative and meaningful results.

One of the subsistence elements that require more attention is arable land. We not only need to know where arable land was situated in the landscape, but also how and if it was manured, how and how often it was ploughed, whether there were fallow periods, crop rotation, etc. What was the function of criss-cross ploughing

¹⁰⁸⁹ Hillman 1981.

¹⁰⁹⁰ Van Amerongen 2016.

with an ard? How large were fields and how were they worked? Are our documentation techniques adequate for answering these questions? Since all companies are now equipped with digital registration theodolites, the production of real drawing has become too 'cost intensive'. Instead, only generalised plans are drawn with a focus on orientation rather than detail. An example of this development is the excavation of Zwaagdijk-Noorderboekert (Figure 7.48). The only research questions aimed at the arable land in this excavation read: 'Is the distance between the ard marks uniform, everywhere criss-cross, or does the orientation change?'.¹⁰⁹¹

The registration of the linear arrangement and orientation by means of a GPS digital registration was sufficient for this purpose. Sampling of the field or the buried soil on top of it was not part of the research strategy. Consequently, the buried soil was removed by machine and finds collected in 5 x 5 m squares.¹⁰⁹² Only when the members of the NWO *Farmers of the Coast* team insisted on having some samples of the buried soil sieved, some square meters were sieved and analysed. The reason these researchers asked for this approach, is that systematic sampling is the only way to find out whether manuring with household waste was practiced, as is often suggested for this period. And indeed, the sieving yielded much fragmented material, including fish bones and other subfossil material. Unfortunately conclusions cannot be drawn for this site because sampling was only limited. In order to find out about manuring one or two litre samples per four square meters could be sieved and analysed. If a field was manured with household waste, one might expect an even distribution of fragmented material over the entire arable plot. If not, domestic waste may exhibit a patched or localised distribution. Moreover, the samples could provide an impression of the kind of waste material that households produced during this period, or other material was present, for instance manure fungi. Preferably, micro-morphological samples should also be taken of the layers above a plough soil in order to establish in what way the layer was formed. Pollen samples can be taken from these micro-morphological samples as well. Despite the fact that pollen samples from arable land provide little additional information

about the grains that were cultivated on this land, such samples may inform us about fungi that can be an indication of manure.¹⁰⁹³ At Haarlem-Zuidpolder, Bakels detected the use of mud from ditches in her pollen samples from arable land.¹⁰⁹⁴

The National Research Agenda Archaeology 1.0 emphasises that the agrarian subsistence basis of past societies is also closely related to social structures like organisation of labour, the production and distribution of surplus, and land tenure, but also to the construction of identity and cosmological orderings.¹⁰⁹⁵ That is undoubtedly true, but it is very difficult to translate this into research questions. A possible angle on these issues can be obtained through the analysis of the role of animals in exchange relations. These could not only have been used for gifts but they could also have been exchanged because of the need for new blood in herds to prevent inbreeding. The National Research Agenda Archaeology 1.0 also advocates the study of different breeds, but we have seen no examples of that. However, such a study can be very informative. In the NWO project *Farmers of the Coast* it was hypothesised that if cattle was so dominant in the Bronze Age, people may have gifted cattle during gift exchanges (for instance as bride wealth). By analysing isotope samples of over 30 specimens of cattle and sheep, we discovered that indeed a few animals from West Frisian sites derived from outside West Frisia.¹⁰⁹⁶

If we want to understand farming and the social role of animals, we have to change our research strategies to enable that kind of research. We know by now that Late Neolithic and Bronze Age people kept cattle, a few sheep, some pigs, and an occasionally horses. This pattern is well-established and hardly needs further elaboration. A more challenging and informative goal is to study the potential information on daily life that the analysis of animals and plants can offer. Were sheep and cattle exchanged? Was wool exchanged? Answering these questions requires isotope and DNA samples, which in itself requires changes to excavation strategies. This could result in attempts to analyse DNA from animals to see whether there were different breeds, or in the systematic analysis of cattle bones (not only of oxen) to test for signs that they have pulled ards or carts. If specialists and archaeologists with knowledge

¹⁰⁹¹ Knippenberg 2014, 5. We stress that Knippenberg was not the author of the WSI, but the person who had to do the fieldwork to answer that question.

¹⁰⁹² Knippenberg 2014, 9.

¹⁰⁹³ C.C. Bakels, personal comment May 2016.

¹⁰⁹⁴ Alkemade, Bakels & Vermeeren 1991.

¹⁰⁹⁵ Gerritsen, Jongste & Theunissen 2005, 8.

¹⁰⁹⁶ Research by N. Brusgaard and L. Kootker (Brusgaard 2013).

of the period in question convene *before a WSI is written*, they may decide that such innovative approaches should be tried in certain cases instead of standard types of analysis.

9.5.5 Settlement structure and organisation

Currently, we lack an understanding of how settlement sites are structured. This was a challenge before development-led archaeological research, and it still is. A few farms or houses are now known, but questions pertaining how the farmstead was organised, whether there were areas reserved for specific activities or ancillary structures remain unanswered. The position of arable fields in relation to settlements is not known either. Did the many pits we excavated serve another use before they ended up being used for the deposition of settlement waste? What do the pits with burnt stones that have been found on some sites mean? How many people were living together in a settlement? These, and many other questions need to be answered for sites of all periods under discussion.

There are several ways to approach the above-mentioned questions. One way is through the excavation strategy and relates to where, how and what to excavate; another way is through the sampling strategy. We are used to excavate Neolithic sites in units of square meter in order to plot finds in distribution maps and detect activity areas. However, these distribution maps tell us very little in general. Apart from the hut structures that Nobles has suggested for Keinsmerbrug on the basis of artefact distribution analysis, we have no idea yet how sites were structured.¹⁰⁹⁷ This is largely due to the fact that these sites are almost always a palimpsest of many visits and phases, and that a real stratigraphy is absent. As a result, distribution maps do not tell us much about activity areas, because these are jumbled together. Furthermore, a detailed analysis of pottery, bone and flint in such palimpsest sites is not very helpful in understanding site structure. Even though these studies do give an impression of activities carried out at a site, such impressions often cannot be specified to one specific period. Consequentially, our view

of the periods represented in these palimpsests remains general, and details regarding the internal settlement structure of such sites remain unavailable.

We raise the question whether we should *always* excavate Late Neolithic and Early Bronze Age sites with the same time and money consuming method that involves excavation in square meters, sieving of all the removed soil, and meticulous analysis of all of the finds. Especially since we are often dealing with palimpsest situations, it should be possible to make different choices. In West Frisia and in other comparable sites with buried soils, we should not focus only on these buried soils, but also on the areas outside the obvious cultural debris areas. We might find more house plans like at Zeewijk-Oost, for instance. We can think of many different excavation strategies, but the choice for one or the other should always be site specific. Finds are always important, so we cannot simply discard them, but if we suspect a palimpsest situation, both the collection and analysis of finds in the buried soil can be less detailed than in normal situations. We could collect finds in larger units, take systematic samples, or follow alternative approaches to get a good impression of the entire site. Sampling techniques that take larger samples at locations where there are more finds, or only samples where there are finds (a strategy that is often proposed) are statistically useless. If we decide to sample instead of collecting all finds, only systematic sampling of the entire site yields relevant results.

Systematic sampling of the entire settlement area is preferred for optimal results. The analyses of these samples should focus on different kinds of material and involve several specialists. The presence or absence material patterns that cut across the often made archaeological distinctions between pottery, flint, faunal remains etc. can reveal activity areas that would otherwise remain undetected. Another approach is to list activities that we might expect on different kinds of sites and translate them into archaeological correlates and means of detection. That way we could start to target certain activity areas. For instance flint working could be detected by micro-debitage analysis. Again, such a strategy relies on the sampling strategy. The same samples can be used for the analyses of several proxies.¹⁰⁹⁸

¹⁰⁹⁷ Nobles 2012.

¹⁰⁹⁸ Grabowski 2014.

If we want to check for hearths or traces of fire, magnetic susceptibility measurements could produce results. For tracing manure or pathways, phosphate analysis is important. Samples for these analyses should not be limited to the inside of a house, but should also be taken from larger areas in order to detect how animals and people moved through the yard. Of course, one needs to know whether a palimpsest situation is expected or not beforehand. Given the rarity of settlements that were only in use for one habitation phase, such sampling strategies should be prioritised when the chance presents itself. Consequently, a carefully designed sampling strategies should precede excavation, and not be haphazardly thrown together on the spot.

9.5.6 Farms and houses

In Chapters 6, 7 and 8 we have commented on the recognition of houses and house structures. One of the questions that emanates from this discussion is whether the Zeewijk and Veldhoven houses are normal houses or not. We argue that these relatively large houses are based on a wider tradition in northwest Europe. Often, these are smaller in length and were rebuilt frequently, resulting in difficult to comment upon assemblages of posts.¹⁰⁹⁹ However, more systematic research is necessary. The present practice that ‘anything goes’ in post-excavation analysis, should be abandoned in favour of much more rigorous testing and sampling during fieldwork. When a WSI is prepared, models for structures that might be expected, should be presented as a means of structuring observations in the field. There are now clear examples of house plans that we can at least use for pattern recognition and as tests for new data. If a structure is recognised, we need to sample the entire area of the house and immediate surroundings in a systematic manner. Samples for a multiproxy analysis should be taken every one or two meters in an alternating grid.¹¹⁰⁰ Multiproxy analysis involves the integrated analysis of phosphates (manure), organic matter, magnetic susceptibility (fire), and plants and seeds. Whether or not these samples should be analysed is a matter of evaluation, but they should be taken, and properly stored.

Subsequently, if a house plan is considered to have been a real plan, the samples can be analysed and yield information about house structure in terms of activity areas. This method can also shed light on the presence of animals in a house or structure.

The sections of features should be carefully documented and analysed for indications about abandonment of structures. Were the wooden posts removed? Did they decay in situ? Were the pits left open to be filled naturally? Abandonment analysis has already been addressed,¹¹⁰¹ because it is very important for understanding the dynamics of settlement development, but also enables us to discuss the biography of settlements. The way in which settled places were re-used later, can tell us how inhabitants might have experienced abandoned houses and the places where they once had stood.¹¹⁰² For a coherent methodology we also refer to the National Research Agenda Archaeology 1.0¹¹⁰³, and Section 9.4.3.

9.5.7 Craft and exchange

Craftsmanship appears to be well studied in Dutch commercial Archaeology. The hiring of specialists for the analysis of find categories, notably pottery, flint, stone, and wood, has become standard. Furthermore, there are guidelines that advice on what to measure and to document. However, most of the activities of these specialists are oriented towards a descriptive *ex situ* preservation of material. In the National Research Agenda Archaeology 1.0, object typologies, but also the social role of material culture is seen as a gravity point for research.¹¹⁰⁴ In Section 9.4.1 we have argued that typology is less important than the analysis of technological choices and communities of practice for understanding past societies. Standard, of potsherds weight, thickness, building technique, colour inside and outside, temper, decoration, etc. are documented. Lists and graphs are produced from the results of these analyses to characterise the pottery of a site. One may question whether that kind information is really useful if it is only aimed at constructing typo-chronologies. One of the approaches that are now advocated as one of the possible ways forward is a form of the *chaîne*

¹⁰⁹⁹ Cf. Chapter 8.

¹¹⁰⁰ Grabowski 2014.

¹¹⁰¹ Cf. Section 9.4.3.

¹¹⁰² Steffens 2016.

¹¹⁰³ Gerritsen, Jongste & Theunissen 2005, 22.

¹¹⁰⁴ Gerritsen, Jongste & Theunissen 2005, 27.

opératoire approach.¹¹⁰⁵ This approach combines a biography perspective in the use of materials with an analysis of decision making. It forces the specialist to discuss the choices that the crafts persons made during the processes of raw material procurement, manufacture, use, re-use and discard.¹¹⁰⁶ An approach in which specialists make decision diagrams for every site and material category, and compare these results before a synthesis of the site is written, would result in a significant gain of knowledge on craft production.

Understanding decision making in craft technology in terms of communities of practice should be our goal for the next decennium. This goal not only involves discussions about how people did things in a similar fashion, but also how local and regional variation plays a role. For example, with respect to pottery we should be aware of the fact that some of the choices that potters make are learned behaviour that is part of a larger community of practice, whereas many decisions also are local or personal adaptations or preferences.¹¹⁰⁷ This implies that technological choices can tell us about social interaction. Therefore we suggest that the following research question, or a variety of this question, should become part of every project: *'in order to determine which part of the craft technology is determined by learning in the framework of a community of practice, and which part is a matter of local or personal preference, a chaîne opératoire analysis will be made of the craft technology under discussion'*. A comparison with similar analyses for other sites can give insight into which decisions were learned, and which decisions could be manipulated by individual crafts persons. If we make such schemes for different types of pots or artefacts that are recognised, we can even start to get a better idea of their function and social values. A key advantage of such an approach is that it shifts from a descriptive study to an explanatory study.

With respect to ceramic research, thin sections could be a useful addition to the standardised repertoire of analytical methods. If we want to focus on decisions that potters made, rather than just typological issues, thin sections of different types of pottery might provide a much more information than simple macro morphological descriptions of temper. The Oldeboorn example demonstrates this.¹¹⁰⁸ Residue analysis is yet another method that

is incorporated more and more in research schemes for pottery studies. This is good, but we should be careful here as well. 'What did the vessel contain' is maybe not just what we want to know. Apart from the fact that residue analysis in general does not provide have resolution to answer this question, we might ask whether that is what we want to know: a comparative perspective might be more interesting. Residue analysis of targeted pots and types may reveal different kind of uses of different types of pots. For example, it has been established now that Dutch Corded Ware Beakers were not exclusively used for alcoholic beverages.¹¹⁰⁹ However, this does not imply that they never were, or that they could not have been in a burial context. Again the conclusion is that specialists and archaeologists together (including specialists engaging with residue analyses) should decide what kind of questions are relevant and should go beyond the usual 'what did the vessel contain?'

The analysis of stone tools and stone sources has become part of the standard post-excavation procedures. This should be continued the way it has been done so far, but a better integration and discussion with other specialists (including archaeologists) is necessary. Reports on wooden, stone and bone stone tools are now written by different specialists and often summarised in a descriptive way by the lead archaeologists. This practice needs to be abandoned. Discussions of the *chaîne opératoires* and communication networks should become an integral part of site analyses. This is not only relevant for stone tools and pottery, but also for the use of wood. A list of wood species, or possible chop marks, or the number of axes used for cutting wood is only interesting if it is part of a more coherent analysis of patterns in its use and procurement, practices like woodland management and its development over time, etc.

The provenance of materials is already discussed in most analyses, but coherent interpretations in terms of interaction networks are lacking. In addition to standard practices, the choice for raw materials and their provenance of ceramics can be performed by means of XRF analyses like E.J. Kroon has recently demonstrated for Vlaardingen Culture / Corded Ware Culture pottery.¹¹¹⁰

In a WSI this can easily be demanded by

¹¹⁰⁵ Cf. Sellet 1993; Gosselain 1992.

¹¹⁰⁶ Cf. Van Gijn 2010.

¹¹⁰⁷ Cf. Gosselain 1992.

¹¹⁰⁸ Cf. Section 7.8

¹¹⁰⁹ Beckerman 2015.

¹¹¹⁰ Kroon 2016b. XRF Analysis by E.J. Kroon showed that Vlaardingen Culture and Corded Ware Culture pottery found in coastal Vlaardingen Culture sites consist of clay that originates outside the coastal area. The chemical and mineralogical signatures of these vessels suggest a connection with the southern (SOM) regions.

formulating questions like: Because we want to know with which areas people were in contact and exchanged goods with on a more or less regular basis, we want to study the provenance and quantity of different raw materials. The specialists who study different material categories should compare their results and produce at least one map that shows the quantity and provenance of materials from outside the settlement area. Such an approach can give insight in communication and exchange networks and since the analyses are done in the same way, they can be compared and reproduced.

Exchange can also be studied by isotope analysis. This analytical method is now frequently being employed on human remains, but much less frequently for animal remains. However, as we have indicated in Chapter 8, such an application can yield interesting results and give us an entirely new view on exchange networks in the past. Therefore we recommend that whenever possible, isotope and also DNA samples from first and second molars are collected and stored. Whether or not analysis is part of the research strategy is will always be a matter of discussion, but we propose that taking samples from well dated contexts as a routine practice and storing these samples in a central facility (e.g. the DNA laboratory in Leiden) should become routine practice in archaeology. Targeted research can follow whenever money and research projects allow for this. In this respect, small rodents should also be sampled to establish baselines for isotope values. It would be an enormous step forward if this would become (obligatory or routine) practice, rather than remaining dependent on the course of action by individual researchers.

Bronze production still is one of the aspects of craft production that remains largely out of focus. Bronzes are now found more often, but in general not during archaeological interventions.¹¹¹¹ That implies we will have to involve detector amateurs for a targeted research strategy. This is in fact part of the research strategy of the Leiden Economies of destruction NWO VICI project of Fontijn (2015), and of the NWO investment grant acquired by Roymans (2015).¹¹¹² In order to prepare for the event of a new discovery, we should create scenarios how to collect and document bronze finds. If hoards are discovered, careful

registration of context is necessary. All finds should be lifted *en bloc* for careful analysis and conservation in the laboratory. The finds should never be cleaned: because this removes all evidence of depositional circumstances. Laboratory analyses can reveal how exactly finds were placed together, but also whether textiles were included in the deposit. Textiles and bone can be preserved in contact with bronzes, but these remains are hard to observe in the field and often remain unrecognised. Preferably every stage of discovery and recovery should be photographed from different angles. Nowadays such photographs can be combined into 3-D images with the aid of specialised computer programmes. Furthermore, these images can be printed in 3-D for public outreach and analytical purposes. As a standard procedure one should also notify known experts on such finds and ask for advice. Microscopic use-wear analysis of bronzes is now starting as well. This is a field of study that deserves more attention than has been invested in it so far.¹¹¹³

In settlement or other contexts, we have not yet found any signs of bronze production for the Early Bronze Age or the Middle Bronze Age A. This should not surprise us, since the facilities for bronze production were probably not really different from normal fires. However, we might be on the alert for tuyères, for instance. Unfortunately, this is not something that easily can be translated into research strategies. It is best is to be aware of possible indications for bronze production that can be expected.¹¹¹⁴ If an Early Bronze Age or Middle Bronze Age A site is excavated, those expectations should be made clear in the WSI.

Finally, we have suggested that communication and transport was to a large extent water based. Yet we have yet to find the first Late Neolithic, Early Bronze Age or Middle Bronze Age canoe. Thousands and thousands of vessels must be out there somewhere. If our prospection strategies remain focusses on land-based sites, we will never find one either. If we want to change that, regional and municipal archaeologists will have to target different areas or commission off-site prospection. River channels or small crevasse channels may be the best places to target for these purposes. Emmeloord-J97 is the perfect example. If the Mienakker 'Umiak-type' canoe¹¹¹⁵ was indeed a regular type of vessel in the Vecht and Rhine-

¹¹¹¹ Cf. Chapter 5.

¹¹¹² Cf. Chapter 8.

¹¹¹³ Cf. Woodward & Hunter 2015.

¹¹¹⁴ Cf. Kuijpers 2008.

¹¹¹⁵ Section 7. 2.

Meuse basins, we should be on the alert for such small wooden structures and hides. However, the problem with canoes is that they can move considerable distances even if discarded, so finding them in the archaeological record is not an easy task. The Must Farm canoes were found in the river bed, near a settlement, and possible were caught behind fish-weirs.¹¹¹⁶ Prospection for such sites is difficult, but not impossible if we use a good palaeogeographic landscape models. Lastly a very important aspect of life, dress, needs a much attention as possible. How were clothes made? Was there wool production in the Neolithic or were people depending on plant fibres for cloth, like at Must Farm and other places.¹¹¹⁷ If plant fibres were used for producing cloth, what archaeological remains may we expect? What is needed to beat flax into fibres for weaving? Hardly any remains have been found so far, but do we really know what to look for? We need scenarios for sampling and recording in case textiles are detected or suspected.

9.5.8 Ritual landscapes

The concept 'ritual landscapes' encompasses a wide number of structures, situations, locations and depositions that we cannot directly connect to 'the functional'. Yet, it is clear that 'the' ritual realm does not exist and that ritual is inextricably bound to daily life.¹¹¹⁸ So we will have to be aware of the fact that the way people treated objects, the ways in which objects and other entities were discarded, food and diet, etcetera are socially constituted and ritually laden. Especially patterns related to discard and consumption have not been targeted yet from this perspective. Instead, optimal foraging approaches are more or less standard. We argue that all specialists need to become more aware of these possible aspects. Together they may find ways to bring these practices into view and discuss them as an integral part of their analyses.

In contrast, two 'clear' ritual realms are always discussed: burial practices and hoarding, but in general these discussions mostly take place in hindsight. Only after pits or burials have been found, one tries to analyse their meaning or importance. There are almost no scenarios of

which samples to take, or which questions to solve. This is something we need to change, for instance by writing guidelines. 'If you discover X in your excavation or test trench, you can do Y to study Z, W to study V....' type scenarios could be helpful as a better focus on solving specific research problems.

In the National Research Agenda Archaeology 1.0, the number of research questions that is proposed for the Late Neolithic and the Early Bronze Age about burial practices is limited. It is stated that the Veluwe region still offers a lot of possibilities to explore the variation in burial practices. Indeed, recent studies of that particular area demonstrated that there is much to gain, even by non-invasive research.¹¹¹⁹ So far, Dutch mortuary archaeology in general has focussed on the research of burial mounds, but publications of the last 15 years have revealed that in settlement context burials also occur. In wetland contexts, these burials often show spectacular preservation, like at Hattemerbroek, Schokland-P14, and the West Frisian sites. Apparently, settlement burials constitute a far more regular practice that we assumed. However, little is known about the differences between settlement and barrow burials. Are there differences at all? This difference cannot be studied through the analysis of grave gifts alone. Far more important is the analysis of communities of practice: what are the practices that people performed around burial rituals in different contexts and what are the (regional or local) patterns in these practices. For that kind of analysis, a different sampling and recording strategy is necessary than so far has been standard. Naturally, osteo-archaeologists are needed on-site to do the actual excavation and documentation of the human remains, but we also need a strategy for intensive sampling of these contexts. This also goes for the excavation of body silhouettes and burial pits without visible remains. Layered sampling of the bottom and fill of a pit would be required. A sampling grid that includes areas outside the burial pit is preferable.¹¹²⁰ Multiproxy analysis may tell us about any contents of the burial pit that we cannot directly observe. One sample does not suffice for these analyses.

Another source of information that may tell us about practices involved in burials is the infilling of the burial pit. A micro-morphological sample should be taken of every burial section.¹¹²¹

¹¹¹⁶ Pers. comm. C. Evans (Cambridge Archaeology).

¹¹¹⁷ Pers. comm. M.L.S. Sørensen (Cambridge University / Leiden University).

¹¹¹⁸ Cf. Section 8.3.

¹¹¹⁹ Fontijn, Bourgeois & Louwen 2012; Bourgeois 2013.

¹¹²⁰ Van de Velde *et al.* (1999, 41) have taken this type of samples in a checker board pattern of 10 x 10 cm from the burial pit of a Single Grave Culture burial at Wachtum in order to find out whether the position of the dead and possibly the stomach content could be registered. Unfortunately, the samples have never been analysed.

¹¹²¹ This was also attempted at Wachtum (Van de Velde *et al.* 1999, 105). R. Exaltus, who analysed the samples, concluded on the basis of the analysis of samples from a circular ditch that it possibly had surrounded a low barrow of which no trace was left in the excavation.

This does not mean that these samples should always be analysed as a part of the excavation: that is a matter of discussion between the authorities involved. However, we should always take those samples and preferably store them in the provincial depots if they are not analysed. Burial data are so unique in most cases that we cannot go back and do it all over again. Pollen samples can be taken from the grid-samples as well, or from the micro-morphology cores. At Hattemerbroek, for instance, pollen analysis of the burial content made clear that meadowsweet had been added to the burial.¹¹²² Sometimes the entire burial can be lifted *en bloc* to be studied in more detail later on, like was done with the Corded Ware Culture burial of Twello.¹¹²³

An further important element of burial analysis is the biography of monuments and burials in general. Did they remain visible or somehow remembered? Were burial sites used again in later periods, how? What does that tell about the ways in which burial monuments were perceived during later periods? In Section 9.4.3 we already indicated this as an important focus for study, here we emphasize again that the study of burials as persistent places needs to become one of the foci of research. Features and locations that are suspected to have been the foci for other kinds of rituals, like deposition, or abandonment rituals also need more attention. In general, the finds (often pottery, sometimes bones) are described in that context, but additional analyses lack. If depositional practices are suspected, we need to take as many samples as possible (for a multiproxy analysis) in order to find out what people did. There is also a fair chance that food or animal remains were involved in most depositions. We should develop sampling strategies to explore these possibilities. Amongst others up-turned complete vessels like we have encountered in several Late Neolithic and Early Bronze Age contexts now, need such attention.

9.5.9 Socio-political organisation

Research questions that are aimed at the analysis of social structure are difficult to formulate at this point. Just looking at bigger

or richer structures and finds is too simple. A large house is not by definition the house of a richer or more powerful person, nor is that the case for a richer or larger burial. We always have to discuss these things in context. In general, this discussion will be part of a post-excavation analysis and synthesis of a site. The people writing those analyses should be well aware of the theoretical pitfalls of the Marxist and evolutionary approaches that still are very much common when the Late Neolithic and the Bronze Age are concerned.¹¹²⁴

9.6 Concluding remarks

In this chapter, we formulate new research goals and new strategies in addition to the ones already formulated in the National Research Agenda Archaeology 1.0. However, it is our understanding that if we really want to generate new knowledge, fundamental changes are needed in the way commercial archaeological research is organised. In the past 15 years, fundamental questions from the National Research Agenda Archaeology have not been targeted at all, or only in passing. This is partially due to a lack of sites that were recognised as Late Neolithic or Early Bronze Age from the start, but to a large extent also because there was a focus on description of archaeological phenomena rather than explanation.¹¹²⁵ Currently, it is common practice that an archaeologist or a consultant writes research questions for the WSI. These questions are always *how* and *what* type of questions for which background knowledge can be minimal. The archaeologist then contracts specialists to answer those questions. In the best case, the archaeologists consult specialists about sampling strategies, but often with their own goals already in mind. Subsequently, the excavation is carried out and the specialists get to evaluate these samples. One of the peculiar elements of the Dutch system, is that after each excavation an evaluation report has to be written on all samples that were taken and a decision then has to be made on which samples to analyse. In theory, this is done to select those samples that have the best chances of answering the research questions in the WSI. However, since these research questions are only how or

¹¹²² Van Haaster 2011, 243.

¹¹²³ Section 7.13; Meurkens *et al.* 2015.

¹¹²⁴ For a critical discussion, see for instance Brück & Fontijn 2013.

¹¹²⁵ Cf. Section 9.2; 9.3.

what questions in the style ‘what is the nature of the food economy?’, only those samples are selected that have a lot of material in it. More often than not, the archaeologists are the ones to decide which samples will be studied in the end. Therefore, the specialist only gets to analyse a selection of samples that is chosen by others to answer questions s/he has *not* formulated her/himself. In the worst case the specialists write their reports in separation and in many instances the archaeologist in charge of the project staples the reports together, or maybe even reduces a discussion of these reports to a summary.

This kind of approach will never gain us new knowledge. Instead, research questions should be developed via an integrated approach, referring to issues of the National Research Agenda Archaeology. If specialists¹¹²⁶ compare and discuss the sampling strategies and the motivations behind these strategies, they should, as a team, get the most out of a site. All specialists should discuss how themes formulated in the National Research Agenda Archaeology could be approached from different angles and with different methods. Only then is it possible to obtain knowledge about how settlements were organised, how daily life was structured and which activities and rituals gave meaning to it.

The general answer to such remarks is ‘Yes, we are aware of that and we want to, but the developer is not paying for that, so we can’t do it.’ In our view that is a self-fulfilling prophecy. If we keep saying this, the developer is certainly not paying, because the developer is not even aware of what we think is important. Moreover, the developer is right to be unwilling to pay one cent too much for just data recording. And that is the message we seem to give all the time, because explanation, or meaningful research questions are not being asked. Neither do we ask the developer what their interests are, what they would consider a good product.

If we want to change this, we will have to know what ambitions and interests that stakeholders have. If cost-minimisation and effect-maximisation are the main underlying goals, scientific questions are indeed out of focus. But if archaeologists were to make clear what real issues they actually want to answer with their research, and how that might connect to societal issues, other choices may be made

by the developers. In conclusion, knowing what stakeholders interests are, how we can connect with communities, as well as awareness of how archaeology can contribute to a better quality of life, should be part of ‘Malta’ archaeology if we really want to answer and ask meaningful questions.¹¹²⁷

¹¹²⁶ We also consider the archaeologist a specialist.

¹¹²⁷ Van den Dries 2014.

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Drawing by Mikko Kriek.



In the last fifteen years development-led archaeology has boosted the number of prospections and subsequent excavations in the Netherlands. Hundreds of sites have been excavated, hundreds of reports have been written. Even if much data is now available, we hardly know whether the gaps in our knowledge, identified in for instance the National Research Agenda Archaeology, have now been filled in. Has development-led archaeology been successful in generating really new knowledge? This book tries to answer this question by analysing a large number of site reports and synthesising the data that now are available for the period 2850 – 1500 cal BC: the Late Neolithic, the Early Bronze Age and the start of the Middle Bronze Age. The conclusion is that the traditional views that were predominantly based on burial evidence, have to be changed considerably on the basis of settlement evidence. In recent years many settlement sites have been excavated, some with clear stratigraphies and excellent preservation of organic data. Development-led archaeology has provided high quality evidence that gives a much more nuanced view on the past than we had before.

This scientific report is aimed at archaeologists and other professionals occupied with Archaeology.

With knowledge and advice the Cultural Heritage Agency of the Netherlands gives the future a past.