In search of the invisible dead: Exploring the deposition of human remains in Dutch Neolithic, Bronze Age, and Iron Age settlements

Verhoeven, Gwen

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Figure on front page: A fragment of a human skull found inside a pit at the Iron Age Den Haag–Wateringse Veld settlement (Kootker, 2014, p. 283).

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Final version

Acknowledgements

Here we are, two years later, at the end of my Research Master's thesis on the deposition of disarticulated human remains found within prehistoric settlements. This is a topic that has interested me since my Bachelor's degree, where I focused on disarticulated human remains in Bronze Age settlements in West Frisia and the river area in The Netherlands. I was happy to expand on this during my Research Master by taking a broader approach, including both the Neolithic, Bronze Age and Iron Age.

First of all, I would like to thank my supervisor, Dr. Quentin Bourgeois, for giving me the opportunity to grow as a young researcher, both through our (almost) monthly meetings and through the valuable feedback you provided on my thesis. One of the most important things I have learned is the growing ability to be more critical of academic publications and to form and express my own opinions in an academic way. I also had the chance to develop a broader perspective on this topic and to draw from a wider range of theoretical frameworks. Besides being my supervisor, you also offered me other valuable opportunities, such as working as a student assistant for 'The Talking Dead' and visiting Neolithic, Bronze Age, and Iron Age sites in Britain. Thank you for those chances!

Secondly, I would like to thank Liesbeth Theunissen as well, for bringing me into this topic almost four years ago already. Your continued support over the last five years, your consistent enthusiasm whenever we met, and your willingness to read one of the final versions of this thesis and provide feedback have truly helped make it even better. Thank you!

I hope you enjoy reading this thesis, as much as I enjoyed working on it.

Gwen Verhoeven

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1. Introduction

1.1 Background and importance of the research

Nearly fifty years ago, the first evidence of alternative burial practices, less visible in the archaeological record, was found in Bronze Age settlements in West-Frisia, The Netherlands. These practices took place outside the well-known burial monuments. Large development-led excavations at almost ten sites uncovered disarticulated human remains in house ditches and ring ditches (Bakker, 1974, p. 10). This created an opportunity for Dutch archaeologists to develop a theoretical framework based on funerary rituals in the region, noting the presence of human remains found between houses and 'household waste' (Brandt & IJzereef, 1981, p. 56). Soon, these observations were not limited to West-Frisia, but also extended to other regions and time periods, such as the river area, the terp region and South-Holland (Jongste & Koot, 2005, p. 35; Meijlink & Kranendonk, 2002, p. 679; Nieuwhof, 2015, p. 95; Smits & Louwe Kooijmans, 2006, p. 101). Around thirty years ago, other countries, including Britain and Germany, began also observing the presence of human remains more frequently within settlements (Brück, 1995; Müller-Scheessel et al., 2020), raising more awareness of human deposition practices across different regions and periods of European Prehistory.

When discussing burial practices in European Prehistory, the focus has mostly been on prominent monuments such as megaliths, barrows and urnfields, where much of our understanding of social status and communities comes from (Fokkens & Fontijn, 2013, p. 557). It is well established that these monuments do not represent the entire population, as only a small number of individuals were buried in them. Despite this limitation, these monuments remain the main focus of study, as grave goods and body positioning offer valuable information into funerary practices. Case studies of Bronze Age communities and their barrows, done in the eastern Netherlands in 1991 and the southern Netherlands in 1999, show that these burial mounds were used by only a very small segment of the population, approximately 10 to 15% (Lohof, 1991, pp. 252–256; Theunissen, 1999, p. 36). A similar trend is seen in the Iron Age in Britain, where only 6% of individuals were buried using visible burial practices (Booth & Madgwick, 2016, p. 14), leaving the fate of 94% of the population unclear. While similar studies on Neolithic burial practices have not been conducted, the available evidence suggests that burials represent only a small percentage of the population (Chapman, 1994, p. 45). It is therefore possible that, as in other periods, the proportion of individuals buried in Neolithic burial monuments was similarly low in relation to the overall population. Interestingly, the daily lives of Neolithic, Bronze Age, and Iron Age populations are primarily known through remains such as burials, hoards, and monuments, while settlements were mostly left unexamined, with only a few being excavated (Brück & Fokkens, 2013, pp. 82–83). In this thesis, the term 'formal burials' refers to burial practices that have been well documented and are clearly visible in the archaeological record over the past two hundred years. These include cemeteries, barrows, and similar burial grounds, often located outside settlements (Müller-Scheessel et al., 2020, pp. 172–174). Disarticulated human remains found outside formal burial sites are described as 'non-formal' due to their invisibility in the archaeological record compared to the well-documented formal practices. It is still unknown what kind of burial or treatment they received, or why some people were buried in visible monuments while others were not.

Disarticulated human remains inside settlement context have been found from the start of the Neolithic, with the transition towards sedentary settlements, with early examples found in Linear Bandkeramik settlements where human remains have been consistently found in settlement context. Frequently, fragmented remains of children have been found near building walls, while other skeletal remains were located in pits near hearths. A common practice involves placing human remains around enclosure ditches, marking settlement boundaries (Hofmann, 2015, pp. 117–118). At one of the more famous sites, Herxheim in Germany, the disarticulated remains of around 1,000 mostly non-local individuals were found within the settlement's outer and inner ditches, where interpretations suggest that bodily movement and the deliberate bringing of human remains into the site played an important role (Chapman et al., 2024 p. 177). There is also evidence suggesting that human remains were fragmented and deposited within settlement features during the Bronze Age, potentially reflecting a similar process. The exact moment of deliberate deposition during the settlement or house lifecycle remains largely unknown. It has been stated that almost half of all Late Bronze Age settlements in Britain contain human remains within this context (Brück, 2006a, pp. 76–79). This deposition practice, persists into the Iron Age, where settlement burials in hilltop forts and simpler settlements are observed. These burials contain complete skeletons as well as fragmented human remains found within features and settlement pits (Redfern, 2008, p. 281). The recognition of human remains within settlement context has grown a lot over the past three decades, driven by the increased presence of development-led excavations, revealing more prehistoric settlements across European Prehistory (Vander Linden & Webley, 2012, p. 7). Disarticulated human remains highlight a different aspect of burial practices, drawing attention to the less visible forms that have often been overlooked due to the long-standing focus on formal and prominent monuments.

These formal practices are typically associated with visible structures such as barrows, urnfields, and megalithic chambered cairns. Chambered cairns used for communal inhumation between 4000 and 3000 BC, not only served as lasting memorials but also allowed the living to maintain a tangible connection with the deceased by accessing skeletal remains (Thomas, 2000, pp. 655-656). From 3000 BC onwards, burial practices shifted from megalithic cairns to more individualistic burials, in which male and female burials differed based on gender: females were placed on their right side, while males were buried on their left. This standardized practice, observed across Europe, was accompanied by a consistent set of grave goods known as the 'Beaker Package' (Vander Linden, 2024, p. 29). These changes in burial practices are associated with the broader cultural transition involving both the Corded Ware (CW) culture (2900–2100 BC) and the Bell Beaker (BB) culture (2750–2000 BC) (Furholt, 2021, pp. 485–487). Barrows, dating back to the early 3rd millennium BC, were prevalent during the Corded Ware culture and changed through the Bronze Age. While initial mounds remained undisturbed, the Bell Beaker culture saw increased re-burial and restoration practices. During the Early and Middle Bronze Age burial practices were characterized by cremation and inhumation burials inside barrows, alongside flat graves (Bourgeois, 2013, pp. 31–33). During the Middle Bronze Age A (1800–1500 BC), cremation became the prevailing practice in the southern Netherlands, while this change happened later during the Middle Bronze Age B (1500-1100 BC) in the northern regions (Sørensen & Rebay, 2008, pp. 60–61). Changes in body treatment led to a shift from selective burials in mounds to community wide urnfields. This shift towards cremation burials led to a higher importance of pottery in burials, as the ashes of the deceased were placed in these containers (Fokkens & Fontijn, 2013, p. 558).

During the Iron Age, Hallstatt and La Tène cultures continued cremation practices. Iron Age graves could vary greatly depending on social status. Some individuals were buried in simple pits, while high-status people were buried in large chambers made of wood and stone, often accompanied by elaborate artefacts such as furniture. Their grave goods frequently included textiles to signify their high status and social connections (Rebay-Salisbury, 2016, pp. 88-89). Burial chambers were often reused by later generations, with previous inhumations being moved to make space for new burials. During the Iron Age, graves were typically organized in clusters or arrangements that mirrored community ties and underscored differences in social status (Rebay-Salisbury, 2016, pp. 88–92)

The presence of human remains in settlement context has not gone unnoticed, as they are frequently found during excavations from all late prehistoric periods. These remains are typically only briefly referenced in excavation reports. This oversight is often attributed to a perceived lack of importance to the human remains or to time and budget constraints during excavations (Nieuwhof, 2015, p. 95). Publications on disarticulated human remains, tend to focus more on remarkable finds rather than systematically analysing the overall patterns shown in all available evidence. To fully understand how human skeletal elements in settlements reflect societal attitudes towards the dead and why certain individuals were deposited in settlement features and the cultural layer, while others received monumental burials, a systematic approach is needed. Considering not only remarkable finds, such as complete skulls in post holes, but also smaller fragments and singular elements, will allow for a comprehensive understanding of human remains within settlement context. By analysing all disarticulated human remains, instead of only extraordinary finds, it becomes possible to determine whether these remains offer an alternative perspective on burial practices and to create an accurate overview of human remains found in settlements from the Neolithic, Bronze Age, and Iron Age. By examining the spatial location and treatment of the bones, it becomes possible to highlight the presence and possible importance of these skeletal remains and determine whether the deposition of human bones was intentional and meaningful or merely accidental. Aiming to provide information into how a portion of the majority (85-90%) of the population might have been buried, in contrast to the 10-15% who received formal burials.

1.2 Research questions

Through this research, I aim to gain more information into the disarticulated human remains and whether these represent the burial practices of the unknown majority. With this, it will be possible to explore the variation in burial forms and deposition choices related to disarticulated human skeletal remains within settlements. Taking a systematic approach allows for a clearer understanding of patterns in their treatment. Currently, the burial practices of the majority of the population from European Prehistory remains unknown. Looking beyond the ‘formal’ burial rites to include this other 85-90% is important for learning more about their complex burial practices and how these isolated human remains possibly connect personhood to mortuary practices. By studying different prehistoric settlements, from the Neolithic to the Iron Age, that have human bones in features and the cultural layer, we can better understand these less visible burial practices.

This thesis will aim to answer the following main research question:

- **What are the funerary practices associated with the disarticulated human remains found within prehistoric settlements situated across the Netherlands?**

To be able to answer the main research question, the following sub-questions are formulated: to understand the difference between 'formal' and 'non-formal' burial practices. And to identify patterns based on a collection of Neolithic, Bronze Age, and Iron Age settlements in the Netherlands, focusing on the deposition of disarticulated human remains and what happened between death and deposition.

- **What criteria define an non-formal late prehistoric burial and how to differentiate and characterize between formal and non-formal prehistoric burial practices in Northwestern-Europe?**

- **What patterns can be identified in the treatment of the dead within the settlements of the Netherlands?**

- **What rituals and treatment can we infer from the postmortem processes that occurred between 5300-12 BC, as observed on the human skeletal remains found within settlement context?**

To get a complete overview of the choices and patterns behind the found skeletal elements in settlement, this thesis will consider two different scales:

1. At the scale of the settlement and the community's treatment of the human bones (e.g. case studies);
2. At the scale of all skeletal elements of an entire period in the Netherlands.

These different scales allow for a bottom-to-top approach, starting with the patterns and choices of local communities sharing households and extending to broader trends observed across at least 20 settlements per period.

1.3 Thesis outline

The thesis outline begins with Chapter 2, where I will briefly discuss the methodology and dataset used for data collection, including its focus, the delineation of the research area and what is included in this dataset. This is followed by Chapter 3, which presents the theoretical framework. This chapter will discuss prehistoric burials and the criteria for identifying 'non-formative' burials. These criteria form the foundation of this thesis, explaining the methods and rationale behind the dataset of the human remains. An important aspect is the archaeological theory used to interpret funerary practices and experiences. Chapter 4 discusses how the concept of disarticulated human remains has developed within Dutch archaeological history, how changing perspectives on human remains have influenced the field of archaeology, and concludes with arguments against the current interpretation of the human remains. Chapter 5 introduces three case studies, each representing a different prehistoric period (Neolithic, Bronze Age, and Iron Age), along with their associated skeletal elements. These case studies shows the positioning of human remains within settlements and their communities, serving as representative examples of skeletal remains from each period. Chapters 6, 7, 8 and 9 present the results of all catalogued skeletal remains, focusing on the depositional locations, who the deposited individuals were, and what happened between death and deposition. The final chapter includes the conclusion, where I answer the research questions and suggest possibilities for future research on how we can get a better perspective of disarticulated human remains in settlement context.

2. Methodology and research scope

2.1 Research approach

To answer the research questions for this thesis, two methodological approaches will be used: a literature review and data collection. This thesis examines less visible burial practices, moving away from the well-defined burial monuments such as barrows and urnfields in the Netherlands. Instead, it examines the deposition of disarticulated human remains found within prehistoric settlement context. This research spans a time period of approximately 5,300 years, covering three periods (Neolithic, Bronze Age and Iron Age), where permanent settlement becomes the norm. The primary goal is to improve the understanding and identify patterns in the deposition of human skeletal elements within settlement features and the cultural layer. By doing so, the thesis aims to better understand the choices behind the deposition of human remains in this context.

2.1.1 Literature Review

Before interpreting the collected data on human remains found within settlements and understanding how these remains relate to established burial practices, it is important to create a theoretical framework that defines funerary practices and how archaeologists approach death and identity. The theoretical framework in Chapter 3 will help clarify the general treatment of human remains, the various burial practices associated with them, and the impact of death on the identity of both the living and the deceased, as well as how it influenced funerary practices. These chapters will outline the different phases of 'formal' burial practices and examine how these shifts influenced mortuary choices from the Neolithic to the Iron Age. Providing a basis for understanding what extends beyond the final phase visible in the archaeological record. After laying the foundation of burial practices in European Prehistory, this thesis shifts focus away from 'formal' burials. Instead, it looks at what defines 'non-normative' or 'non-formal' burials. It also explores how views on these burials, found outside traditional mortuary context, have changed over time within the Archaeology of Death. These changing perspectives have also influenced how human remains in non-mortuary contexts are treated and interpreted. To address these topics, foundational theoretical publications on identity and death, such as those by Hertz (1960), Van Gennep (1960), and Metcalf and Huntington (1991), are being used. Alongside these, more specialized works on secondary burial practices are also consulted. These include excarnation, defleshing, exhumation, mummification, and curation. This will provide the framework needed to connect the collected data with archaeological theory for the discussion and conclusion.

Chapter 4 specifically focuses on how human remains in Dutch settlement contexts have been treated and how this has shaped archaeological research over the past 50 years. This will be examined through older publications, PhD dissertations that discuss disarticulated human remains in settlements, and excavation reports. It will also consider whether these earlier interpretations still hold when evaluated against the dataset used in this thesis. To understand Dutch archaeological research and its influence on the treatment of bones, the SIKB guidelines, Program of Requirements (PvE), and the Nationale Onderzoeksagenda Archeologie (NOaA 2.0) (The National Research Agenda of Archaeology) will be used. These sources provide an overview of the history of archaeological research in the Netherlands, how the Dutch field currently approaches this topic, and how this influences further research and the available data, resulting in missing data.

2.1.2 Data Collection

The dataset for this thesis consists of human remains found in Dutch settlements (see Appendix A). The data comes from excavation reports from commercial companies, universities, and government and municipality publications of Neolithic, Bronze Age, and Iron Age settlements. Data from the excavation reports are compiled into an Access dataset with various fields, including the location of the skeletal elements, the trench, find number, filling type, structure, and X/Y coordinates, as well as the time period. Combined with data on the skeletal elements themselves, such as biological sex, age, bone markings (post-mortem damages), and type of bone, will be recorded. The data will be collected from excavation reports that follow the 'Excavation' and 'Trial trenches' SIKB protocols. Non-invasive methods like, quarrying will be excluded, as this kind of research often lacks context. The primary resources for excavation reports are the Archaeological Information System (ARCHIS), where all excavations in the Netherlands are required to be reported, and the DANS repository, which holds most of the published reports. If excavation reports were not available in the DANS repository, usually older or incomplete reports, or those from municipalities, they were retrieved from the Leiden University Library or the Cultural Heritage Agency library, scanned, and saved digitally.

To gain a better understanding of the diversity and shifts in patterns throughout the Neolithic, Bronze Age, and Iron Age, it is important to examine settlements containing human remains from each period. At least 20 settlements per prehistoric period are needed to recognize differences and similarities across sites. Such an approach provides enough settlement and skeletal data to identify and compare these patterns. Settlement data is used to analyse the spatial placement of skeletal elements within the settlement, studying their location within specific features and their temporal placement throughout the entire site. This is important for identifying patterns in the deposition of human remains in certain locations. After studying the spatial distribution and context of the disarticulated human remains, it is important to also look at the skeletal data, as it gives information about the preference for certain skeletal elements, but also about the biological sex and age of the individuals that were deposited. Lastly, the post-mortem damages possibly visible on the human bones can provide information about what may have happened between an individual's death and deposition, offering more information into secondary practices. Both the contextual and skeletal information give a better understanding of the deposition of disarticulated human remains inside settlements.

2.2 Research area

This study focuses on settlements in the Netherlands where human remains have been deposited, offering the most complete and up-to-date overview of this practice and the choices made by past communities. There are no limitations on which regions or provinces will be taken into account, although post-depositional processes that lead to the degradation of skeletal material are acknowledged. Wetlands are particularly favourable for preservation due to their rich organic data and the higher likelihood of skeletal elements being preserved. This is because their saturated conditions limit oxygen, slowing down the decay and decomposition of organic materials such as bones. As a result, most of the selected settlements are located in wetter areas, such as the West Netherlands, South Holland, (West) Frisia, and the river region. Although sandy uplands are generally less conducive to preserving human remains due to their environmental conditions, they are still included in the study. Sites were not selected based on preservation alone; both wetland and sandy environments are considered equally. All settlements with human bones from each Dutch province have been catalogued, resulting in the inclusion of sites from nearly every province in the Netherlands.

2.3 Building a dataset: defining scope and selection

2.3.1 Criteria for defining a settlement

All data used in this thesis is sourced exclusively from pre-existing excavation reports spanning the past hundred years. This means I will not examine the skeletal elements in person, as my analysis relies solely on the information provided in excavation reports. As a result, some details about the skeletal elements might be missing, as these are not always discussed or recorded in the reports. The dataset is focused solely on reports related to settlements; human remains found outside settlement context are not within the scope of this study. When an excavation report identifies a site as a settlement or with settlement features, this site context is accepted as accurate without further verification. All information regarding skeletal elements, their context, and temporal placement is derived directly from excavation data to the fullest extent possible. To be classified as a settlement, it must contain house structures, not just smaller buildings like granaries. It must indicate that activities such as sleeping and cooking would have taken place within these structures. Due to the way archaeology is organized in various countries, especially in the Netherlands, development-led archaeology frequently faces challenges in pinpointing the clear boundaries of settlements. Excavation areas are typically limited in size, which may result in missing parts of a settlement. Trenches are usually smaller than the structures they investigate, meaning that not all areas are excavated. As a result, there is ongoing debate about the boundaries of settlements and the spaces between houses within them (Arnoldussen, 2008, pp. 69–70). According to Arnoldussen (2008, pp. 69–70), it is challenging to specify a maximum distance for settlement boundaries. Therefore, all human remains within the settlement context, as outlined in the report, will be taken into account. If human remains are found far from any well-defined settlement structures (e.g., houses, granaries, wells), their context will be double-checked to determine whether they are near any burial sites or still part of the settlement. Most importantly, it must be confirmed that the human remains are not part of any ‘formal’ burial context. Main consideration is whether skeleton(s) in burial pits belong to the settlement or the burial context. For isolated human remains across the settlement, this is less likely to be a problem, as most are found between settlement features or clearly within the ‘borders’ of the settlement.

If skeletal remains are found at the borders of the settlement, without any nearby burial pits, they are not considered part of a burial context. Burials located between settlement features, such as near the house, can easily be confirmed as part of the settlement. In some cases, skeletons are more isolated and grouped together away from settlement features (20 metres? 50 metres? 100 metres?). Whether they belong to the settlement depends on how far they are from it and the number of skeletons buried together in the same area. Using this approach ensures that any human remains found beyond this distance within the cultural layer, and not associated with a burial context, are included in the study to avoid overlooking relevant finds.

2.3.2 Criteria for selecting human bones

These excavation reports will be analysed for information on human remains within settlement boundaries, comprising all types of bones, from highly fragmentary elements and isolated teeth to complete skeletons, including those buried in 'formal burials' inside the settlement. No selection based on preservation or completeness is applied; all remains are included in the dataset.

It is noted that older excavation reports frequently lack the involvement of physical anthropologists and pay little attention to human remains within the settlement context; as a result, human bones are often overlooked, briefly recorded, and occasionally photographed rather than thoroughly examined. This means that, these reports often provide only basic descriptions of skeletal elements without additional detail. Therefore, no additional investigation will be done on the human remains themselves, as this thesis relies solely on existing data. Preservation of the bones is important for identifying skeletal elements and potential damages. While determining the sex and age of individuals from these remains is preferred, it is not mandatory and will be considered within the broader context of the research. Due to the absence of a physical anthropologist, every human bone found within the settlement context, as defined by the excavation report's authors, is taken into account, provided it has a clear and identifiable location or structure within the settlement. This allows its placement to be traced and enables identification of the specific skeletal element to which the bone belongs.

Accurately dating human remains to specific periods and subperiods such as the Neolithic, Bronze Age, or Iron Age, and determining whether they belong to the early, middle, or late phase of these periods, is needed. This dating is established through methods like radiocarbon dating of the skeletal elements themselves, or by dating the layers or features where they are found using radiocarbon analysis, stratigraphy, or other object-based evidence. Ensuring that the chronological placement of the skeletal remains within their archaeological context is well supported and correctly documented. All human remains within prehistoric settlements will be the focus of this research, including both non-cremated and cremated remains. Non-cremated remains were more prevalent between 5300 and 1500 BC, while cremated remains from 1500 BC onwards are equally important and will be studied within settlement features and cultural layers.

In conclusion, all human remains found within settlement context will be considered for this research. To ensure meaningful comparisons between human remains across different periods and settlement context, it is essential that each find is accompanied by sufficient information to date and place it within the settlement. Including details such as the type of skeletal element, its location, and the associated feature.

2.3.3 Site selection: included and excluded sites

While this approach acknowledges potential gaps within the dataset, it also highlights the value of systematically compiling and analysing the available data. To that end, an exhaustive dataset on human remains in settlement context has been collected for this thesis, containing almost all available data on human remains in settlements across all provinces in the Netherlands, resulting in the inclusion of 84 settlements and 511 individual skeletal remains. This means that most of the settlements containing human remains are represented in this thesis. While most settlements have been selected, not all skeletal remains from the terp region are included in this thesis. Nieuwhof (2015, p. 361) provides a complete overview of human remains found at terp settlements ranging from the Iron Age to the Roman Period in Catalogue C of her PhD dissertation.

Only four sites, Ezinge, Wommels-Stapert, Englum, and Middelstum-Boerdamsterweg, from this catalogue have been added into the dataset. This is due to the fact that most terp sites were excavated or completely levelled in the early 20th century, with many findings not fully documented through excavation drawings or written documentation. As a result, the specific temporal locations, contexts, and skeletal data of the disarticulated human remains remain unclear at these sites, making it nearly impossible to use this data for analysis to be meaningful. The four selected sites, however, are usable due to the accessible information about spatial context and skeletal elements available from both publications written about the excavation reports and the case studies of Nieuwhof's 2015 PhD research. All other provinces and settlements containing human remains have been included in the dataset. For the Neolithic and Iron Age, all depositions within the settlement context was collected during this thesis, while the Bronze Age data comes from two pre-existing datasets, one dataset for West-Frisia from the Pre-Malta project, *'Los menselijk skeletmateriaal in bronstijdnederzettingscontext in West-Friesland,'* covering 20 settlement sites and 81 skeletal remains, and a second dataset from my bachelor thesis, which covers the river area with 10 settlement sites and 89 skeletal remains (Verhoeven, 2022, p. 32). Both datasets span the Early to Late Bronze Age.

Given the pre-existing data on 30 Bronze Age settlements, this thesis focussed primarily on finding Neolithic and Iron Age settlements with human remains. This was important, due to the fact it is important to have an evenly distributed number of settlements across all three periods to ensure an accurate and comprehensive comparison. Without this balance, it would be challenging to identify differences and similarities in the deposition and treatment of human remains across the Neolithic, Bronze Age, and Iron Age. The current dataset for the Netherlands includes settlements with human remains from three periods, comprising 22 Neolithic, 34 Bronze Age, and 28 Iron Age settlements (Figure 1, 2, and 3).

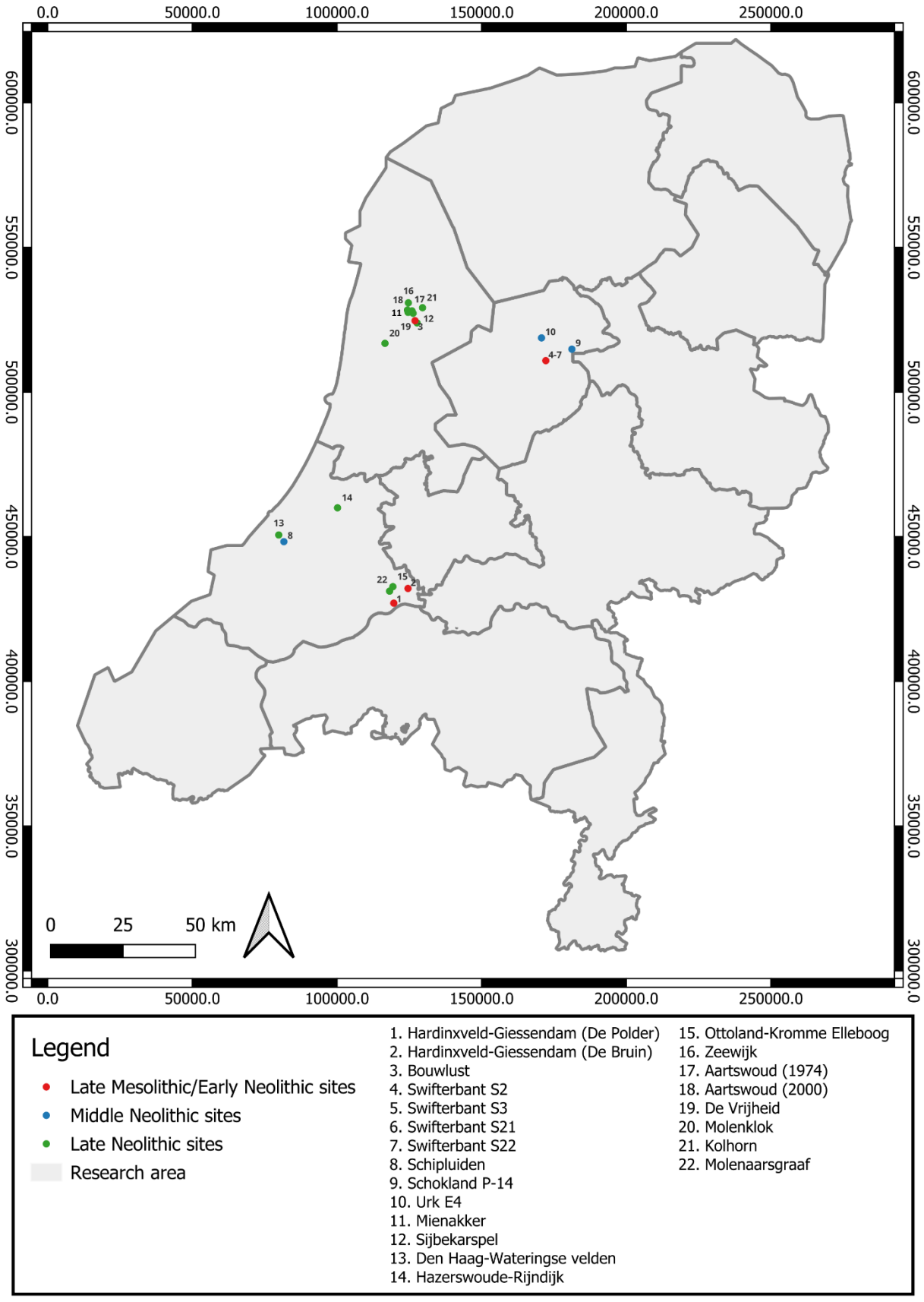

Figure 1: Map of the 22 Neolithic sites selected in the dataset, spanning from the Late Mesolithic to the Late Neolithic.

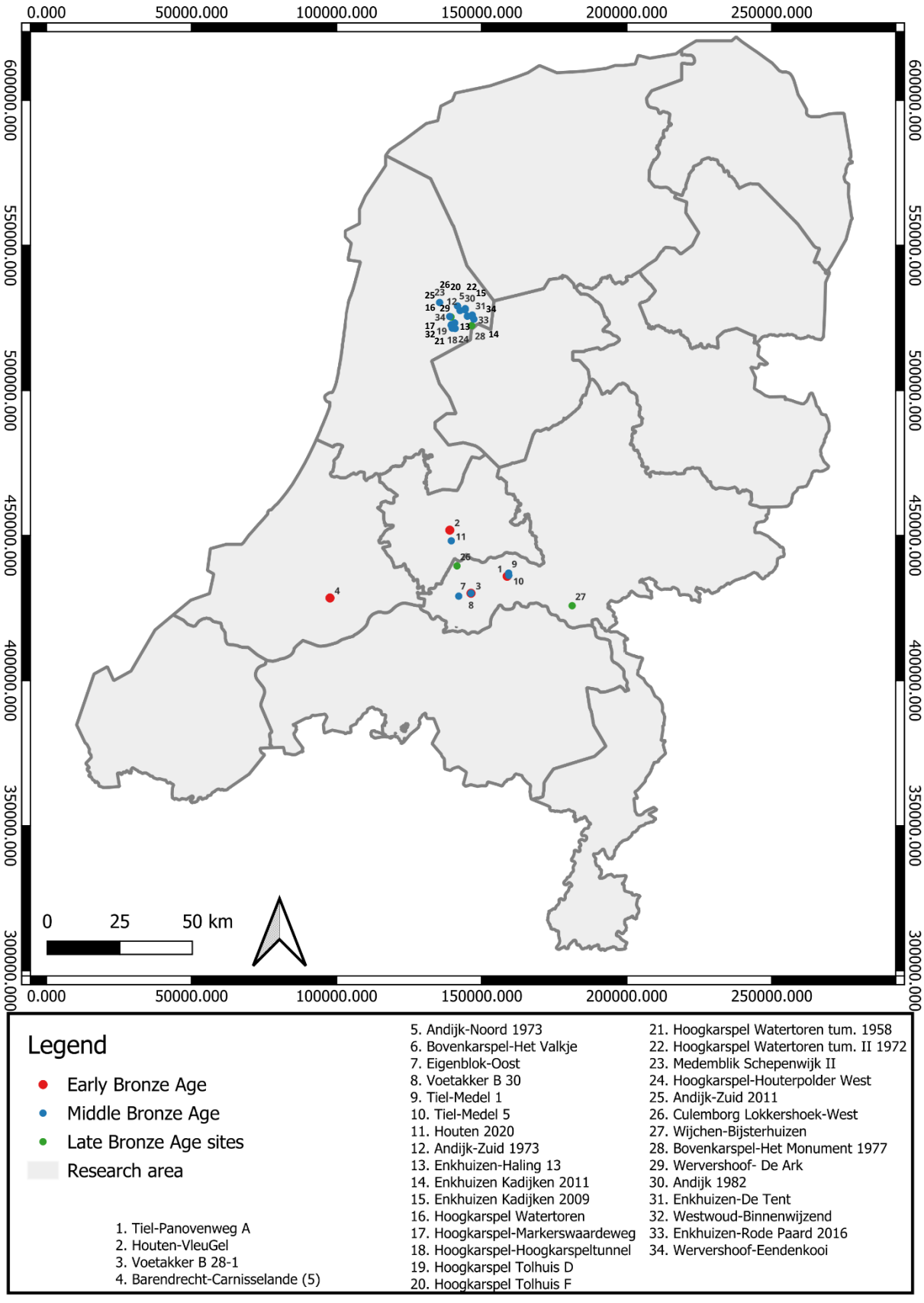

Figure 2: Map of the 34 Bronze Age sites selected in the dataset, spanning from the Early Bronze Age to the Late Bronze Age.

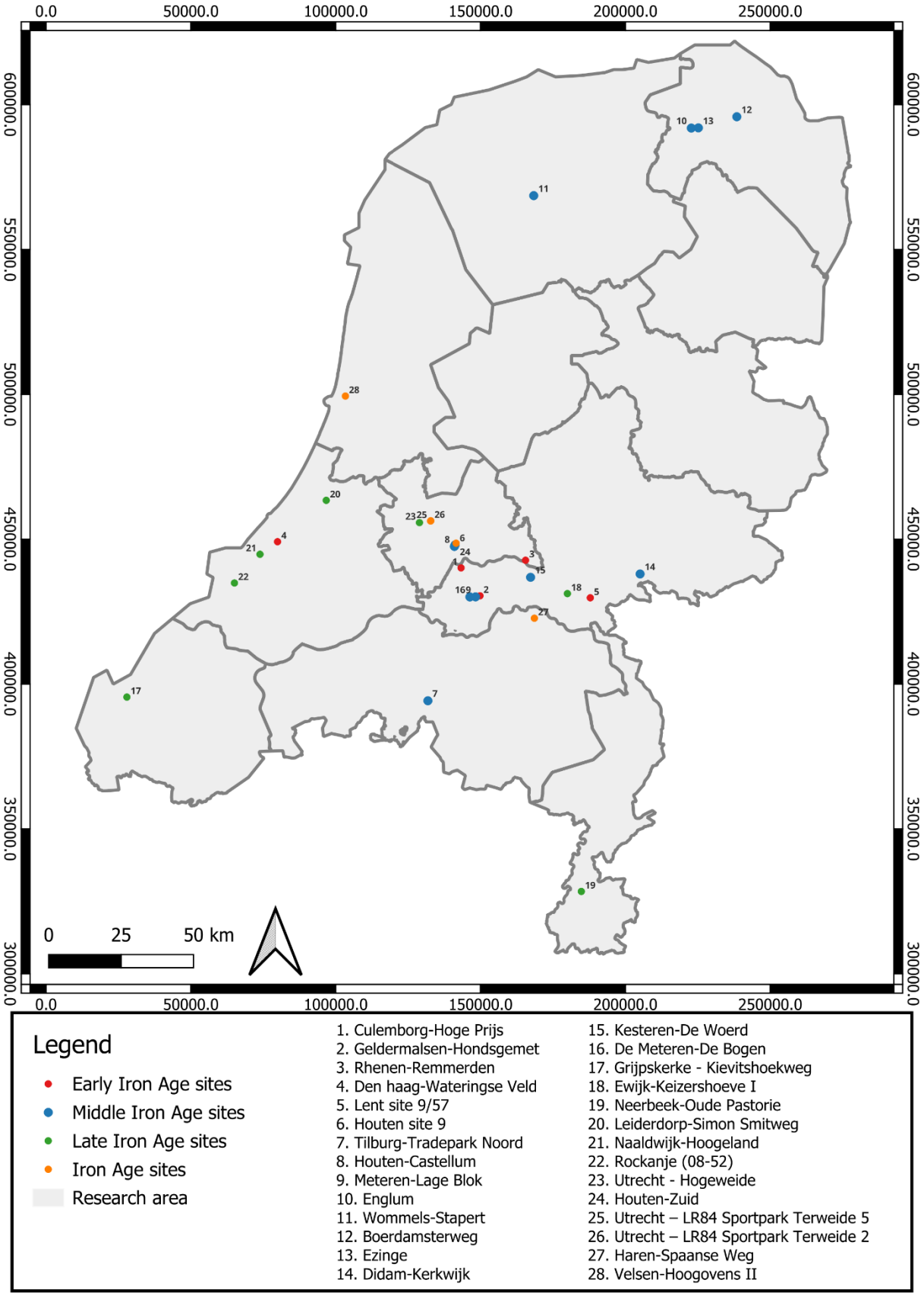

Figure 3: Map of the 28 Iron Age sites selected in the dataset, spanning from the Early Iron Age to the Late Iron Age.

3. Theoretical framework

3.1 The body treatment and burial rituals of prehistoric individuals

Studying burial practices has been important in archaeology. This focus stems from the fact that burial sites are often more prominent and easier to identify in the archaeological record compared to settlements. Burial sites, such as cemeteries and burial mounds, combined with grave goods, have served as indicators of cultural norms and have underscored societal inequalities within prehistoric communities. Mortuary practices were used in the past to reconstruct societal classifications, ranging everything from equality among all community members to a hierarchical structure within the community (Chapman, 2013, pp. 48–49). The majority of burial archaeology tends to focus more on exploring questions related to demographics, dietary patterns, and social structures rather than looking into aspects of death such as burial rituals, body treatment, and beliefs about the afterlife. By examining both the human remains and the objects found alongside them, researchers gain multifaceted insights into past human behaviours and practices (Nilsson Stutz, 2021a, p. 14). Recently, archaeologists have increasingly focused on the body as a material object and explored its significance both in life and death. This shift involves examining how prehistoric societies engaged with the body and the individual beyond mortuary context. This new perspective has emerged over the past few years, offering a deeper understanding of how these prehistoric cultures dealt with human remains (Nilsson Stutz & Tarlow, 2013, p. 2). Defining death in archaeology presents challenges because it is intertwined with concepts like the soul and spirituality. The physical corpse remains a universal aspect, and funeral processes often grapple with its decay and their cosmological identity (Fahlander & Oestigaard, 2008, p. 5). The body discovered at the final stage of the burial process is more than just a physical object; it also reflects the life and experiences that shaped it. Once the individual leaves the realm of the ordinary, the body can become polluted, an object of fear and avoidance. This perception persists until it is ritually transformed through secondary practices, which neutralize the danger and restore social order (Hertz, 1960, pp. 37–38). Liminality begins as the body starts decomposing, signaling the transition from the world of the living to the realm of the dead (Metcalf & Huntington, 1991, p. 72). In archaeology, we use scientific practices such as osteological analysis to determine biological age and sex, pathology analysis to get insights into the health and lifestyle of the deceased, and DNA analyses to investigate potential kinship ties among individuals within a single cemetery or burial ground. By integrating these analyses with the context of the grave and the body, we can gain insights into the individual's social life and their place within it (Nilsson Stutz & Tarlow, 2013, pp. 3–4). Recent advancements in scientific methods involve using 3D documentation techniques to examine the spatial arrangements and positioning of bones and objects within burials. This approach helps researchers gain a deeper understanding of burial processes and how remains decay over time. It involves visualizing not only the layout of the grave but also potential paths and sequences of bone movement (Mickleburgh et al., 2021, pp. 544–546).

The human remains that archaeologists find in graves, often representing the final stage of body treatment, are not merely objects. They also provide valuable insights into how the living community perceived their spiritual and ancestral connections to the world and to death. Mortuary rituals exhibit a wide range of diversity, spanning from singular phases to multiple stages (Nilsson Stutz & Tarlow, 2013, p. 6). Where, before the final burial or phase, bodies were sometimes left in separate locations away from the houses, possibly as part of a process of excarnation, awaiting the next step (Hertz, 1960, p. 30).

The completion of a body's final phase and placement does not necessarily mark the end of mourning; the grieving process can extend both before and after this stage. In most communities, there is no direct connection between the burial of the body and the ultimate fate of the individual's soul (Weiss-Krejci, 2013, p. 284). Although archaeologists often uncover the final stages of burial rituals, it appears that the liminal phase has the greatest impact on shaping the identity of the deceased. During this transitional period, when the body is neither part of the world of the living nor fully of the dead, it undergoes symbolic transformation. This is achieved through the presentation of grave goods and specific treatments of the body (Fowler, 2013, p. 50). Often, the body was first left to decompose, a process intended to remove its perceived pollution, before new rites and secondary treatments were performed. These choices, particularly the series of rites following decomposition, most strongly express the deceased's identity among the three phases of the rites of passage (Van Gennep, 1960, pp. 146–148). These rituals aim to highlight the personified identity of the deceased. During the last phase, the focus shifts to integrating the deceased into a new community shared with all deceased individuals of that particular group (Fowler, 2013, p. 50). Where the lifting of mourning becomes most important, and where the deceased receives a new identity or role not only in the world of the dead, but also within the living community (Van Gennep, 1960, p. 147).

This intricate process involves the dissolution and reaffirmation of relationships, often linked to the deceased's identity. Rites of passage, both in the living world, such as the transition from childhood to adulthood or into marriage, are also reflected in the way death is dealt with. These rites consist of three phases: the rites of separation, the rites of transition, and the rites of incorporation (Van Gennep, 1960, p. 146). The post-liminal or rites of separation phase consists of activities aimed at memorializing the departed and facilitating closure for their social relations. Establishing a direct correlation between personhood and specific mortuary practices is challenging. Such practices still can offer information into the beliefs and social identity of the community performing them (Fowler, 2013, pp. 519–521).

Post-funerary practices reveal that interaction and involvement with the deceased persisted beyond the liminal phase, with the deceased remaining actively engaged in various ways. This includes the handling of exhumed bones, ongoing social rituals such as feasting and offerings, as well as the significance of physical contact with human remains. The human remains retained their importance and never became devoid of meaning (Sørensen & Rebay, 2007, p. 4). The identity of the deceased, as expressed through burial rituals in all three phases, reflects the living community's perspectives on life and death. This indicates a clear correlation between the mourners and the experiences they share across multiple burials within the community. This is evident in the consistent funeral practices observed in communities, where cemeteries serve as a shared space, uniting all the deceased into a new community (Fowler, 2013, p. 512). Once the individual has been buried, they acquire a new status separate from the living community while maintaining a continued connection and bond with it. Currently, it is impossible to precisely associate grave goods or other findings with a specific stage or ritual within the overall funeral process. Prehistoric funeral practices are complex, with overlapping phases that often lack clear boundaries (Fowler, 2013, p. 513). After the passing of a loved one, mourners are left with feelings of grief and loss. Archaeology tries to understand the relationship and social roles of the deceased within their community, as well as the beliefs and rituals of those communities. Death initiates an irreversible process of decay in the body, further altered by various funerary practices that affect it both externally and internally, diminishing its initial appearance.

The body, often not perceived as an object within the funeral process, falls between different categories. When the living person is separated from their body, new emotions arise, and in some cultures, the body even becomes a taboo subject. Funerary practices aim to manage both death and the deceased in accordance with societal structures (Nilsson Stutz, 2013, pp. 4–5). The manner in which sites present the deposition of the deceased in a familiar manner, in comparison to our cultural norms, influences our interpretation. Discerning and interpreting burials that differ significantly from our own practices poses challenges due to their unfamiliarity (Weiss-Krejci, 2011, pp. 68–69).

3.2 Formal versus non-normative burials

In archaeology, there are differences between 'formal' and 'non-normative' burials. 'Formal' burials are easier to find since they are usually located in designated cemetery monuments, often with grave goods and specific placements in the grave pits. On the other hand, 'non-normative' burials leave less evidence, making them harder to recognize in the field (Weiss-Krejci, 2013, p. 282). These less visible burials are often found in settlements and wet areas like rivers, caves, and bogs. The main differences between these two types are that 'non-normative' burials typically lack the structured placement of objects and the deceased body seen in regular burials and often do not include grave goods (Müller-Scheessel et al., 2020, pp. 172–173). In recent years, archaeologists have become increasingly interested in understanding why human remains are placed in specific locations and whether there is a connection between these burial sites and nearby settlements or communities. This is why, it is crucial to consider all available evidence surrounding these less visible burials. While patterns may be recognized, it is important to recognize that the reasons behind these patterns can vary with each burial (Fontijn, 2019, p. 25). When distinguishing between non-burial treatments and 'formal' burials, it is important to also consider subadult burials. Throughout history, children have had a different social status within communities, often not being seen as fully human until they reach a certain age or undergo specific rituals. As a result, their burial practices are often different from those of adults and can be even more complex (Brück, 2019, pp. 54–55). Children go through notable social and biological changes as they grow. Subadult burials are often set apart from adult cemeteries and have their own specific locations. To grasp how this might impact 'non-normative' burials, it is important to look at the differences between subadults and adults and to recognize any patterns that arise (Murphy & Le Roy, 2023, pp. 4–5).

3.3 The unburied dead and the choices behind them

The term ‘unburied dead’ has been used since the 19th century to describe individuals who have not undergone traditional burial practices. These unburied dead are often considered as ‘non-normative’ treatment and often have less archaeological attention. The treatment of these 'unburied dead' can vary widely and often involves negative aspects, such as abandonment in the field, mutilation of the body, or partial deposition of the remains (Weiss-Krejci, 2013, p. 282). It is often argued that the cause of death or the individual's behaviour in life can influence how the community handles their burial. If the death is considered unconventional, it might be viewed as 'deviant' and not conforming to societal standards. This can lead to a loss of social status, regardless of the individual's age or biological gender. Identifying 'deviant' burials and understanding how they are represented in the archaeological record can be challenging (Aspöck, 2008, p. 25).

Before the recent renewed interest in less visible burials outside traditional cemeteries or mounds, these remains were often overlooked. Previously, human remains found outside traditional burial context were frequently explained negatively, often attributed to violence from enemies (Müller-Scheessel et al., 2020, p. 170). The term 'unburied dead' encompass to individuals who are denied proper funerals, falling into three main groups: those who die violently, accidentally, or in unusual circumstances, often labelled as 'bad deaths'. This can also include punishment, such as publicly displaying and mutilating enemies. These ‘bad deaths’ are often laid to rest separately from traditional burial sites. The reasons for these practices vary and are influenced by cultural beliefs, societal norms, and perceptions of death. The idea of what constitutes a 'bad death' is complex, as different societies have differing definitions of what deaths are considered 'good' or 'bad'. Economic difficulties, social stigma, and spiritual beliefs also play a role, and in some cases, proper rituals may be performed long after the person's death (Weiss-Krejci, 2013, pp. 286–290). This suggests that the social persona of an individual has deviated from the norm within the community, meaning that the collective duty toward that person may no longer include the right to a 'formal' burial (Aspöck, 2008, p. 25).

Another reason for the lack of a proper funeral process could be the individual's social standing within the community. Those who were less wealthy or lower on the social ladder, possibly due to their own behaviour, might have been denied a formal burial (Müller-Scheessel et al., 2020, p. 174). Warfare and conflicts were frequent in European prehistory, occurring on both small and large scales, and this may have prevented some bodies from being recovered and receiving a formal burial. It is unclear how many individuals were affected by this. Without a body, funerary practices could not proceed, making it more challenging for the living community to move on and potentially affecting the personhood of the deceased (Weiss-Krejci, 2013, pp. 291–294). During warfare and conflicts, it is possible that the bodies of those who died in battle were used as trophies, by enemies to display and dehumanize their foes. Not only during warfare, but also within communities, bodies or specific skeletal elements might have been used as ornaments or jewellery to maintain ongoing connections with the deceased. Given the many variations of 'undead bodies,' it is challenging to determine the reasons behind the archaeological evidence found. Understanding more or parts of the complex mortuary practices within a community requires recognizing patterns and representativeness to account for all burial practices. It is crucial to grasp the complexity of the rationale and the various stages involved in the funerary process that might have taken generations (Weiss-Krejci, 2013, pp. 293–294).

3.4 Fragmentation and dividuality

It is often argued that personhood includes elements of 'dividuality', where the self is seen as divisible, and identity is understood as flexible and fluid (Nilsson Stutz, 2021b, p. 20). At times, there are post-funerary processes where skeletal elements or bodies are exhumed later on, sometimes cleaned and cremated. Embodying the role of a sacred bone object meant for display or adornment. In other cases, skeletal remains are exhumed for reburial in a later grave, potentially centuries older than their new funerary context (Weiss-Krejci, 2011, pp. 77–78). Human bones are a powerful resource, highlighting a living-ancestor type of relationship, as they were often kept and re-used later in their life history, retaining their value over time (Chapman, 1994, pp. 46–47). Through the secondary treatments, where skeletal elements are removed, exhumed, cleaned, and transformed into new objects, it shows that personhood is both physically and socially divisible. The remains are redistributed within the community, used to create new connections to another kin group, either as inheritance or to claim inheritance in the landscape (Fowler, 2004, pp. 48–50).

Besides the transformation of human remains into ornaments, the purposeful fragmentation, manipulation, and curation of the body played a role in expressing an individual's identity. These actions often served as part of secondary practices after death. These remains were deposited in both mortuary and non-mortuary context (Brück, 2024, p. 25). Outside of the mortuary context, often found in settlements and related to their creation or destruction, there exists a continued relationship between the living and the dead. In these contexts, skeletal remains circulated, contributing to the construction of personhood through their close connection to the living members of the settlement (Jones, 2005, p. 214). People and objects were intertwined through both human lifecycles and the lifecycles of objects and materials, marking transitions as they moved from one state to another, with death serving as the final transition (Brück, 2006b, pp. 297–300). In mortuary context, both cremated and fragmented remains were deposited into burials, circulating within the community before being redeposited in other graves. At times, human remains from two generations prior were included, suggesting that memory and identity were transmitted across multiple generations before reaching their final place of deposition. The moment of deposition may signify the cessation of the individual's living memory within the society (Booth & Brück, 2020, pp. 4–8).

Body manipulation, specifically through the destruction of the body, can occur in various ways, such as cremation or the deliberate breaking of skeletal remains (Louwen, 2024, p. 42). Decomposition and fragmentation occur not only in human bones but also in daily life, where raw materials, such as hemp, rice, and other everyday products, are transformed into lasting and useful products (Metcalf & Huntington, 1991, p. 74). The process of burning bones is akin to the production of metals and ceramics, where fire serves both as a destructive and generative force. In this context, the cremation process reflects a dividual concept of the body and the self (Nilsson Stutz, 2021b, p. 23). It is unknown whether there was a distinction between burnt and non-burnt bones; however, this transformation might have represented identity in ways that were internally expressed, possibly indicating belonging and ownership of liminal areas. The fragmentation of the body also made it easier to interchange and carry the remains to different places (Cleary, 2018, p. 349). By exchanging and transporting these fragmented remains to different places, they may have served as empowered objects that changed and transformed social relationships between places, objects, and even other people (Louwen, 2021, p. 213). Reconnecting the link broken by death, and by fragmenting the remains, it becomes possible to realign these relationships (Hofmann, 2015, p. 115). The placement of disarticulated human remains, in wet areas like caves but also inside the settlement, might have been part of community life and the rituals connected to these communities. The variation in body treatment, where some individuals were left complete while others went through a long process of secondary treatment, shows that different choices were made for each person. Was this a deliberate decision, or something accidental, where these individuals held their identity differently (Leach, 2008, pp. 50–51). Destructive behaviour toward the body may reflect the social experiences the deceased person underwent, ranging from marriage and exchange to interactions with others. In this context, destruction serves as a form of rebirth and a key element in the construction of personhood (Brück, 2014, p. 136).

4. The relevance of the human remains in settlement context

4.1 Dutch perspective on disarticulated human remains in settlements

The observation of human remains in settlements across the Netherlands is not a recent archaeological development and has not gone completely unnoticed during settlement excavations. Over 50 years ago, J.A. Bakker first documented such findings in West Frisia, providing a brief overview of the stagnation in research on human remains. In total, 53 skeletal remains were recorded, including four disarticulated human remains found in ring and settlement ditches. These findings aligned with large-scale excavations that uncovered many settlements (Bakker, 1974, p. 7). Through these observations in the settlement, Brandt and IJzereef (1981, p. 53) introduced a burial program for the West Frisian people during the Bronze Age. While barrows and flat graves were primarily discussed, a third burial context was also introduced, human remains found among 'household waste' in ring and settlement ditches, particularly during the Bronze Age when barrow burials became less common (Bakker & IJzereef, 1981, p. 54). Indicating that these human remains were part of the 'household waste' rather than a less visible burial practice. This burial program for West-Frisia set the tone for all subsequent publications about human remains in settlements, where human remains were not considered part of a less visible burial practice but were instead dismissed as mere 'household waste' or remnants of older burials, unless there is an exceptional location or post-mortem damages are visible (Habermehl, 2022; Nieuwhof, 2015; Roessingh et al., 2024).

After these early studies, the topic was largely overlooked for a while. But in recent years, this has changed, as more excavation reports have pointed out the presence of human remains in settlements from the Neolithic to the Iron Age (Jongste & Koot, 2005, pp. 623–628; Kootker, 2014, p. 284; Ten Anscher, 2012, p. 348). In some cases, these remains have even been interpreted in relation to community identity. For example, the authors of the Betuweroute excavations (1997–2002) in the Dutch river area suggested a possible connection between human remains and Bronze Age settlements (Jongste & Koot, 2005, pp. 623–628). Despite this, most excavation reports have merely noted the presence of human remains or, at most, compared them to findings from nearby settlements in the same region. In the 20th century, although settlement excavations continued beyond these brief mentions of scattered human remains, the skeletal elements found in settlements were not taken seriously. As Nieuwhof (2015) mentions through terp research, "*It was apparently thought that the study of skeletal remains would lead up to nowhere and that they might as well be left behind*" (p. 232). This general attitude persisted well into recent years, with human remains often briefly mentioned in reports but rarely looked at in detail. Later, notable research by Annet Nieuwhof focused on ritual practices in the terp region of the northern Netherlands, dating from 600 BC to 300 AD, including a catalogue of human remains and burials discovered at the terps (Nieuwhof, 2015). Recent studies commissioned by the Cultural Heritage Agency, including *NAR 79: Gewoon bijzonder, archeologisch onderzoek naar speciale depositiepraktijken rond huis en erf (neolithicum-nieuwe tijd)*, which examines 'special' deposition practices around living areas involving various object categories, including human bones. Often found in settlement features such as houses and ditches, as well as in wet contexts like depressions, gullies, and fens (Habermehl, 2022, p. 25). In total, 57 skeletal remains were given 'special' deposition in and around the farmyard, with 31 coming from prehistoric settlements and the remaining 26 from later periods (Habermehl, 2022, pp. 233–234).

Habermehl (2022, pp. 14–15) argues that a practice or ritual, such as the deposition of human remains is categorized by formality, structure, and repetition, serving as a social practice that goes above the symbolic meaning but rather maintains, emphasises or transforms the social relationship in a community. In the case of the human remains, they are more interesting as "*this is because of the general assumption that the remains of deceased individuals were treated with care and were interred in graves in their entirety, often, though not exclusively, outside settlements*" (Habermehl, 2022, p. 221). Suggesting that the human remains found inside settlements are often seen as treated with less care. While Habermehl mentions 57 depositions containing human remains, and 31 specifically for prehistoric contexts, the criteria for this selection remain unclear. It is only stated that the practice must be repeated in a specific location and that the deposition includes other objects or occurs in similar contexts. However, although it is assumed that these criteria also apply to human remains, this is not explicitly stated in the publication. There is also no clear distinction between what is considered meaningful and deliberate and what is not, nor is it discussed why certain depositions were picked or considered (see Table 6.34, Habermehl, 2022, pp. 233–234).

Habermehl (2022) does explore the possible meanings behind the deposition of disarticulated remains, mentioning disturbed graves, family identity, and transitional rituals. That said, most of his examples focus on highly exceptional cases of disarticulated human remains in unusual locations, such as the skulls from Houten-Castellum with evidence of headhunting and the worked skulls from Ezinge. Less attention is given to remains found in more common locations or those without visible post-mortem modifications, which make up the majority of the skeletal remains, lacking a 'special' location or visible damage on the bone (Habermehl, 2022, pp. 236–237). Interestingly, while the publication includes a wide range of deposited object categories, like pottery, animal bones, coins, and others, and analyses them using different graphs and tables, botanical remains, human remains, and 'remaining' objects are left out of these graphs as they are considered not 'exhaustive/comprehensive' enough. As Habermehl (2022) states, *"The category of 'other' objects (horseshoes, keys, etc.) is not included here, nor are the smaller categories such as botanical and human remains"* (p. 139), this raises questions about what qualifies as 'comprehensive' or 'exhaustive' in the study. For example, coins (n=40) are included, while human remains (n=57) are excluded, without any explanation as to why human remains are considered less comprehensive despite their greater quantity. This exclusion is clearly not based on category size, as coins are fewer in number than human remains. This suggests that even in a publication focusing on special depositions around farmyards and settlements, human remains do not receive the attention this category deserves and are excluded from the broader analysis.

NAR 85: Scattered Human Bones, most closely relates to this thesis, the authors of the latter publication analysed 84 human bones discovered at Bronze Age settlements in West Frisia. As part of a synthesis and re-analysis of all disarticulated human remains from the region (Roessingh et al., 2024, p. 9). It builds on old and new excavations, including those by Bakker (1974) and Brandt and IJzereef (1981). This publication highlights a growing awareness of the presence and importance of human bones in non-mortuary context, such as settlements in the Netherlands. While it reassesses the disarticulated human bones with the addition of a physical anthropologist, it presents two possible interpretations of these remains: either deliberate manipulation or remnants of older burials. The authors lean more toward the conclusion that these bones originate from disturbed burial sites of earlier communities and that they were treated no differently than household waste, with no supporting evidence of secondary burial practices (Roessingh et al., 2024, pp. 99–101).

They conclude with the statement: "*At least for some period of time, these bones may have held special meaning for the members of the society. Still, when these bones lost their special meaning, they ended up in features amongst the objects of daily life*" (Roessingh et al., 2024, p. 101). This indicates that they continue the narrative first presented nearly 50 years ago by Bakker and Brandt and IJzereef. This suggests that, in the end, their deposition became irrelevant, and they were discarded into settlement features once they had lost their meaning. While the authors comment a little on a deliberate intent with recognizable patterns in the deposition of human remains in West Frisia, such as a preference for cranial and long bone (femur) fragments, they argue that this may simply be due to the fact that these skeletal elements are more resistant to decay and easily identifiable in the field. The publication barely mentions smaller, more fragile bones found in settlements, referring instead to the remains as 'various elements.' This vague terminology suggests that more than just skulls and long bones may have survived over the past 4,000 years, but that these are not clearly discussed (Roessingh et al., 202, p. 65). Six human remains show evidence of curation and defleshing, including cut marks, but it remains unknown whether this was a widespread practice (Roessingh et al., 2024, p. 96). The overrepresentation of certain bones found in various ditches is attributed to the fact that these areas act as object traps during excavations. This pattern is more likely a result of modern excavation methods rather than deliberate choices made by people in the past. In contrast, the small, scattered human remains recovered through wet sieving hold less importance (Roessingh et al., 2024, p. 98). The argument for disturbed burial graves is based on two criteria: first, the distribution of human remains within the settlement context should resemble refuse; second, there must be evidence of disturbed graves within or near the settlement. Nearly all disarticulated human bones were found alongside other object categories, such as animal bones and pottery (Roessingh et al., 2024, p. 97). In this context, settlement refuse refers to 'unwanted' objects discarded at the end of a settlement's occupation. Most materials found in settlement context are classified as refuse, with pottery being the most common, followed by smaller quantities of stone and flint, often associated with refuse pits or postholes (De Vries, 2021, p. 89). The second criterion focuses on evidence of remnants from older burials, such as burial grounds that were later built over during the Middle Bronze Age. This suggests that barrows or flat graves were levelled before the construction of settlements. Approximately 25% of the skeletal remains were found in barrow features, while 75% were found in settlement features (Roessingh et al., 2024, p. 97). West-Frisia shows evidence of the integration of barrows that were not levelled during the Bronze Age, such as those at Hoogkarspel-Het Valkje and Hoogkarspel-Watertoren, into settlement features. The Bronze Age communities appear to have respected these barrows, so why should they be considered older remnants (Roessingh et al., 2024, pp. 96–99)?

The way human remains have been treated in the archaeological field over the past 100 years, as described in previous publications, has influenced how they are perceived today. As a result, the credibility of human remains found outside mortuary context and scattered across settlements has often been questioned. This has led to ongoing debate about whether these remains reflect intentional prehistoric burial practices or are merely remnants of older, disturbed graves. The scepticism surrounding scattered human remains is partly rooted in the documentation methods used during old excavations. While some excavation report authors mention disarticulated human bones and speculate on their possible meaning within the specific site, the broader context of the time period is never fully researched. The main issue lies in how these projects are guided by specific research questions outlined in the Program of Requirements (PvE) prior to the excavation itself, which prioritizes predefined objectives within limited time and budget constraints.

Similarly important, together with the PvE is the Nationale Onderzoeksagenda Archeologie (NOaA 2.0) (The National Research Agenda of Archaeology). A web based research framework that highlights the most important research questions, organized by theme, which still need to be addressed in the Dutch archaeological field. One of these questions is: ''What is the context and meaning of disarticulated human skeletal remains in and outside settlements? (NOaA 2.0-question 54)''. Disarticulated human remains have been included in the National Research Agenda of Archaeology since 2005, addressing how to handle the presence of human remains within settlements and offering recommendations from the literature on their treatment and interpretation. Highlighting that human remains, whether disarticulated or in graves, must be carefully excavated and documented. The relationship with surrounding features should be determined, and remains examined by a physical anthropologist. DNA contamination should be prevented, and dating and thorough analysis of the remains (e.g., marks and fractures) are essential for understanding post-mortem treatment (Bazelmans et al., 2005, p. 81).

These are guidelines, not strict requirements, as the PvE (Program of Requirements) outlines the specific requirements for an excavation. The guidelines aim to ensure careful handling and documentation of human remains, but the actual excavation procedures are determined by the established standards in the PvE. Consequently, when a settlement excavation is anticipated, the research questions are tailored specifically to that context (SIKB, 2022, p. 27). Objects or structures that fall outside these predefined questions require additional time and funding, which are often unavailable. As a result, such findings, particularly fragmented human remains found in cultural layers or settlement structures, are frequently not documented during an excavation, receive minimal investigation, and are only briefly documented. Leading to the fact that the of human remains found at settlements across the Netherlands over various time periods is incomplete. There is a lack of detailed information regarding the treatment of the bones and the involvement of a physical anthropologist in the analysis. This, combined with the limited attention given in publications (both excavation reports and synthesis reports focused on Prehistory), has led to a diminished interest in exploring the broader importance of these remains within burial practices. As a result, excavation reports often only briefly mention these remains, showing little interest in their broader context and highlighting a lack of focus on this topic in the Dutch archaeological field.

4.2 Why we are not dealing with accidental loss or refuse

While Habermehl (2022) and Roessingh et al. (2024) primarily attributed disarticulated human remains to older disturbed graves or considered them as 'household waste,' or not even considering the bones ‘exhaustive’ enough for analysis, their explanations remain insufficient. This thesis aims to offer a new perspective on disarticulated human remains found across settlement features and the cultural layer, moving beyond extraordinary finds in special locations or those exhibiting visible post-mortem damage. Rather, it seeks to identify a broader pattern, including those remains without 'special' locations or noticeable post-mortem damages, to prove that a recognizable and exhaustive pattern exists. To move towards a new perspective, it is important to begin by considering why the interpretation of older publications might not be correct.

4.2.1 Continuity and fragmentation of the skeletal remains inside the settlement

The collected data (as part 2.3 overview of the dataset) shows that the observation of disarticulated human remains found within 84 settlements is neither limited to a certain region nor a specific time period. Instead, it is observed evenly disturbed across time periods and throughout the Netherlands, indicating that we are not dealing with a one off event or something restricted to a certain region. The data shows that the presence of disarticulated human remains began even before the Neolithic, as evidenced at both Hardinxveld-Giessendam sites, which highlight the transition from the Late Mesolithic to the Neolithic (Smits & Louwe Kooijmans, 2001a, p. 427; Smits & Louwe Kooijmans, 2001b, p. 485). This indicates that the practice of deposition was already occurring before and during the transition to more permanent settlements, suggesting it was already an integral part of the early stages of establishing permanent communities. The deposition practice did not end with Prehistory but continued into the Roman period, with finds both in the terp region and the hinterlands of central Netherlands, indicating that the practice extended beyond prehistoric communities at least until the end of the Roman Period (Nieuwhof, 2015). This suggests that for over 6,000 years, possibly even longer, individuals were buried or deposited within settlement boundaries. The presence of human remains in settlements appears to have been a consistent and enduring practice in prehistoric communities, rather than a short-lived trend limited to a particular region or period.

Within the sites, both individual non-fragmented skeletal elements and complete skeletons have been found within the settlement features and cultural layer, suggesting that we are not dealing merely with small fragmented bones accidentally left behind while moving deceased individuals or lost by chance. One notable observation is the high number of human teeth present in the cultural layer, especially in Neolithic settlements, which are included in the dataset. Although it is nearly impossible to determine the cause of death from these remains, the loss of teeth is not necessarily linked to death. Their presence still offers information into how people viewed human teeth, and, by extension, human bones, in their daily lives. The fact that teeth were freely lost or left in the cultural layer, where people lived and walked, indicates that such remains were part of the everyday environment, implying there might have been less separation between human remains and the living. While teeth, as well as, small fragmented bones might suggest accidental loss, the higher proportion of non-fragmented skeletal remains, such as complete long bones, and even complete skeletons, points to intentional deposition rather than accidental occurrence. This contrast raises questions about whether the differences between highly fragmented bones and more complete remains are due to preservation and excavation methods, or if they reflect intentional actions by prehistoric people. Most of the dataset consists of complete or nearly complete bones, with fewer highly fragmented pieces present.

4.2.2 No, this is not waste

Besides the high amount of teeth found within Neolithic settlements, the skeletal elements found within the settlements indicate little variation, showing a dominant and recurring pattern of cranial and long bone elements. It is widely recognized that skulls and long bones are better preserved due to their robustness and recognizability, which may lead to their overrepresentation. Roessingh et al. (2024, p. 96) argue that this overrepresentation is likely a result of excavation methods and the preservation of these robust elements. I would argue that the majority of the skeletal elements being cranial and long bones was a deliberate choice by prehistoric communities. In the Neolithic, as mentioned earlier, half of the skeletal elements are teeth, with 11% (23) coming from the cranium and 16% (32) from various long bones. In contrast, the Bronze Age shows an overrepresentation of cranial and long bone fragments, with 38% (69) from cranial fragments and 44% (79) from various long bones. In the Iron Age, 32% (26) of the remains come from long bones and 37% (30) from cranial fragments. This means that in the Bronze and Iron Ages, over 70% of the remains consist of cranial and long bone fragments. While this supports Roessingh et al.'s (2024, p. 96) statement about preservation, it is important to note that cranial and long bones are not the only skeletal elements found in the settlements. Around 20-30% of the remains come from smaller bones, such as hand and feet bones, vertebrae, pelvis, and mandibles. The fact that these more fragile and less recognizable skeletal parts also survived over time suggests that the pattern is not solely the result of preservation or excavation methods.

This is further supported by looking at the excavation methods used at the sites: the recurring pattern of cranial and long bone fragments does not appear to be related to whether hand excavation, mechanical excavation, or (wet) sieving of features was used, contrary to the argument made by Roessingh et al. (2024, p. 103). Most Bronze Age sites in West Frisia were excavated by hand, and in a few rare cases partly (wet) sieved. Roessingh et al. suggest that this limited sieving likely led to smaller bones being missed, which could explain the overrepresentation of cranial and long bone fragments. With the inclusion of the non-sieved West Frisia sites, approximately 53% of all sites were sieved. However, outside of West Frisia, sites dating from the Neolithic to the Iron Age show that around 70% of settlement excavations were systematically sieved, either through the cultural layer and/or complete features. If smaller bone fragments had been present, they would have been found through sieving. Yet, as shown in Table 1, even the sites that were primarily sieved still predominantly included cranial and long bone fragments. This suggests that these skeletal elements are dominant regardless of excavation method.

Dominant skeletal element per site (count is per site)				
Sieved or not?	**Cranium and/or long bone**	**Skeleton**	**Other (smaller fragments or dental elements)**	**Total sites**
Neolithic				
Sieved	14	2	4	20
Not Sieved	1	1	0	2
Unknown	0	1	0	1

Bronze Age				
Sieved	8	0	3	11
Not Sieved	20	1	1	22
Unknown	0	0	1	1
Iron Age				
Sieved	11	2	1	14
Not sieved	9	1	1	11
Unknown	0	2		3

Table 1: Table of sieved and non-sieved sites with the dominant skeletal element per site.

The combination of the high percentage of cranial and long bone fragments, along with the low percentage of smaller and other skeletal elements, and the lack of variation in skeletal elements regardless of excavation methods, suggests that this pattern is not simply the result of preservation bias or excavation method. As previously said, I would argue that prehistoric communities had a preference for depositing cranial and long bone fragments, and that we are not merely dealing with accidental loss or the fact that these remains are the only ones preserved or easily observable. Long bone and cranial fragments may have been more familiar or recognizable to prehistoric communities as meaningful parts of the body, perhaps because they were easier to identify, handle, or collect. This pattern could also suggest that cranial and long bone fragments held special significance, potentially forming the basis of ritual deposits embedded in social or symbolic practices. The skull, for example, may have been associated with intellect or the soul (Brück, 1995, p. 257).

This further relates to the structures and locations where the skeletal elements have been found. If the deposition of these bones were accidental, such as if they were remnants from earlier burials, there would be no recognizable pattern in where the bones were deposited. Patterns observed in the 511 human bones across different time periods suggest that these were not accidental deposits, but rather intentional choices. While Roessingh et al. (2024, p. 98) argued that most remains were found in ditches because these features are ‘object traps’, this is not reflected in the dataset. Many other features and the cultural layer also contain human remains that are not ‘object traps.’ Each period (Neolithic, Bronze Age, and Iron Age) shows a different dominant deposition pattern. In the Neolithic, about 80% of skeletal elements were found in the cultural layer, with only 19 found in features like pits and burial pits. The Bronze Age shows over 60% of remains found in different ditches (circular, ring, house, and terp), and 40% in the cultural layer, indicating remains were not limited to ‘object traps.’ In the Iron Age, the remains are spread across natural features, settlement features, and various layers: 22% in pits, 20% in paleochannels, 25% in erosion, cultural, and undefined layers, and the rest across other settlement features. This shows each period had its own deposition pattern while also revealing a recurring pattern throughout. Deposition was not limited to ‘object traps’ but occurred in a range of contexts (see Chapter 6 for more on the depositional locations).

One of the clearest pieces of evidence that the human remains found in settlements are not refuse, household waste, or accidentally lost comes from comparing them to actual refuse, specifically animal bones, found in similar contexts at the Bronze Age West Frisia sites. This comparison clearly shows that human bones received completely different treatment than household waste. Almost *all* animal bones, primarily from cattle, display extensive taphonomic marks such as cutting, chopping, and gnawing, indicating they were processed for meat and then left as refuse once their usage, removing the flesh, was complete, often in unsupervised areas where animals had access (Aal, 2015, p. 139). If human remains were also similar refuse or waste, and treated in the same way, we would expect them to have been carelessly left behind, showing the same patterns of gnawing and possible cut marks, indications that the bones had completely lost their value (see the comparison between Figure 4 and 5). The human bones found in West Frisia themselves demonstrate that these patterns are not present, as only a very small portion show any signs of gnawing or cut marks. This strongly supports the idea that human remains were deliberately protected from animal access and were not discarded in the same manner as household waste.

Figure 4: A single cut mark identified on a tibia from Andijk-Noord (Roessingh et al., 2024, p. 57).

Figure 5: Multiple crisscross cut marks observed on remains from Andijk-Zuid (Aal, 2015, p. 122).

4.2.3 Nor is this the result of accidental loss from older graves

Since the depositional location, the recurrence of skeletal elements, and the treatment of these human remains after 'losing their value' show no signs of household waste, another possibility must be considered. It has been suggested that these remains may be remnants of older, disturbed burials, possibly displaced during activities such as levelling barrows to construct new houses. To have evidence of the older disturbed burials, two aspects were mentioned: 'unwanted' objects and evidence of disturbed burials (Roessingh et al., 2024, p. 99). The definition of 'unwanted' objects is based on when these remains were deposited, most likely at the end of the settlement, when such objects are seen as having lost their value. And if these human remains were found with other object categories in refuse pits or postholes (De Vries, 2021, p. 89).

The argument that most skeletal elements belong to refuse from the end of the settlement is not accurate for the dataset. In the Neolithic, nearly 57% (125 elements) of the skeletal remains do not originate from the end of the settlement but rather from its middle phase while it was still in use (often based on the site's phasing). Only 6% (13 elements) come from the end of the settlement, while for 34% (74 elements), the phasing of the skeletal remains in relation to the settlement is unknown. This suggests that during the Neolithic, people actively lived alongside disarticulated human remains and skeletons. Similarly, although most of the disarticulated human remains were found in the cultural layer, no other 'refuse' remains, such as pottery, were found nearby.

In the rare cases of pits in Swifterbant (Meiklejohn & Costandse-Westermann, 1978, p. 80), no other object categories were present. Although the ditches in Bronze Age West Frisia are sometimes filled with other objects, it is unclear whether these were deposited at the same time. Most ditches and house ditches are quite extensive, so if objects are found in different locations within the same feature, this does not necessarily mean they were deposited simultaneously or held the same meaning. The lack of clear stratigraphic information and the fact that many C14 dates are based on the human bone found inside the features make it impossible to determine exactly when these ditches were filled with other materials. This uncertainty becomes even more because not all the findings from the West Frisia excavations are fully analysed yet (Roessingh et al., 2024, pp. 51–53). Due to the lack of C14 dating, it is also not possible to determine with certainty to which phase of the settlement these bones belong (Roessingh, 2018, pp. 45–46). For the other river area, most of the disarticulated human remains are not found with other objects, both in features and in the cultural layer. Only Houten-VleuGel shows a clear ritual deposition inside a depression, which was likely ritual in meaning and not refuse (Besselsen & Van der Helden, 2009, p. 125). As most of the disarticulated human remains did not receive C14 dating, it is unsure whether they belong to the final phase or to a moment during the settlement's life. Similarly, for the Iron Age, most disarticulated human remains are found without other objects that could be considered 'refuse', but are sometimes found with complete pots, suggesting that these are not simply refuse (Taayke, 1996b; Wolting & Prummel, 2005, p. 138). Both terp settlements show that disarticulated human remains and skeletons were integrated into the community, such as during house construction, but also during later phases of the settlement (Nieuwhof 2015; Woltinge & Prummel 2005). This practice also appears outside the terp settlements, as seen at Geldermalsen-Hondsgemet and Culemborg-Hoge Prijs, where remains were deposited halfway through the settlement's life (Baetsen, 2009, pp. 344–345; Verhelst et al., 2015, p. 109). This shows that the interpretation of these remains as 'unwanted' objects at the end of the settlement alongside other refuse is questionable, as there is little direct evidence to suggest that the human remains were considered 'unwanted'. Most of the skeletal remains were not placed at the end of the settlement's use, and they are usually not found in refuse pits. Instead, they are often found without other material objects or with items that are not typically considered refuse.

The second criterion also falls short, as there is no evidence of undisturbed burials at any of the settlements included in the dataset. During the Neolithic period, no formal burial grounds were located near the settlements. Both Ottoland-Kromme Rug (Wassink, 1981, p. 82) and Schipluiden (Louwe Kooijmans & Jongste, 2006, p. 91) feature multiple burial pits with complete skeletons within the settlements, which could be considered as burial grounds, particularly for Ottoland-Kromme Rug with its burial area situated to the east of the settlement (Wassink, 1981, p. 13). In the Bronze Age, settlements in the river area and West Frisia, such as Eigenblok, De Bogen, Bovenkarspel-Het Valkje, and Hoogkarspel, were located in close proximity to barrows (Meijlink & Kranendonk, 2002, p. 681; Roessingh et al., 2024, p. 98). Most barrows in these regions remained undisturbed during the Bronze Age. In the river area, they were situated at the edges of settlements, with no evidence of barrows being levelled. At the West Frisia sites, particularly Hoogkarspel-Het Valkje and Hoogkarspel-Watertoren, the barrows were actively integrated into the settlement system. They became part of the settlement layout and features, yet were also not levelled during the Bronze Age.

Roessingh et al. (2024, pp. 96–99) argue that the skeletal elements found within the ring and circular ditches of the barrows are part of disturbed burials. I would contend that this is not the case. If these skeletal elements, initially a very small percentage of a complete skeleton, along with the 81 remains found in West Frisia, which also reflect a very minimal number of skeletal elements, were part of a disturbed burial, then it raises the question: where are the missing skeletal elements? If disturbed burial pits, levelled barrows, or destroyed flat graves were responsible, we would expect to find more evidence of such features, and additional skeletal remains, at these sites, especially considering that all West Frisia sites have been fully excavated (Roessingh et al., 2024, p. 103).

Yet, there are no other signs of disturbed burials, neither in the barrows nor in the settlements. Another important aspect is that, while most of the settlements and human remains in West-Frisia are associated with the Middle Bronze Age, this period spans approximately 600 years. Absolute dates for these settlements have not been established due to the lack of reliable C14 dating. As a result, it remains unclear how much time passed between the abandonment and integration of the barrows, along with the deposition in the ditches, and the establishment of new settlements at sites such as Hoogkarspel-Het Valkje and Hoogkarspel-Watertoren (Roessingh et al., 2024, p. 53). It is unknown whether the same people who used the barrows also created the subsequent settlements or if they were completely unaware of the barrow while building their houses (Roessingh, 2018, p. 337). For this reason, I argue that these are not remnants of older burials. For the Iron Age, the situation becomes more complex, as it is unclear whether settlements were built over old cemeteries, possibly contributing to the presence of refuse. This is especially clear at Houten-Castellum, where a settlement lies right next to a cultic site and a possible cemetery. Houten-Castellum is an exception to the rule (Panhuijsen, 2017, p. 241), as other Iron Age settlements show no signs of disturbed burials.

The complete skeletons found from the Iron Age, particularly in the terp settlements, indicate that there were no designated cemeteries within these settlements. Instead, burials were not concentrated in specific areas but appeared to be more closely related to settlement features (Nieuwhof 2015; Verhelst et al., 2015, p. 109). Another argument for this is the dominant body treatment. Starting from the Middle Bronze Age, most of the burials in settlements are inhumations. This is seen in both the Bronze Age and the Middle to Late Iron Age, even though cremation was the dominant choice for body treatment during that time. The disarticulated human bones found are mostly unburnt and show no signs of being part of a pyre or other cremation rituals, indicating that the deposited human remains served another purpose and were not part of the ‘formal’ burial practices. There is also no evidence of older cemeteries or settlements from the Neolithic or Bronze Age, indicating that these bones do not belong to earlier burial grounds.

As a result, there is no clear evidence in all periods that shows the isolated human remains come from disturbed burials. This is true both when we look at the number of skeletal elements and the lack of signs of older burials. Also, their location and the position of burial pits inside settlements support this. All of this suggests that these remains were part of funerary practices that were different from ‘formal burials’ like barrows, monuments, and cemeteries.

4.2.4 Reframing the disarticulated human remains

The human remains are neither refuse nor the result of accidental loss from older burials. Instead, they follow a different pattern than these two categories. Such evidence suggests that the remains held a different role within prehistoric communities, one that becomes more clear when approached from a neutral interpretive position. Still, some aspects need more discussion. One is the idea that people found outside of the mortuary context are often explained with negative reasons.

The presence of human remains outside traditional burial context has often been interpreted in older literature as 'non-normative' burials, frequently associated with negative circumstances. These negative narratives suggest that such individuals were excluded from formal cemeteries or burial mounds due to factors like violence or disease, or bad social standing, rendering them unworthy of a 'normal' burial. The data from the dataset does not fully support these claims. While some skeletons at settlements show signs of trauma or disease, the majority of the skeletons show good health and lack any evidence of violence. Only a small percentage of remains show indications of cutting or trauma. The findings of skeletons (and disarticulated human remains) within settlement structures further indicates that health or violence alone cannot definitively explain why individuals were buried in these locations. The effort in the burials of these individuals within the settlement, along with the absence of any indications of negative circumstances, challenges the notion that human remains outside the mortuary context signify so-called 'bad deaths.' Instead, this suggests that the reasons for these burials were more complex and varied.

The following case studies and results chapters will explore the possible roles that disarticulated human remains played within the settlement and household. By moving away from more negative interpretations and adopting a more neutral position, it becomes possible to examine what role these disarticulated human remains played. This includes examining depositional locations, who was buried within these settlements, and how identity factored into these practices. Finally, it addresses the post-mortem choices made between death and deposition. Before proceeding, it is important to acknowledge that it remains unclear whether all 511 skeletal elements were deposited intentionally, or to what extent. However, the data provides a basis for a new interpretation.

5. Case studies

I have argued that the human bones found at different settlements in the Netherlands are an intentional deposition by prehistoric communities, as part of the broader funerary practices that archaeologists are currently aware of. The data is presented in two different ways (as discussed by the scales): through three case studies, one for each period, through analysis and graphs showing all the skeletal elements from the dataset per period. The chosen case studies, Schipluiden, Meteren-de Bogen, and Ezinge, were selected because they are well documented excavations from different regions of the Netherlands (South Holland, the river area, and Groningen). All settlements have sufficient settlement features to indicate permanent habitation for a long period of time. Human remains, found in different contexts, are spread throughout the settlements, and all sites contain both burial pits, bordering the definition of 'formal burials', and isolated human remains. With these case studies, there is an opportunity to examine on a smaller scale, that provides more information on how a community dealt with their deceased. Extensive research has already been conducted on all three sites, including excavation reports, synthesis reports, and PhD dissertations, mostly focused on the settlement itself. Therefore, the excavation results will be kept as concise as possible, as these settlements have already been extensively studied. Most of the focus will be on the isolated and disarticulated human remains, as these did not receive as much attention on their relationship with the community in the reports.

5.1 Schipluiden: skeletons and disarticulated human remains

5.1.1 Site background

Schipluiden is a Middle Neolithic site located in the municipality of Midden-Delfland in South Holland. Excavated in 2003, the site spans an area of 5,500 square meters (Jongste & Louwe Kooijmans, 2006, pp. 5–7). The site is situated on a dune covering 0.5 hectares. The periods of occupation can be traced through the rise in sea levels. In total, there were four different phases of occupation. Phase 1 began around 3630 cal BC, marking the initial settlement, as there was no occupation prior to this phase. Phase 2 started at 3550 cal BC, following a brief hiatus after phase 1 caused by a flood, during which the dune shrank due to heavy usage (Mol et al., 2006, pp. 35–37). Phase 3, which occurred between 3490 and 3380 cal BC, saw occupation limited to the highest parts of the dune. A flood caused the end of the Middle Neolithic occupation if this settlement. The final phase occurred about a thousand years later (2300-2050 cal BC), after the dune had disappeared, yet still indicated human activity. The longest occupation phase was the final Middle Neolithic phase, lasting 110 years. Phase 2 was occupied for 60 years, while phase 1 lasted for 80 years. Showing a total occupation period of 250 years (Mol et al., 2006, pp. 35–37).

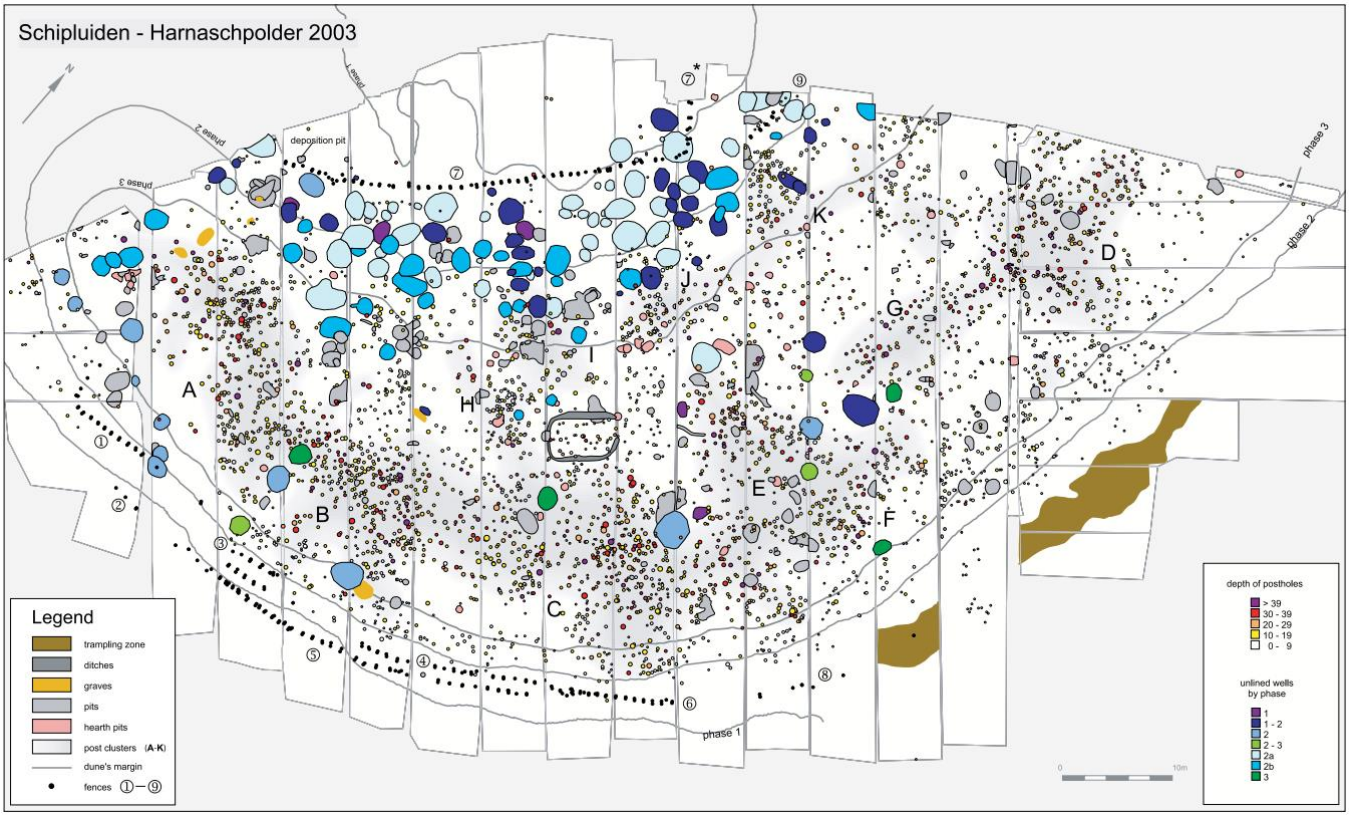

Figure 6: Excavation plan of all features found at Schipluiden per phase (Jongste & Louwe Kooijmans, 2005, p. 54).

The site contains a diverse range of features from all three phases, totalling nearly 4,609 features, which suggests prolonged and intensive use of the settlement (Figure 6). These features include wells, hearths, pits, and houses. The houses were typically small and frequently rebuilt during different phases, with a maximum of five houses at any given phase. Starting from phase 2b, the settlement was enclosed on the west side, extending to the northern side. The absence of fences in the northeastern part of the settlement raises questions about whether it was fully enclosed or if the settlement is not fully excavated during this project. All the settlement features were located within this enclosure (Jongste & Louwe Kooijmans, 2005, pp. 39–41).

5.1.2 Graves and disarticulated human bones

Within this (possible) enclosed settlement, six burials and 36 scattered human remains were found across all three phases of the Middle Neolithic settlement. These disarticulated remains were discovered across all three periods, with a noticeable increase in remains starting from Phase 2a. The breakdown of the human remains is as follows: Phase 1 (1), Phase 1-2a (4), Phase 2a (11), Phase 2b (4), and Phase 3 (12). As last, there are two remains that could not be assigned to a specific phase, categorized as Phase 1-3 (Smits & Louwe Kooijmans, 2006, p. 102). Most of the disarticulated remains on the northeastern-eastern side of the settlement were located near the fences of the settlement, at the settlements border, and possibly even beyond what the community considered their living areas, where few or no features were identified (Figure 7). The human remains located on the northwestern side of the settlement, close to burials 1, 2, 4, and 6, are primarily situated within the settlement's fences and are near the water wells from phases 2a and 2b (Smits & Louwe Kooijmans, 2006, pp. 102–103).

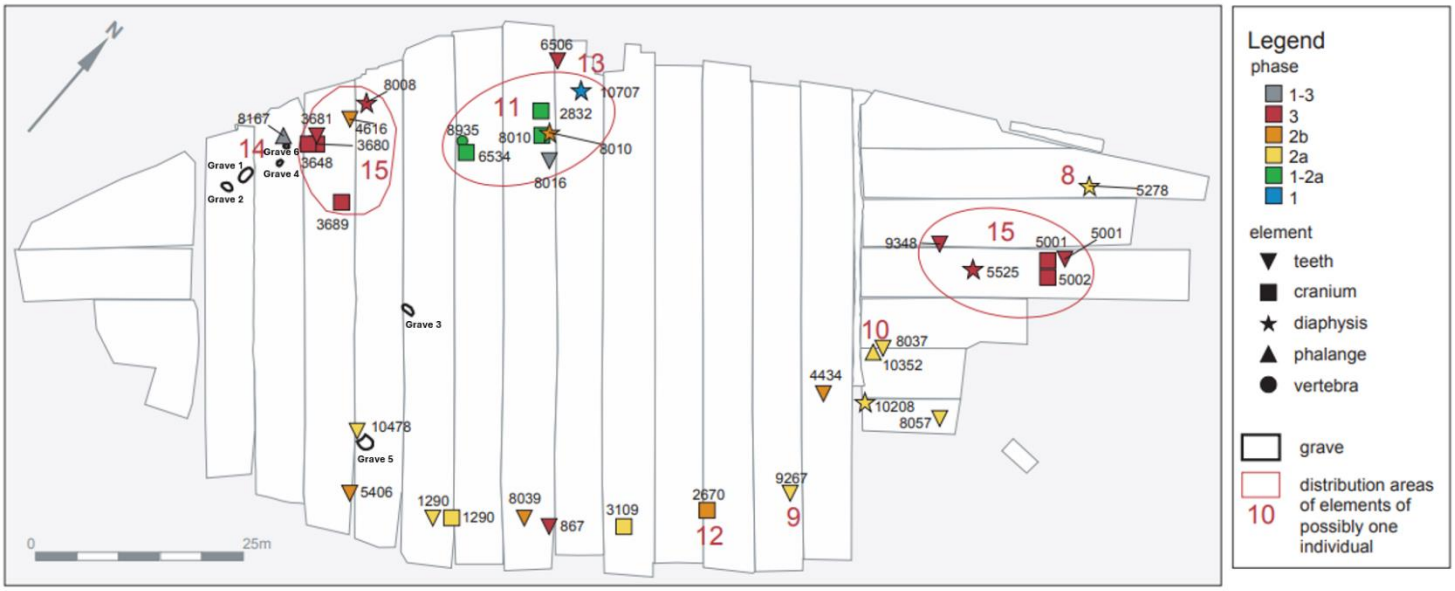

Figure 7: Excavation plan of all the disarticulated and graves found at Schipluiden per phase (Jongste & Louwe Kooijmans, 2006, p. 105).

Human bones found	Number of skeletal elements	Find location
Vertebrae (axial)	1	Edges of the refuse zone and near the graves
Diaphysis and phalanges	8	Edges of the refuse zone and near the graves
Cranium	11	Edges of the refuse zone and near the graves
Teeth	16	Edges of the refuse zone and near the graves
Skeletons	7 (one double grave)	Between the settlement features

Table 2: Overview of the human remains found at the site Schipluiden (Smits & Louwe Kooijmans, 2006, p. 101).

The water wells and burial pits both date to phase 2, with one grave from phase 3, showing that the burials were not from the final occupation phase of the site but were instead associated with the settlement when the water wells were still in use (Jongste & Louwe Kooijmans, 2006, p 54). This suggests that the community lived near the areas where they buried their community members. A similar pattern is seen with the scattered human bones, which are mostly found in the refuse layer, at the fences. The majority of these bones are from phase 2, followed by phase 3, with the fewest from phase 1. In total, 36 scattered human bones have been identified (see table 2) (Smits & Louwe Kooijmans, 2006, p. 101).

The bones appear to be grouped by phase. On the northeastern side of the site, the bones, teeth, cranium, and diaphysis fragments, along with grave 5, all date to phase 2a or 2b. This area lacks settlement features and is situated along the site's boundary, near the fences. Phase 3 bones are represented only by cluster 15 and human bone 867, with cluster 15 possibly belonging to a single individual (Smits & Louwe Kooijmans, 2006, p. 99). This reveals a clear pattern on the northeastern side of the site, where phase 2 bones dominate, the area contains few features, and it is located at the edge of the settlement. In contrast, the human bones are less clustered here compared to the western side of the site, which has a higher concentration of features. The western side of the site contains most of the graves (1, 2, 4, and 6), which are clustered closely together (Smits & Louwe Kooijmans, 2006, p. 101).

Nearby is cluster 11, consisting primarily of phase 3 human bones, which may also belong to a single individual. A similar pattern is observed further north, where cluster 11 includes bones from phase 1 to the early phase 2a. The only isolated grave is grave 3, located more toward the center of the site, with no skeletal elements found nearby. The distribution of disarticulated human bones differs notably from that of the graves. The disarticulated bones are spread across the entire site rather than being concentrated in a specific area. They are mostly found along the edge of the dunes within the cultural layer, with only five fragments recovered from settlement features such as pit fills (Smits & Louwe Kooijmans, 2006, p. 99). The deposition of human remains was likely practiced by the entire settlement, as it appears to have been a widespread practice occurring throughout all phases, rather than being limited to a specific location or phase. Both disarticulated human bones and skeletons are mostly absent from the center of the settlement, except for grave 3. In contrast, most graves are clustered in the northwestern part of the site (Smits & Louwe Kooijmans, 2006, p. 102). Although this clustering suggests that burying individuals within the farmyard may have been limited to a single household and reserved for certain adults and children, this seems unlikely. The majority of the buried individuals were older males, with an average age of 46, accounting for at least eight individuals. The graves contained the remains of five older males, one unidentified adult and two children, whose ages ranged from 9 months to 10 years. If the graves truly reflected a single household, it would suggest a group made up mostly of older men, with no women and very few children. This raises questions about why (older) male individuals were primarily buried in this small ‘cemetery,’ while women and most children were largely absent. In total, 15 individuals were identified across the 36 scattered human bones and 6 graves, including one double grave (Smits & Louwe Kooijmans, 2006, pp. 103–105).

The individuals appeared to be in good health, with no evidence of fatal diseases, and they lived in relatively favourable conditions. Most adults reached an older age, and the wear and tear on their bodies aligned with the expected physical toll of their labour, indicating they were strong and healthy. Implying that these individuals were not buried in the settlement due to negative factors like violence, diseases or poor social status (Smits & Louwe Kooijmans, 2006, p. 104). The graves were generally organized in a formal manner, though some post-mortem activities were observed. For example, the double grave revealed signs of violence, with one individual (individual 2) showing damage on the skull (Figure 9). Additionally, the burial of two adult males in the same grave suggests a potential unnatural cause of death (Smits & Louwe Kooijmans, 2006, pp. 104–105). The skull damage showed no signs of healing, indicating it happened close to the time of death. The single graves show a more formalized burial practice, featuring strongly flexed postures and the presence of some grave goods. These single individual graves followed a more standardized pattern; but, the legs of all individuals were tightly flexed towards the torso (Figure 8) (Smits & Louwe Kooijmans, 2006, pp. 96–99).

Figure 8: Individual 5, with extremely flexed legs toward the torso, indicating secondary practices (Smits & Louwe Kooijmans, 2006, p. 100).

Such positioning would be impossible to achieve while the flesh was still intact on the legs, suggesting that some form of post-mortem choices happened. As this is an abnormal position that moves beyond the normal movement of a body (Knüsel, 2014, p. 42). The binding of the legs may have taken place later, possibly after the flesh had decomposed. Speculation surrounds whether these skeletons were exhumed and reburied at a later time or left exposed on the surface to decompose naturally. Mummification may have played a role in preserving soft tissue, either through human methods like embalming or through natural processes (Booth et al., 2015, p. 1155). If skeletons or scattered human bones were left exposed on the surface for an extended period, there should be signs of gnawing or bite marks. Nevertheless, the excavation report does not mention any such marks, making it less likely that these deceased individuals bodies were left unsupervised to decompose.

The 15 individuals represent only 10% of the population that lived in this settlement. While the settlement most likely had around 25 people per generation over a span of at least two centuries (Smits & Louwe Kooijmans, 2006, pp. 105). Suggesting that the burials and scattered human bones account for only a small fraction of the total population. It implies the possible existence of a third, less detectable burial or disposal practice that left no trace in the archaeological record. The burials and scattered human bones found at the site may be linked to each other, potentially reflecting the secondary burial practice for the bodies that are shown with the extreme flexed legs (Smits & Louwe Kooijmans, 2006, pp. 104–105).

Figure 9: Skull fracture in Individual 2 from the double burial, inflicted at the time of death (Smits & Louwe Kooijmans, 2006, p. 95).

Key evidence: individual 15

The most important evidence on this site linking both the skeletons buried together in the northeastern corner and the scattered human remains is the presence of two clusters from individual 15 (Figure 7). The two clusters suggest that individuals were moved after their death and show a secondary handling of human bones post-mortem. Although other clusters from different individuals are present, there are no other indications of two clusters belonging to the same individual. These two clusters of individual 15, both from phase 3, are located 75 meters apart, one near the graves in the northeastern corner and the other in the northwestern corner of the site. The clusters are connected by the findings of the diaphyseal parts of a right femur (number 8008) and a left femur (number 5525), each found in one of the clusters. Both femurs show signs of periostitis (Smits & Louwe Kooijmans, 2006, p. 101), making it highly likely they belonged to the same individual. What these clusters indicate is that the movement of bodies took place at this site before they were either buried or deposited elsewhere. Interestingly, no other skeletal elements were found between the two clusters, suggesting that the movement of bodies was carried out with a certain level of care (or were not observed during the excavation).

Since individual 15 was not ultimately buried in the small 'cemetery' in the northeastern corner, this implies that the body was either deposited outside the settlement or underwent a burial practice that is no longer archaeologically visible. The presence of some of the bones within the settlement suggests that the body was initially kept there. Another important point is that none of the scattered human remains, whether in the cultural layer or burial pits, show any signs of gnawing marks. This suggests, in my view, that the bones were neither left exposed outside the settlement nor left unsupervised inside, where animals could have reached them. Evidence of extremely flexed legs seems to support the idea that they were kept above the surface, as such positioning would only be possible if the bodies had been stored somewhere before burial. I would argue that designated houses, separate rooms within households, or even platforms in the open air within the settlements may have been used for the decomposition and decay of bodies before they entered a new phase in the funerary process. If the scattered bones were, as I interpret it, an integral part of an intermediate phase of funerary practices, this would suggest that bodies were moved after decomposition had occurred. This could also explain the skeletal elements found on the eastern side, which may serve as evidence of bodies being relocated to their final resting place outside the settlement.

5.1.3 Discussion and conclusion

The skeletons and isolated human bones represent different stages of a single burial tradition: the isolated bones mark an intermediate phase, while the complete burials reflect its final stage, revealing how the community treated their deceased household members. The six individuals and 36 disarticulated human bones together indicate at least 15 individuals from this settlement, representing only a small portion of the population (Smits & Louwe Kooijmans, 2006, pp. 104–105). This suggests a settlement where a few individuals were buried near the living area, with evidence of secondary practices seen in the flexed leg positioning and the two clusters of Individual 15. But most individuals were likely buried outside the settlement or are no longer archaeologically visible (Smits & Louwe Kooijmans, 2006, p. 101). Highly flexed legs, have been found in other Neolithic cemeteries and settlements. For example, at Ypenburg, 25 burials show hyper-flexed legs (Baetsen, 2008, p. 125). A similar practice is seen at Cladh Hallan in Scotland, where multiple skeletons were buried beneath roundhouses. Two of these skeletons had tightly flexed legs, suggesting that they were wrapped or bound by individuals. Evidence indicates that these individuals were preserved for some time after death, possibly through drying their bones while keeping some soft tissue intact, a process also referred to as mummification, before being buried beneath the primary floor of a roundhouse (Parker Pearson et al., 2005, pp. 534–536). Possible signs of mummification and soft tissue preservation can only be determined by analysing the time between death and deposition, as well as studying microbial activity (Parker Pearson et al., 2005, p. 536). As of now, these kinds of analyses have not yet been performed on skeletons in Dutch settlements and cemeteries, so statements about mummification reflect potential treatments rather than certainties.

The disarticulated human bones found along the edges of the site do not necessarily suggest they came from disturbed older graves, as there is no evidence of earlier burials. There is no clear direct connection between these bones and the graves in the northwestern corner, nor is there evidence that they were left behind when moving these six specific individuals to the burial pits. Burials and disarticulated remains primarily belong to older males and children of various ages, indicating that burial practices within the settlement were not associated with negative connotations such as violence, low social status, or disease (Smits & Louwe Kooijmans, 2006, p. 104).

Another important aspect of the disarticulated human bones is that no cutting marks or evidence of tissue, muscle, or ligament separation were observed. I would argue that this indicates direct manipulation of the body by human hands was not practiced, and instead, natural decomposition was likely the secondary process.

The evidence makes it most likely that individuals placed in burial pits, within the settlement were initially kept elsewhere before being relocated to their final resting place in the northwestern part of the settlement. Since none of the human remains, both skeletons and isolated bones, show signs of gnawing marks, they were likely not left unsupervised in the open air outside the settlement, where animals could have accessed them. Making it more likely that they were kept indoors in specific places within the settlement or even inside the household itself, or perhaps outside on a platform. Raising questions about whether the scattered human bones are direct remnants of moving bodies or if they were part of another intentional practice. I would argue that these bones were not deliberately placed in specific locations within the settlement's cultural layer to highlight identity or serve as markers reinforcing the bond between community and landscape. Rather, they appear to be remnants left behind during or just before the body was moved above the surface.

Isolated human bones found on the east side, with no nearby features and situated just inside or outside the settlement fences, make it more likely that they are remnants of bodies that were held in the settlement to undergo a secondary handling before being moved outside. These isolated human bones date to the same phase as the small 'cemetery,' indicating that these moved bodies did not 'deserve' or receive a burial inside the settlement. Although only seven of at least 15 individuals were buried (Smits & Louwe Kooijmans, 2006, p. 104), the dispersed clusters of Individual 15, found 75 meters apart, suggest that bodies were temporarily kept within the settlement before being moved to their final resting place. Supporting the idea that the movement of bodies was a common practice at this settlement. The fact that human bones come from all phases of the settlement indicates that this was a continued choice by the community (Smits & Louwe Kooijmans, 2006, p. 102).

The combination of skeletons and disarticulated human bones in the Schipluiden case study suggests that Neolithic communities were likely not focused and had not their initial intent on deliberately leaving bones behind to mark their presence in the landscape or to emphasize the connection to the settlement. Instead, these scattered bones are likely the direct result of a secondary burial practice, which may be less visible in the archaeological record, such as leaving bodies on the surface (e.g. on a platform or within the house) within the settlement for an unknown period before eventually burying them in their final resting places, either outside or inside the settlement.

5.2 De Meteren: scattered human remains and barrows

5.2.1 Site background

From 1997 to 2000, the construction of the Betuweroute for the railway from Rotterdam Harbour to Germany led to several excavations in the river area. One notable settlement uncovered was De Meteren, which consisted of two main areas: De Bogen (with a focus on sections 30-1 and 45-1 due to skeletal remains) and Voetakker B (28-1) (Meijlink & Kranendonk, 2002, p. 11). Although the excavators classify these two areas as separate settlements, this case study will treat them as a single settlement, given their close proximity, similar features, and finds, with no evidence suggesting they are two different settlements. As Arnoldussen (2008, p. 138) also argues, defining clear boundaries for Bronze Age settlements is challenging, especially when only 100 meters without features or finds separate the two areas. The absence of clearly visible archaeological borders, such as fences, suggests that these areas were likely part of the same settlement.

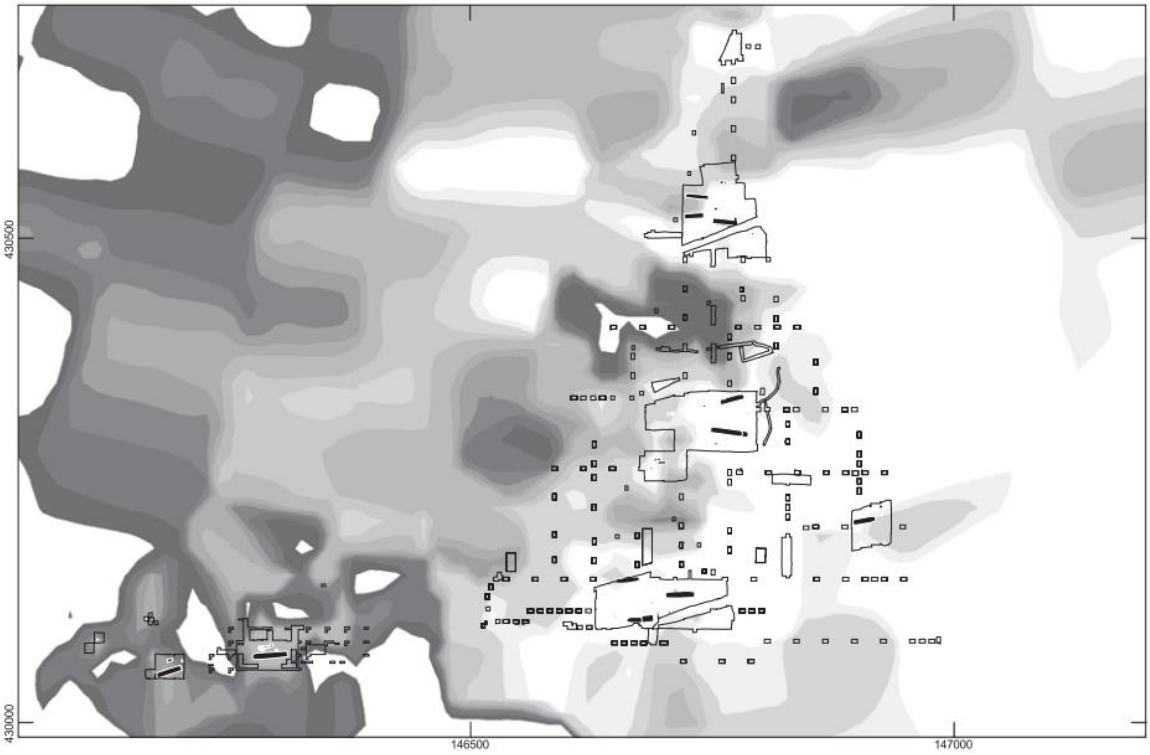

Figure 10: Excavation plan of the settlement De Meteren-Bogen (Meijlink & Kranendonk, 2002, pp. 26-27).

De Bogen spans an area of 3,15 hectares and is situated on a crevasse splay landscape, which includes five different crevasse phases at the site. According to the excavation report authors, the settlement dates back to three periods, spanning from the Late Neolithic B to the Middle Bronze Age B (2450–1100 BC), and was continuously inhabited for approximately 1,350 years. In total, 12,688 features were identified at the site, including postholes, wells, house structures, and ditches, indicating a continuous and permanent settlement (Meijlink & Kranendonk, 2002, p. 24). According to Arnoldussen (2008), it remains uncertain whether permanent occupation began around 2200 BC. While ceramics from the Bell Beaker culture and the Early Bronze Age have been discovered, the Late Neolithic and Early Bronze Age houses are not stratigraphically contemporaneous, or their existence is debated due to the dense clustering of postholes. Arnoldussen (2008, p. 139) argues that it is likely that these sites were used before the Middle Bronze Age B, though uncertainty persists through to the Middle Bronze Age A. The first well-supported evidence of permanent occupation appears in the Middle Bronze Age B (1500–1100 BC), when eleven houses dating to this period were identified. Radiocarbon dated features and pottery indicate that these people were likely present from the Late Neolithic B period onwards.

5.2.2 Graves and scattered human bones

Meteren-De Bogen reveals human remains spanning from the Late Neolithic to the Middle Iron Age, found in multiple contexts. These include two different categories of disarticulated human remains. The first group consists of 17 disarticulated bones found within the settlement. The second group includes five inhumation burials, a pit containing an unburnt foot, 55 disarticulated bones on the flanks, and six burnt fragments, all located inside a nearby barrow (Table 3).

Human bones found	**Number of skeletal elements**	**Find location**
Various long bone elements	5	Inside the cultural layer and inside a pit
Mandible	1	Inside a well
Cranial fragments	3	Inside the cultural layer
Teeth	5	Within the layer beneath the overlapping houses
Hand/foot bone	1	Within the layer beneath the overlapping houses
Unidentified skeletal elements (unburnt and burnt)	61	On the flanks of the barrow
Skeletons	6	In the barrow at the edge of the settlement

Table 3: Human remains found at the site Meteren-De Bogen (Meijlink & Kranendonk, 2002, pp. 679–680).

The scattered bones were found in the northernmost and westernmost parts of the settlement, with no remains in between, suggesting no direct connection. At site 28-1 (Voetakker B), eleven skeletal elements, including a femur, cranial fragments, and teeth, were recovered within the cultural layer, mostly inside or along the edges of five overlapping house structures. The overlapping suggests long-term occupation and rebuilding (Figure 12). Two bones were found outside the house plans: a complete femur in a peat-covered transitional zone, identified as an adult male, and a cranial fragment near the granaries. Most remains showed no signs of damage, though one cranial fragment had been intentionally burnt on the inside (Meijlink & Kranendonk, 2002, pp. 679–680). At site 30 (De Bogen), the northernmost location, six skeletal elements were found, including two tibiae, one fibula, one humerus, a mandible with two molars, and an unspecified bone fragment. Suggesting that long bones were predominantly deposited at this site. 30-De Bogen's remains were found in a different context than those at site 28-1, distributed across two features: S619-17 and S541-39. Feature S541-39, a pit located near house structures, contained a unspecified fragment and a left tibia, both belonging to an adult (Figure 11). Given its proximity to the houses, this pit may have functioned as a refuse pit. The second feature, a well (S541-17), contained four skeletal elements, all from adults, including a humerus, a tibia, a fibula, and a mandible with two molars. Unlike the pit, this well was more isolated, located primarily near fences rather than houses, possibly marking the edge of the settlement. The well was intersected by a fence, suggesting it may have been covered and abandoned after the deposition of the skeletal remains (Meijlink & Kranendonk, 2002, p. 680).

The excavation report does not mention any other material types being deposited within either the well or the pit. All human remains found at site 30 show no signs of damage, and all are unburnt fragments. Almost all scattered human bones from both sites 28-1 and 30 belong to adults, particularly those relevant to the moment of death. The only exceptions are the three deciduous teeth from subadults, which do not indicate whether these individuals died at that time. Indicating that the deposition practice was reserved exclusively for adults (Meijlink & Kranendonk, 2002, p. 679).At site 45 (De Bogen), the southernmost location, five inhumations were found inside a barrow directly connected to the settlement (Figure 13). While this may seem like a 'formal burial,' the finds suggest a more complex practice, positioned between 'formal' and 'non-formal' funerary traditions. The 45-oost barrow has five phases, spanning from the Late Neolithic B to the Middle Iron Age. Phase one includes a pit with an unburnt adult human foot, likely part of a grave ritual predating the barrow (Meijlink & Kranendonk, 2002, p. 681). No post-mortem modifications were observed. The pit (feature 503-31) also contained 19 Bell Beaker sherds and animal bones from deer, pigs, cattle, and mice, including deer foot bones (Meijlink & Kranendonk, 2002, p. 684). Phase two includes only an eccentric ditch, with no graves. Dating is uncertain, based on one Hilversum-type sherd from the Middle Bronze Age A, and unclear stratigraphy (Bourgeois & Fontijn, 2008, p. 51). There is no sign of a barrow in this phase, suggesting it was built later, likely in the Middle Bronze Age B.

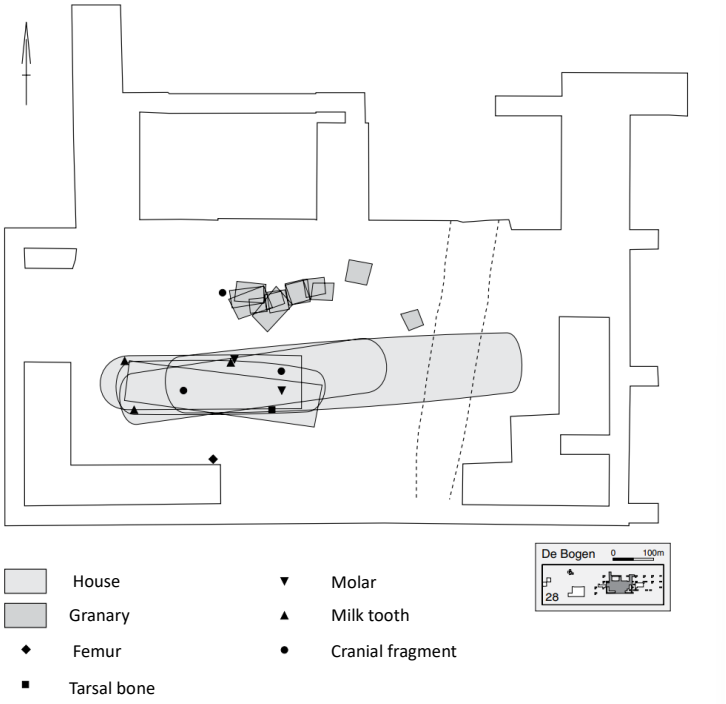

Figure 11: Overview of all the eleven scattered human bones found at the cultural layer of site 28-1 (Meijlink & Kranendonk, 2002, p. 679).

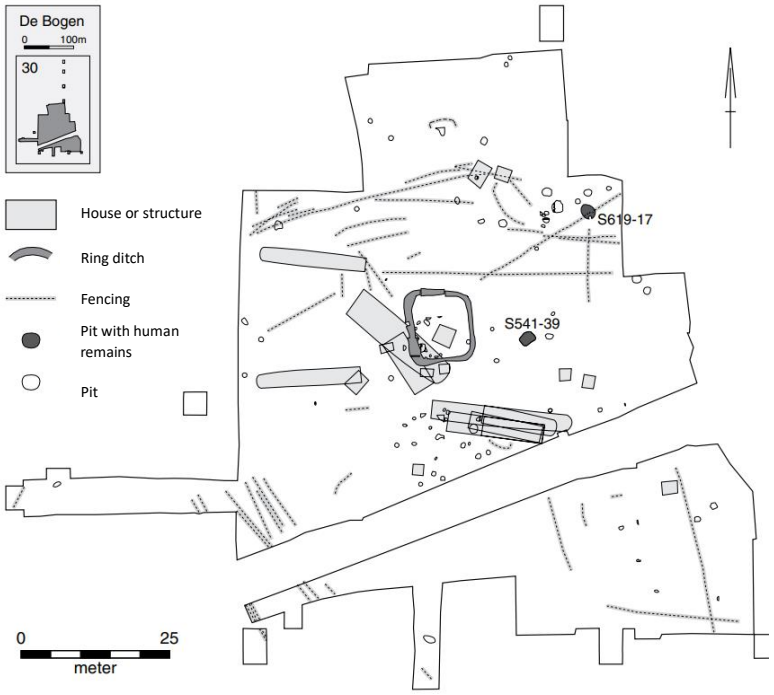

Figure 12: Overview of the six scattered human bones found at site 30 in two features (Meijlink & Kranendonk, 2002, p. 680).

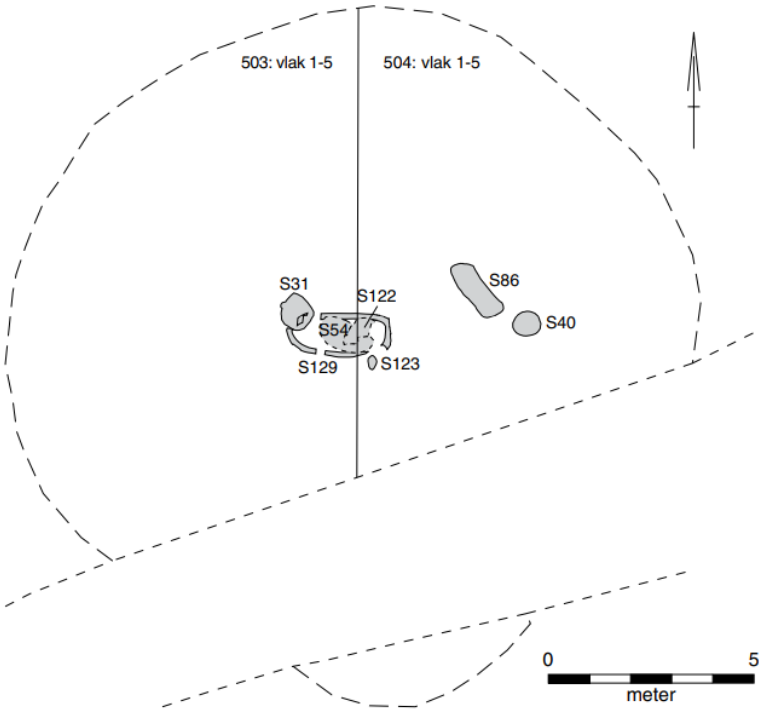

Figure 13: Six burials found inside the Meteren barrow, ranging from the Late Neolithic to the Middle Iron Age (Meijlink & Kranendonk, 2002, p. 667).

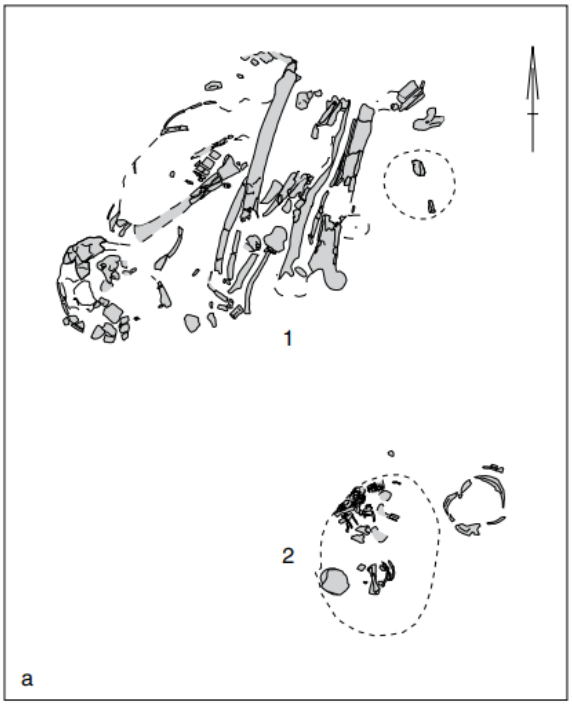

Figure 14: Drawing of Individual 1, featuring extremely flexed legs, and two barrows discovered inside House 45HH (Meijlink & Kranendonk, 2002, p. 668).

Most activity around the grave structure occurred during the Middle Bronze Age B and Late Bronze Age. In phase 3, the first burial, individual 1 (503-122), was placed centrally in the barrow, in a right-flexed crouched position with legs extremely bent toward the chin (Figure 14). (Meijlink & Kranendonk, 2002, pp. 680-681). A similar posture is seen in an infant burial at Zwaagdijk (Middle Bronze Age) (Modderman, 1964, 30), and earlier examples from Schipluiden (Middle Neolithic) (Smits & Louwe Kooijmans, 2006, p. 95), suggesting a broader funerary tradition. While grave 1 is described as central to the barrow, it may also align with the center of house 45HH, a three-aisled structure built directly on top. Radiocarbon dates place both the house and grave around 1600–1400 BC, matching the surrounding ring ditch (Meijlink & Kranendonk, 2002, p. 209). Though small mortuary houses are known from this period, the size of house 45H suggests it was a fully functional dwelling, not a symbolic structure. Grave 2, an infant burial (0–9 months), was placed south of grave 1 inside house 45HH, indicating continued use of the house for burial after it was occupied. It is unclear whether graves 1 and 2 were part of a double burial or separate events (Meijlink & Kranendonk, 2002, p. 209). A second house, 45BH, was built nearby during phase 3, partially overlapping the barrow, suggesting the ring ditch was already filled. Phase 4 (Late Bronze Age) saw grave 3, an adult male with bronze grave goods, placed directly over grave 1 (Meijlink & Kranendonk, 2002, p. 210). No Late Bronze Age or Iron Age settlement remains were found, suggesting the barrow stayed visible and was reused. In phase 5 (Middle to Late Iron Age), two more burials were added: grave 5, a child (9–12 years) missing the lower body likely due to modern disturbance; and grave 6, a youth (14–17 years) with bound hands. A possible cremation burial included six burnt fragments (Meijlink & Kranendonk, 2002, pp. 210–211). 51 unburnt bones were found scattered throughout the barrow. Some may belong to individuals 1, 3, 5, or 6, though only a few fragments could be tentatively linked. Disarticulated human bones were also found in settlement features and cultural layers at sites 28-1, 30, and 45-oost (Meijlink & Kranendonk, 2002, pp. 683–687).

5.2.3 Discussion and conclusion

At De Meteren, human bones were not placed in just one specific area, but show different patterns across the settlement. At 28-1, most human bones appear inside overlapping house plans, some inside, others along the edges of older houses, suggesting they were either displayed as ornaments during occupation or left as an 'abandoning offer.' In contrast, 30-1 shows a different pattern, with bones deposited in features like a pit and a well, located further from the houses. At 45-Oost, a barrow becomes part of the settlement, with a three-aisled house built on and beside it over time. Together, this shows that people used different ways of depositing remains in the same place, across thousands of years.

The practice of displaying human bones inside houses is not unique to De Meteren. At Eigenblok, for example, human bones were found at the house entrance (Jongste & Koot, 2005, pp. 623–628), and a similar practice is observed at the English settlement of Must Farm. At Must Farm, a 12-month occupation phase during the Middle Bronze Age was followed by a destruction event, leaving a snapshot of how people lived at that time. Four out of six skeletal elements were found within the house plans, primarily consisting of skull or mandible fragments and various long bones (Dodwell, 2024, p. 1167). Many of the bones found in Must Farm houses showed evidence of manmade modifications, such as cutting marks on long bones and the polishing of skulls to create a flattened surface. Manmade modifications suggest that the practice of keeping and displaying bones within the household was not uncommon during this period (Dodwell, 2024, pp. 1165–1172).

Another possible interpretation of the deliberate deposition of human bones is that they may have served as markers of time and space within the settlement. In this context, the disarticulated skeletal element could be interpreted as representing the entire individual and may have served as a symbolic resource to legitimize power structures, marking boundaries between different spaces, such as the settlement and the surrounding landscape (Gerritsen, 2003, p. 63). While the construction of a house was a crucial event, the destruction or abandonment of a house likely had a similar impact on the local community. At De Meteren, the presence of five overlapping house structures from the Middle Bronze Age B (1500-1100 BC) suggests that these houses were not simply abandoned and left to decay (Meijlink & Kranendonk, 2002, pp. 679–680). Instead, they were demolished shortly after abandonment, with new houses built in the same location. The repeated reuse of the same spot in such a short time likely highlights the importance of the place to the local community. Leaving human bones may have held deeper meaning than leaving other kind of objects, strengthening ties to the house and reinforcing memory and identity after death (Brück, 2009, p. 65).

A similar treatment of human bones can be seen at site 30, where human bones were found inside the pit and well (Meijlink & Kranendonk, 2002, pp. 679–680). The deposition of the bones in the final layer of the pit indicates that this act served as some kind of closure between the individuals and the features. While the author's report does not specify when the bones were deposited in the well, whether at the beginning, during its use, or at the end, it is most likely that this occurred at the end of the well's use. Since the well was filled up, and human bones inside wells could contaminate the water, it is possible that the deposition of bones was part of closing the end of permanent habitation. This act could have served to continue to claim the land after physically leaving it, by rendering wells unusable, breaking down houses, and leaving bones inside important settlement features.

The barrow was integrated into the daily lives of the people living in De Meteren and was not necessarily viewed as separate from their living spaces, unlike cemeteries. This interconnectedness between life and death is also reflected in the combination of so-called 'formal burials' and everything in between, suggesting that formal burial was not a requirement.

The 'formal' burials, such as those of individuals 1 to 3 during the Bronze Age and individuals 5 and 6 during the Iron Age, contrast with the less formal practices, such as the singular foot burial and the continued presence of 51 disarticulated bones and 6 burnt bones across the barrow (Meijlink & Kranendonk, 2002, pp. 683–687). This interconnectedness is further supported by the house structure located directly on top of the barrow. While this house may have served as a 'mortuary house,' the architectural traits and size suggest it was primarily a living space, rather than one dedicated solely to funerary practices. The size and period of the house also differ from typical 'mortuary houses,' which are usually much smaller and attributed to later periods, such as Iron Age cemeteries.

The three-aisled house, possibly used as a mortuary house (Bourgeois & Fontijn, 2008, p. 52), might explain the different practices observed at the barrow. The extremely flexed position of individual 1 and the scattered human remains over the barrow coincide with the house, with individual 1 being buried exactly in the center. The binding of the legs was clearly a secondary practice, carried out after death, since it would be impossible to bind the legs before defleshing (Knüsel, 2014, p. 42). The bodies were likely kept somewhere else (perhaps inside the mortuary house) before being buried in the ground. The house on top of the barrow may have been considered the space for all burial practices. This might also explain the non-related 51 disarticulated bones at the barrow, with only three bones likely linked to the individuals buried there (Meijlink & Kranendonk, 2002, pp. 683–687). Secondary practices, such as moving bodies, cutting off bones, mummification, and leaving bodies to decompose, may have led to the scattering of smaller bones. Raising questions about where the other bodies were left or buried after undergoing secondary practices. Were they left at the edges of houses and features at sites 28-1 and 30?

This case study suggests that the treatment of human remains was likely linked to the relationship between the local community and the landscape where their settlement was placed. It also highlights different final phases for the human bones, depending on where they ended up. While the end locations (inside features, the barrow, and a house structure) differ, the secondary practices (such as leaving bodies at the surface and fragmentating the body afterwards) may have been the same. The 'mortuary house' atop the barrow, located so closely to the deceased individuals, would have been the perfect place to allow bodies to decay, either through human intervention or natural processes. The scattered human bones at the barrow could have resulted directly from leaving bodies to decompose or other secondary practices, with these remains being the remnants left behind. Meanwhile, the scattered human bones within the features and house constructions might have been intentionally left behind as markers in the landscape.

5.3 Ezinge: Worked skulls and burials in farmyards

5.3.1 Site background

Ezinge is a Middle Pre-Roman Iron Age to Middle Roman Iron Age (500 BC – 300 AD) settlement located in the municipality of Westerkwartier in Groningen. The excavation covered an area of 1.5 hectares, which is only 10% of the entire terp that was built in the Iron Age (Figure 15). The first excavations were done between 1923 and 1934 by A. E. Van Giffen and the site was re-examined beginning in 2011. The site was almost completely destroyed in the early 20th century due to quarrying. The excavation did not focus on horizontal planes but tried to follow stratigraphy as much as possible, resulting in the identification of twenty-two different levels, with an emphasis on the settlement features (Nieuwhof, 2015, p. 159). The first occupation, from 500 BC to 200 BC, consisted of one to three houses. This number increased toward the end of the Iron Age (around 100 BC), with up to four houses and the introduction of new pottery styles, such as Wierum pottery. During the Middle and Late Iron Age, the settlement likely developed into a village with between two and six houses, reaching its highest number of houses during the Early Roman Iron Age, with around 15 houses (Nieuwhof, 2015, p. 160). It is important to note that A.E. Van Giffen's excavations primarily focused on the center of the terp and the houses, meaning that other settlement features, such as ditches, wells, and pits, did not receive attention. As a result, the material categories are mainly linked to the houses and not to other features. Another point to consider is that the excavation took place nearly 90 years ago, and many finds have gone missing. The excavation drawings are also not as organized or structured as those in modern excavations (Nieuwhof, 2015, pp. 159–160).

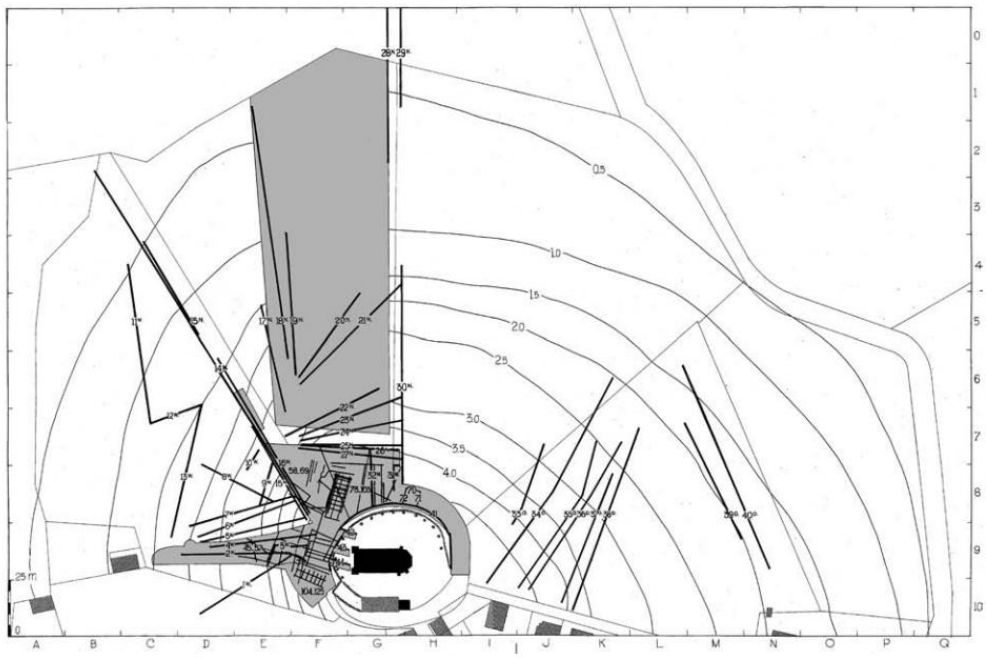

Figure 15: The excavated area of the Ezinge settlement, the grey areas are trenches and the black lines are profiles (representing only 10%) (Nieuwhof, 2015, p. 160).

Since most of the settlement features were not examined during the excavations, it is impossible to determine the permanent occupation phases based only on the house plans that were found. The settlement data comes from the 2,052 finds, 350 associated finds linked to documented features, and 220 soil and botanical samples. While the site was inhabited into the Early and Middle Roman Iron Age, this case study mainly focuses on the human remains and burials from the Middle and Late Pre-Roman Iron Age (500 – 0 BC) (Nieuwhof, 2015, pp. 159–160).

5.3.2 Graves and scattered human bones

The entirety of the permanent settlement led to the accumulation of 13 complete burials within the settlement and 13 scattered single bones across all four phases of the site (Middle Pre-Roman Iron Age to Middle Roman Period). This shows a continued handling of burials and bones at the settlement, even well into the Roman Period, as people continued their prehistoric practices (Nieuwhof, 2015, pp. 195–198). For the Pre-Roman Iron Age, only 7 burials and 5 single bones are discussed, while the other 6 burials and 8 single bones from the Early and Middle Roman Iron Age are briefly mentioned to show the continuity of the same practice into a new period (Table 4).

Human bones found	Number of skeletal elements	Find location
Cranial fragments	5	Inside and near houses and byres
Skeletons	7	Inside and near houses and byres

Table 4: Human remains found at the site Ezinge during the Iron Age (Nieuwhof, 2015, pp. 195-198).

These human remains are not confined to a specific area of the excavation, but were spread throughout the settlement. This indicates that leaving disarticulated human remains within the settlement was a practice carried out by all households. With only 10% of the site excavated, it suggests there must have been more human remains in the unexcavated 90%, pointing to a widespread practice. With the community consisting of 2 to 6 houses, the human bones and burials do not represent the entire population at the terp, but rather a small portion of the people (Nieuwhof, 2015, pp. 159–160). For the burials, all three subperiods are covered; however, the Late Pre-Roman Iron Age includes the most burials. In the Middle Pre-Roman Iron Age, the earliest inhumation, a partial skeleton without its skull and other unknown skeletal parts, was found 10-15 meters north of House 7 in the salt marsh (Nieuwhof, 2015, p. 194). The position of the skeleton is also unclear. It is uncertain whether the incompleteness was caused by practices from the Late Iron Age or by issues during excavation, due to the lack of information. The Late Pre-Roman Iron Age includes five skeletons, all directly associated with houses. These differ in placement, ranging from directly under or inside houses to being 5-10 meters away from house plans. This shows a strong connection between the settlement and the deceased individuals (Nieuwhof, 2015, p. 195).

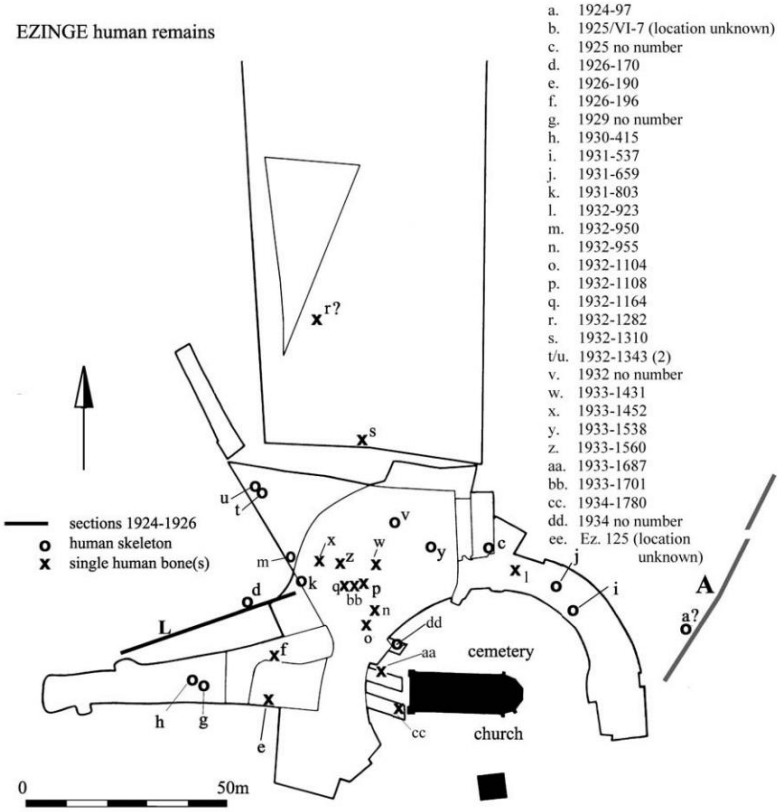

Figure 16: Distribution of the skeletal elements and burials across Ezinge (Nieuwhof, 2015, p. 402).

Figure 17: Irregular burial (P-415) with an inconsistent burial pit and unnatural body position (Nieuwhof, 2015, p. 197).

Skeleton N-803 and RS-no number (1) were found within the house platforms. RS-no number (1) was located inside House 15, while N-803 had no specific house number. The two skeletons were either dug into the floor after the house was already constructed or placed into the platform during the house's construction (Nieuwhof, 2015, p. 196). This suggests that the burials were not part of the house's destruction or end, but rather that people were actively living with their deceased (relatives) beneath the house, showing that the deceased were kept close to where people lived. Possibly, the placement of the house correlated with when an individual died, and that houses were erected in relation to the deceased individuals in their households (Nieuwhof, 2015, p. 195). Although previous burials were often visible to the landscape and the community, the location within or close to the house might have moved the ritual and religious aspects of life to a more private location, such as within their own homes (Parker Pearson, 2023, p. 157). All skeletons from this period were placed in a supine body position with varying head orientations, suggesting that, aside from the standardized body position, there were no other standardized practices. There was some standardization in the burial practice, as almost all skeletons were buried on their backs in appropriately sized burial pits, indicating that these were 'formal burials' that were planned and not hastily executed. Almost no burials included grave goods, except for the irregular burials (P-415 and O-no number). For RS-no number (2) and N-170, the skeletons were found near the houses, often only 5 to 10 meters away from the house structures. One skeleton (BAI 1925/VI-7), dated to this period, only had a skull recovered but was most likely part of a complete skeleton. Further information is lacking in the publication, limiting the understanding of this find. This evidence shows that, during this phase, individuals were primarily buried either in the farmyard or under the house platforms (Nieuwhof, 2015, pp. 194–196).

The transition from the Late Iron Age to the Early Roman Period includes one burial: skeleton P-415 (Figure 17). This skeleton did not follow the typical supine body orientation but instead had extremely flexed legs to the right side of the body, in an unnatural position, where the pit was not large enough for a formal burial. This suggests the pit had a different usage before the skeleton was placed inside. Similar to other case studies, the unnatural flexing of the legs indicates that this was likely done after the individual had died. This skeleton is closely related to the O-no number skeleton, which was also crouched on its right side, though with less extreme leg flexion. Both skeletons were found near the same house. Into the Roman period, five skeletons were located, either 15-20 meters away from the houses or close to them. One double grave contained two skeletons, both in a supine body position and facing northeast. The other three skeletons from this period have no further details. This continued practice shows a clear correlation between the burial and the house. Most of the burials show no signs of unnatural or violent causes. Combined with the fact that most skeletons were placed in similar positions, on their backs, in appropriately sized burial pits, this indicates that there was care in the deposition of these skeletons within the settlement (Nieuwhof, 2015, p. 195).

The skull seems to have had a special position for the Ezinge community during both the Iron Age and Roman Period, as nearly all of the single human bones found are from skulls. A total of 13 single bones were found, and 11 of them are skull fragments (Nieuwhof, 2015, p. 197). What is interesting is that all the burials are connected to houses, and the same is true for the scattered bones. These bones were either found inside the byre of a house or within a few meters of the houses. In the Middle Pre-Roman Iron Age, three bone fragments were found: two from skulls and one that was a mix of unspecified bones and sherds. UV-1701 was found in an early terp layer, while RS-1560 and RS-1452 were found in the byre of House 10. By the end of the first century BC, two finds were made: a skull fragment (RS-1431) inside the byre of House 9 and a worked skull bowl (O-1687) (Figure 18) (Nieuwhof, 2015, p. 198).

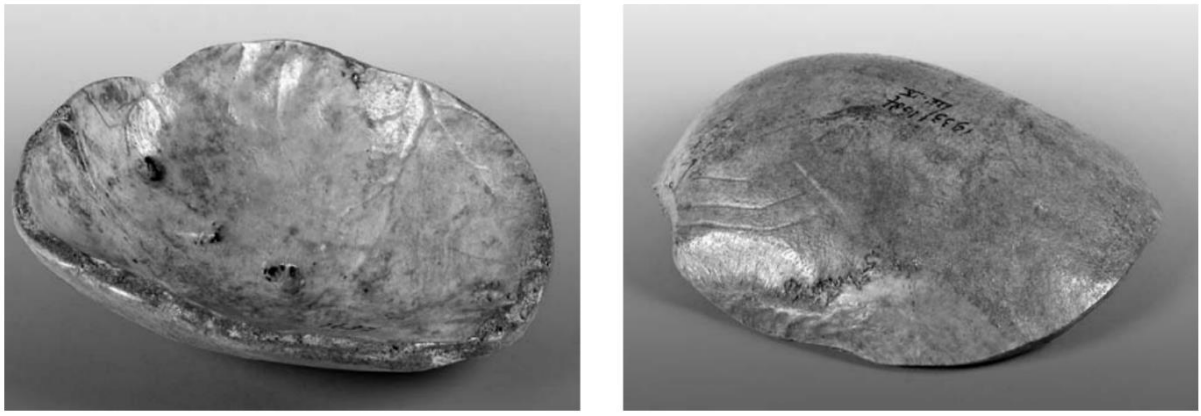

Figure 18: Worked skull (O-1687) (Nieuwhof, 2015, p. 198).

The transition between the Iron Age and Early Roman Period shows a continued use of skulls, although not in byres anymore. Instead, they were found outside the houses, just a few meters apart from three different houses: 11, 25, and 27 (Nieuwhof, 2015, p. 198). While skulls were still in use, there was an increased presence of modified or worked single bones. Of the four bones found, two were modified, either polished or worked, and one smaller fragment was perforated, possibly for use as a pendant or hanger inside a house. The modified fragments included a worked skull bowl with sherds and a playing counter. The perforated skull fragment was accompanied by three pots and two loom weights. It seems that modified skulls were found in assemblages, while unmodified bones were found alone. One skull fragment also showed post-mortem damage, with gnawing marks. After the early 2nd century AD, the practice continued with four single bones, most of which were modified. One bone, a handle made from a human humerus, was found alongside pottery, and another handle made from an animal bone was found in the hearth of House 27 (Nieuwhof, 2015, p. 201). The remaining three bones were found in a layer, while two were found in an unknown context. All skulls, including that of a child, were modified, with one showing the upper part of the skull cut out. In total, two of the 13 skeletal elements showed gnawing marks (Nieuwhof, 2015, p. 198).

5.3.3 Discussion and conclusion

The Ezinge community shows a continued and similar pattern of depositing human remains over nearly 1,000 years, with both single bones and complete skeletons receiving what could be seen as a 'formal burial.' All of the bones are linked to the households and farmyards. Only 10% of the settlement was excavated, revealing just a small fraction of what actually took place at Ezinge (Nieuwhof, 2015, p. 159). Like the 13 skeletons and 13 individual bones, these remains represent a select group of people who were buried within the settlement. The spread of bones across the site, as shown in Figure 16, suggests that this practice was not limited to just one household or a specific area but was a widespread practice across the community (Nieuwhof, 2015, p. 195). It implies that handling human bones was considered a normal part of life. This also suggests there was not a single, formal burial location. Instead, the connection between the house and the burial was more important than a central cemetery, possibly meaning that those buried near houses probably belonged to those households (Nieuwhof, 2015, pp. 195–197). These burials were carried out with care, suggesting that the people buried in the settlement were treated with respect. Two individuals from the transition between the Iron Age and Roman Period received different treatment compared to the others. Although the context was similar, the burial pits for these individuals were not the right size, too deep and too small to be considered proper burial pits. Both were placed near a house, but one, P-415, had an extremely flexed position (Nieuwhof, 2015, p. 197).

Interestingly, authors have often argued that single inhumations inside the terp were part of human sacrifices and that human skulls modified into objects resulted from cannibalism and/or headhunting of enemies (Gerrets, 2010, p. 114). I would argue that these burials and isolated human remains were not necessarily associated with negative connotations, such as defeated enemies and were then used to display heads as warnings for the settlement's community. Even the worked skulls do not show signs of being mounted on stakes, unlike the skulls at Houten-Castellum, which have clear holes indicating such treatment (Panhuijsen, 2017, p. 741). Cannibalized human bones usually show cut marks and fractures, but the isolated remains and skeletons from this site lack such signs of post-mortem damage (Gerrets, 2010, p. 114). There is no indication that the burials inside the terp were treated differently from those buried in designated cemeteries. The skulls were also not found at the edges of the terp, where one would expect them to be if they were meant as displays of power and dominance, but rather within byres of houses or just a few meters from houses. This is further supported by the presence of mostly isolated skulls, likely deliberately taken from inhumations (such as the missing skull from Individual BAI 1925/VI-7) and either repurposed for a different use or buried separately as articulated body parts (Nieuwhof, 2015, p. 195). The clear preference for skulls in this terp settlement raises questions about their origin. Were these individuals originally buried inside the settlement, possibly in unexcavated areas? Or were their skulls deliberately taken as a form of secondary treatment from individuals buried elsewhere? The close relationship between death and living is emphasized not only by the proximity of burials and isolated human remains to houses but also by the active modification of these human bones. This indicates a deliberate and post-mortem practice that kept deceased individuals within the cycle of life inside the settlement (Nieuwhof, 2015, p. 200). If singular human remains were taken from inhumations, this suggests that bodies were first left to decompose before specific skeletal elements were removed for further distribution or modification.

Annet Nieuwhof (2015, p. 273) proposes three possible explanations, excluding cannibalism and boiling of skeletons, as no evidence supports these practices:

- A person was first inhumed and left to decay, after which the body was exhumed for secondary practices.
- The body was left to decompose, exposed to the weather and natural processes, but protected from animals - perhaps placed on a platform of stone or wood, or even inside a household.
- The body was left to decompose, exposed to the weather and natural processes, but within reach of animals.

I would argue that the two most likely scenarios were either inhumation followed by exhumation and alteration of the body or decomposition above the surface, out of the reach of animals. None of the Ezinge bones, neither the skeletons nor the isolated human bones, show any signs of gnawing marks. These marks would have been unavoidable if animals, such as dogs were kept within the settlement, had free access to the remains. The secondary practice of removing, depositing, and, in some cases, modifying skulls, along with their overrepresentation, suggests that these communities placed special significance on this skeletal part (Hertz, 1960, p. 139). Perhaps the 'identity' of the individual remained part of the community when the head was preserved, serving as part of a cosmological motif and an embodiment of the person (Armit et al., 2006, p. 11). Regardless, the deliberate choice to bury individuals and deposit isolated human remains appears to be directly linked to identity and ancestral claim reinforcing a sense of belonging. These practices likely served as markers to establish the community's connection to the landscape and their family identity (Nieuwhof, 2015, p. 278).

This case study demonstrates the continuation of similar treatments of human remains, previously observed in both the Neolithic and Bronze Age case studies. It reflects a long standing tradition, beginning in the Bronze Age, where human remains served as markers and carried an identity related purpose. The deliberate deposition of these remains close to households suggests that ancestors held ongoing importance, maintaining a presence within the settlement and reinforcing the community's connection to the landscape. This highlights the increasing importance of identity during the Bronze Age, a concept that persisted through the Iron Age and into the Roman period, in a similar way. The worked skulls, repurposed into bowls, further emphasize the close relationship between life and death. This practice indicates that handling human bones remained an integral part of their culture rather than becoming something distant or alienated after a household member passed away.

6. What is the practice of deposition in settlements?

6.1 Patterns of prehistoric deposition in the Netherlands

Central to understanding how disarticulated human remains in settlements relate to the funerary practices of prehistoric communities is the need to understand the depositional locations where these human bones were placed. ‘Deposition in settlements' is a vague term, as a settlement has many facets, including its features, relationship to the landscape, and the areas where people walked and lived. However, there are specific recurring choices in the deposition context. Figure 19 shows a list of deposition locations in settlements. While these different contexts tell a different story about how human remains ended up in a certain location, they likely do not fully reflect the choices individuals made regarding deposition. Instead, they provide a simplified overview of what bones remain in the archaeological record and how we can interpret them (Fontijn, 2002, p. 211). For example, the term 'cultural layer' is a broad one, referring to the layer where people lived and worked, and where refuse was left behind. More specifically, the location of deposition, in relation to both the spatial layout of the settlement and its structures, leads to different choices and interpretations, such as inside settlement features, at the edges of the settlement, or near cemeteries and burials.

In this chapter, I will discuss various deposition locations and the choices associated with them, based on a collection of 84 settlements and over 511 skeletal elements. Suggesting that these depositional locations reflect intentional choices regarding the placement of human bones. The disarticulated bones reveal a recurring pattern that demonstrates a practice, one characterized by formality, structure, and repetition, that is connected to the social relationships between the living and the dead. As Bradley (2005, p. 13) notes, a practice is 'a specialized form of behaviour which emphasizes some of the concerns of daily life through a kind of performance.’ In Chapter 8, these choices and recurring patterns will be explored through the concepts of personhood and identity, based on their relation to the household and the settlement.

Deposition locations

Cultural layer

- Near or inside the house
- At the edges of the settlement
- Near burial pits / small cemetery

Natural features

- In proximity of the settlement, in the transition zone between wet and dry places
- Natural features through the settlement plan

Settlement features

- Inside features that form the basis of borders of features or the settlement
- Features in connection to the farmyard

Burial features

- Burial pits inside the fences of the settlements
- Inside the barrow ditches
- In close proximity of the settlement

Figure 19: All possible deposition locations observed across Dutch prehistoric settlements (Inspired by Fontijn, 2002, figure 10.1).

6.2 Disarticulated human bones in the cultural layer during the Neolithic? Meaningful or accidental?

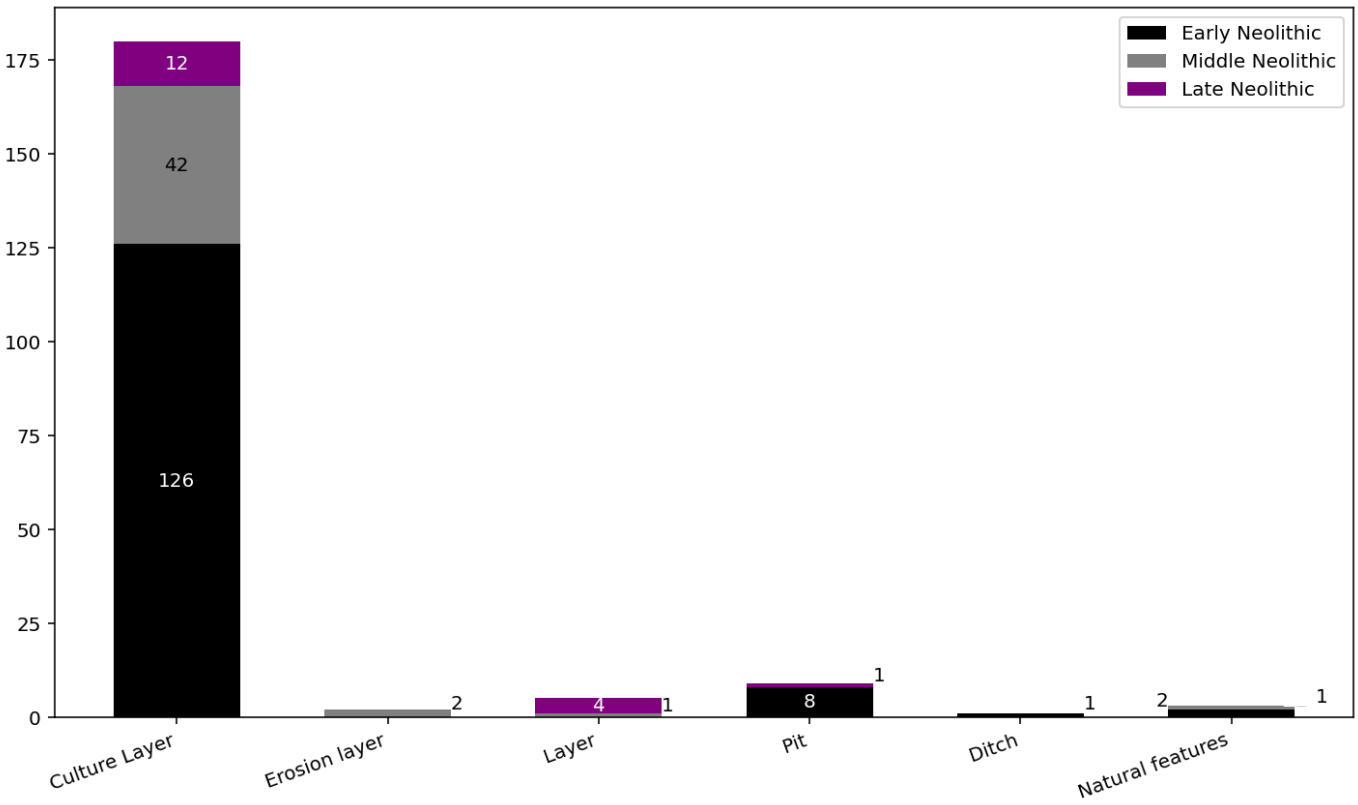

Figure 20: The deposition locations of disarticulated human remains, including settlement features, layers, and natural features, are presented, with the dominant deposition context being the cultural layer throughout the entire period.

One of the first observations from the data is the large number of skeletal remains found in Neolithic settlements, with most disarticulated remains concentrated in the cultural layer. The cultural layer, representing the continued use of space for living and working, appears to be the dominant location for the deposition of disarticulated human remains. In fact, 90% of all 200 skeletal elements recorded across 23 Neolithic settlements were found in the cultural layer (Figure 20). This is further supported by the small number of human remains found in features outside the cultural layer. Disarticulated human remains were found in settlement features at only three of the 23 sites. At Swifterbant S21, one pit contained seven human bones, likely from the same individual. At Swifterbant S22, a single tooth was found in a ditch. At Molenaarsgraaf, the left radius appear to have been deposited directly from Grave 2 into a nearby pit. A similar pattern is seen in natural features, such as at Schokland P14, where a mandible was deposited in a crevice, and at Swifterbant S3, where both a mandible and a tibia were found in a creek. Aside from these 11 skeletal elements, all other remains were found within the cultural layer or other type of layers. This shows that human remains were primarily deposited in the cultural layer, while other features played a minor to no role in Neolithic deposition practices. It is often argued that objects found in the cultural layer are simply remnants of discarded refuse, but does the data truly support this interpretation?

When referring to the cultural layer, we are not merely discussing a single human bone that accidentally ended up there as 'settlement refuse'. Rather, sites such as Schipluiden, Hardinxveld-Giessendam sites, Swifterbant (sites S2, S3, S21, S22) and Schokland P-14, entire clusters of bones, sometimes up to 82 skeletal elements, were left behind in this settlement layer. Most of these clusters are not located near settlement features such as houses, pits, wells, or granaries, where human activity was highest. Instead, they are more often found towards the borders of the settlements, where fewer settlement features are present. These areas may have been used more for refuse zones and were sometimes located near small 'cemeteries' containing a few skeletons inside burial pits. Disarticulated human remains are often found throughout all phases of Neolithic settlements, including the beginning, middle, and final stages. At sites with the highest number of skeletal remains, most are from the early phases or from times when the settlement was still actively in use.

Schipluiden shows a combination of disarticulated human remains found in refuse zones, where the settlement is demarcated by fences. In these zones, which have little to no settlement features, most of the bones were discovered. If not there, human bones were found next to the small cemetery containing six inhumation burials (Smits & Louwe Kooijmans, 2006, p. 102). Similarly, at both Hardinxveld-Giessendam sites, most skeletal remains were found near the two graves, with no other settlement features nearby, and they do not belong to the individuals buried within the graves (Smits & Louwe Kooijmans, 2001a, p. 427; Smits & Louwe Kooijmans, 2001b, p. 485). Similar choices have been observed at the smaller sites, where fewer human remains were found, which also supports this recurring location of human remains. For example, at Den Haag – De Wateringse Binnentuinen, only highly fragmented human remains were found, with no settlement features nearby (Van Dijk et al., 2017, p. 207). Likewise, at Urk E-4, two disarticulated skulls were found in close vicinity to a small cemetery within the settlement, although they themselves did not belong to any burial pits (Peters & Peeters, 2001, pp. 39–40).

Teeth make up the majority of skeletal elements found within the cultural layer and, to a lesser extent, in other features, accounting for approximately 46% of the total (over 110 individual teeth). This prevalence may be because teeth are more likely to be lost during a person's lifetime; adults typically have 32 teeth, while children have 20, making the finding of (replacement) teeth quite common. At some sites, such as all Swifterbant sites, as well as Zeewijk, Kolhorn, and Bouwlust in the De Gouw region of West Frisia, teeth are almost exclusively the skeletal elements found, with only a few other bones present. Besides that, other skeletal elements have been found within the cultural layer, including cranial and long bone fragments, as well as smaller skeletal elements such as bones from the hands, feet, and axial skeleton. The presence of human remains within the settlement is further supported by burials located inside or near the settlement.

6.2.1 Neolithic burial pits and their settlement context

Where the domains of death and living are often separated, with burials placed in different locations from the areas of daily life, some individuals were still buried within or very close to settlements even before fully sedentary life (Stolle, 2023, p. 2).

PERIOD	SITE	CONTEXT
EARLY NEOLITHIC	Hardinxveld-Polderweg (G1)	Burial pit
	Hardinxveld-Polderweg (G2)	Burial pit
	Hardinxveld-De Bruin (G1)	Burial pit
	Hardinxveld-De Bruin (G2)	Burial pit
MIDDLE NEOLITHIC	Schipluiden (G1)	Burial pit
	Schipluiden (G1)	Burial pit
	Schipluiden (G2)	Burial pit
	Schipluiden (G3)	Burial pit
	Schipluiden (G4)	Burial pit
	Schipluiden (G5)	Burial pit
	Schipluiden (G6)	Burial pit
LATE NEOLITHIC	Mienakker (OPM'90)	Burial pit
	Sijbekarspel (SBK'89)	Burial pit
	Ottoland-Kromme Elleboog (G1)	Burial pit
	Ottoland-Kromme Elleboog (G2)	Burial pit
	Ottoland-Kromme Elleboog (G2)	Burial pit
	Molenaarsgraaf	Burial pit
	Molenaarsgraaf	Burial pit
	Molenaarsgraaf	Burial pit
	Molenaarsgraaf	Burial pit

Table 5: Formal burials found inside the Neolithic settlements.

A total of 20 burials were found in seven settlements, indicating that 31% of Neolithic sites contained burials within or close to the settlement (Table 5). The placement of these burials varied. In some cases, such as Hardinxveld-Giessendam De Polder and De Bruin, as well as the double grave (grave N.2) at Ottoland-Kromme Elleboog, burials were positioned in close proximity to settlements but remained separate from other structural features. Whereas, other sites demonstrated a direct integration of burial pits within the settlement itself. At Schipluiden, six burial pits containing seven individuals, positioned among wells, hearths, and farmyards, (Smits & Louwe Kooijmans, 2006, p. 102). Similarly, at Sijbekarspel, an individual was buried in the middle of the settlement while it was still in active use (Van Heeringen & Theunissen, 2001, p. 210). Most of the burials, except for Mienakker (OPM '90), took place while the settlement was still in use, suggesting that living alongside deceased community members was a common practice in Neolithic settlements.

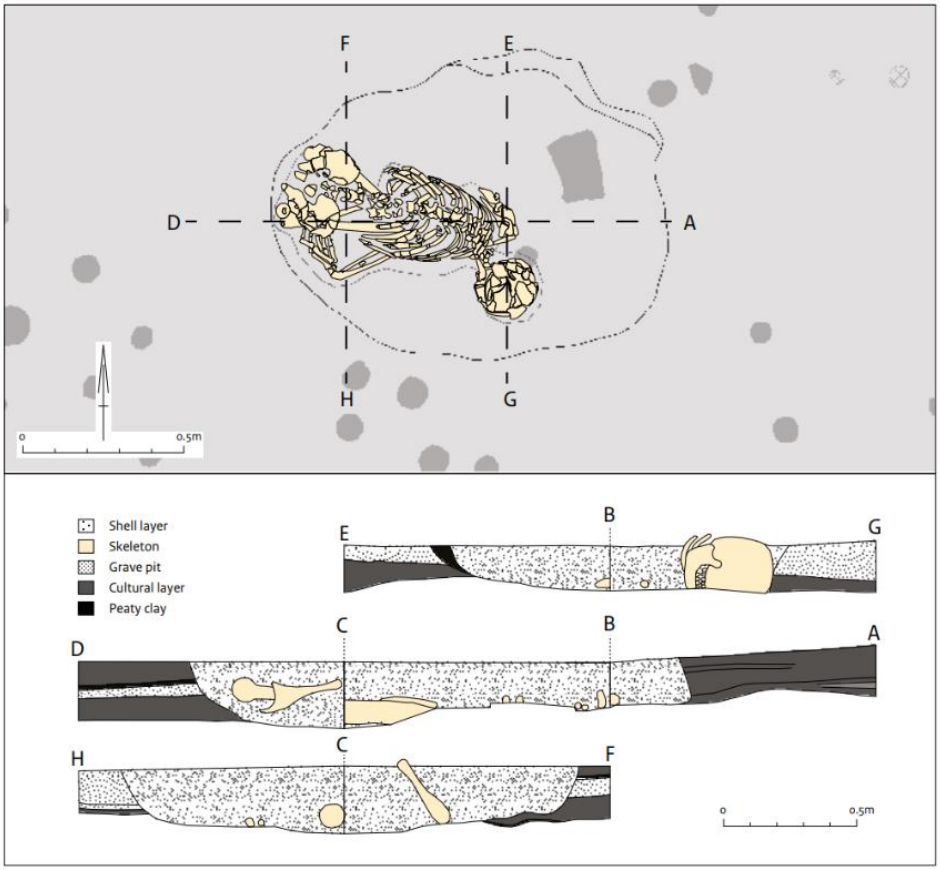

Figure 21: Excavation drawing of OPM'90 at the final phase of the settlement (Plomp, 2013, p. 175).

OPM'90 from Mienakker was most likely buried elsewhere initially and later reburied within the house plan near the end of the settlement's occupation (Plomp, 2013, p. 183). This repurposed burial (Figure 21) indicates that the wooden structure was intentionally reused as a resting place (Plomp, 2013, p. 175). The selection of 20 skeletons shows that most individuals were buried in or near the settlement while the site was still in use, but Mienakker also suggests that burial may have been the final step in leaving the settlement. However, this pattern is not reflected in the spatial distribution of disarticulated human bones, highlighting two different ways in which human remains were treated.

This likely highlights a differentiated perspective on the body within the Neolithic community, with two distinct categories: disarticulated human remains found in refuse zones and near burials, and burials located near or inside settlements. In Dutch Neolithic sites, there is little evidence to determine whether the deposition of disarticulated human remains was accidental or intentional. Instead, could their presence in the cultural layer be a direct consequence of secondary practices within the living community after someone passed away? I will explore this further in Chapter 9, where I discuss treatment within the settlement and community after death.

6.3 A shift in choices during the Bronze Age?

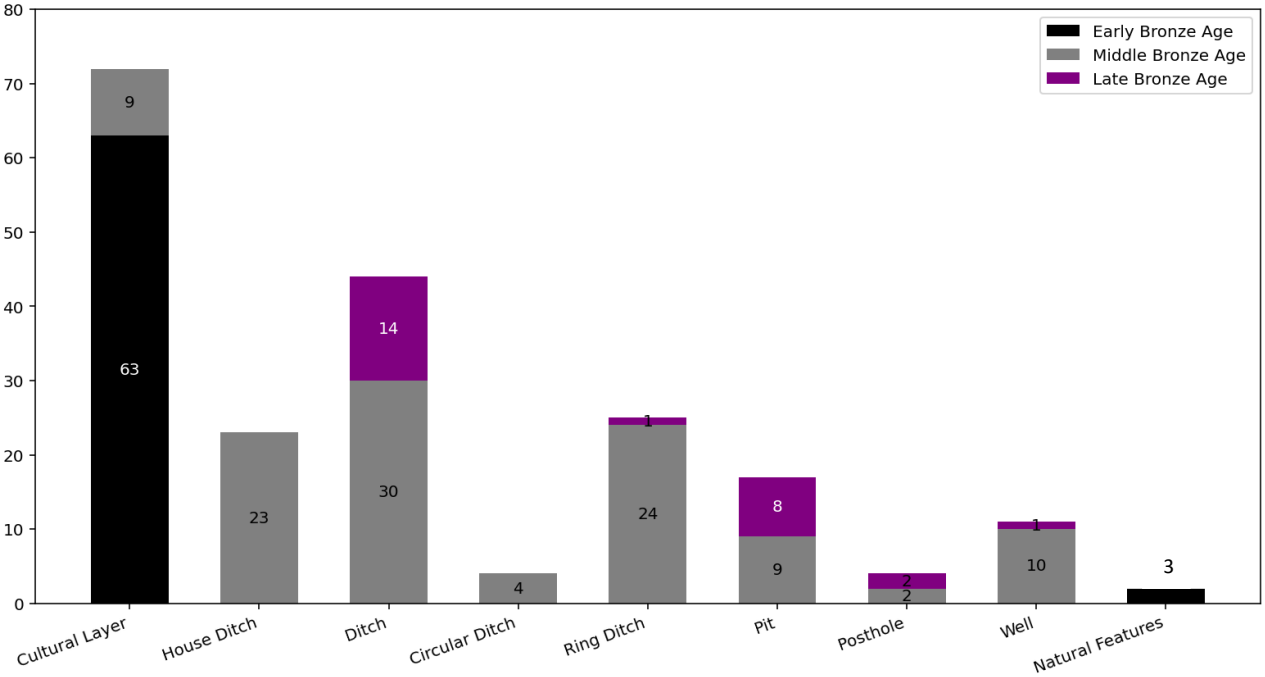

Figure 22: The deposition locations of the disarticulated human remains, including settlement features, layers, and natural features, are represented. A change is observed from the Early Bronze Age to the Middle and Late Bronze Age; where settlement features become more prominent.

The deposition in the cultural layer does not end with the transition from the Late Neolithic to the Early Bronze Age but remains an ongoing aspect of depositional practices (Figure 22). In the Neolithic, human remains were often found in refuse zones with few settlement features or near burial pits. This pattern changes in the Early Bronze Age and Middle Bronze Age.

The changing use of the cultural layer during the Bronze Age is evident at sites such as Eigenblok-Oost, three cranial fragments were found in front of a house entrance (Figure 23), an area that was often visited when entering and leaving the house (Jongste & Koot, 2005, p. 623–628). Other 'special' deposits, such as bronze objects and burnt clay, were also placed in front of other houses at Eigenblok-Oost (Habermehl, 2022, p. 38), suggesting a recurring practice where different objects were placed in front of the house. A similar choice in placement of skeletal elements is observed at the site of De Meteren (Voetakker-28), where various skeletal elements, such as teeth, long bones, and cranial fragments, were found within a single house floorplan. Here, the house was destroyed and rebuilt five times in the same location over a short period (Meijlink & Kranendonk, 2002 p. 679). (see case study De Bogen for more details). At Eigenblok and Voetakker-28, the human remains were found in a singular location within the cultural layer at settlement. In contrast, the Early Bronze Age site of Tiel-Panovenweg A shows a more spread out pattern across the entire site. These human remains were all found near other settlement features, such as house features, wells, and pits (Kenemans, 2021, p. 30).

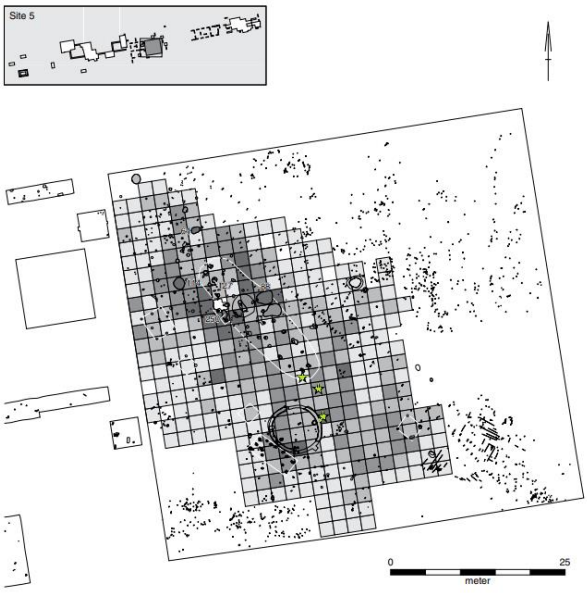

Figure 23: Three cranial fragments (yellow stars) were found at Eigenblok-Oost: one at the entrance of the house and the other two near the farmyard (Jongste & Koot, 2005, fig. 34).

These sites shows that the purpose of the cultural layer for the deposition of disarticulated human bones changed. Before, they were placed in less frequently visited areas, often not related to other features, but over time, they became more integrated into and near settlement features. In the Neolithic, deposition mostly took place in the cultural layer, however, from the Middle Bronze Age onwards, the cultural layer became less important, as fewer deposits were placed in it. About 40% of the skeletal elements (72 in total) were found in the cultural layer, with the majority dating to the Early Bronze Age. After this period, disarticulated human remains were increasingly deposited in well-defined settlement features. These features, including circular ditches, house ditches, irrigation ditches, postholes, pits, and water wells, contained 60% of the skeletal elements (100 in total). The choices behind which settlement features were used, and to some extent the location within the cultural layer, seem to be based on the borders of both structures and the settlement. Andijk-Noord exemplifies these boundary-type locations, as all skeletal elements found at this site were recovered from various house ditches associated with at least three houses that were still in use at the time of deposition (Figure 24). This pattern is also observed at multiple sites, including Andijk-Zuid, Bovenkarspel-Het Valkje, and Enkhuizen-Kadijken, where most skeletal remains were found in house ditches from multiple houses (Roessingh et al., 2024, pp. 25–26). At Houten-VleuGel, a complete thoracic vertebra and other objects were deposited inside a depression situated at the boundary between dry and wet areas near the settlement (Besselsen & van der Helden, 2009, p. 29). Following these depositions, four postholes were constructed around the depression, possibly as part of a roof structure (Besselsen & van der Helden, 2009, p. 125). Another expression of borders during the Bronze Age is found in the deposition of skeletal elements within the circular and ring ditches of barrows, particularly in the West-Frisia region. These barrows were present within the settlement and integrated into its layout (Roessingh et al., 2024, p. 99). Around 14% (29 out of 204) of the skeletal elements from the Bronze Age were found in these barrow ditches, suggesting another form of boundary. It is unknown whether that the barrows were still in use when the new settlement features were partially constructed near them, making it more plausible that these disarticulated human remains were deposited in the ditches before the barrows were abandoned.

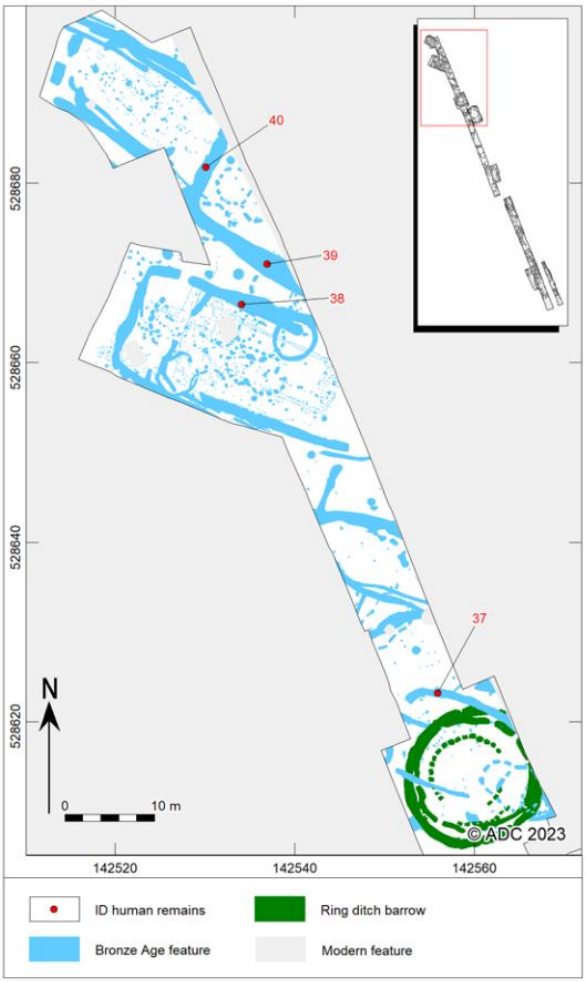

Figure 24: Deposition locations of Andijk-Noord, within house ditches (Roessingh et al., 2024, p. 25).

A similar pattern is observed outside West-Frisia, where disarticulated human remains have been found in barrows located near settlements. At the flanks of the barrow at Meteren-De Bogen, 55 disarticulated human remains were found. A few of these are linked to individuals buried inside the barrow, but the majority remain unidentified. A three-aisled house was constructed on top of the barrow during the same period. It has been suggested that this house may have functioned as a mortuary house. No specific information is available on the remaining individuals (Meijlink & Kranendonk, 2002, pp. 683–687).

Where the depositional locations changed during the Bronze Age, from the Middle Bronze Age onward there was even a complete shift from the cultural layer to deposition within settlement features. Much of the skeletal remains found in settlement features stayed similar to the Neolithic. Cranial fragments and long bones increased, becoming more dominant over other skeletal remains. Teeth, which previously made up nearly half of the skeletal elements, decreased sharply in the Bronze Age. Only 12 out of 177 skeletal elements were teeth. Most of these were found in the cultural layer, with the exception of a circular ditch at Enkhuizen-Kadijken and a pit at Tiel-Medel 1. This shows a notable decrease in teeth, while skeletal elements from various long bones and cranial fragments increased. As discussed in Chapter 4, this is not likely because robust and recognizable bones are overrepresented. Instead, it seems to be a preference of the prehistoric community, where leaving behind specific skeletal elements became the norm.

6.3.1 The decline of settlement burials during the Bronze Age

Whereas disarticulated skeletal remains became more embedded in features and areas where people lived and moved within Bronze Age settlements, their presence decreased in formal settlement burials. In the Neolithic, 20 skeletons were found close to settlements, often in small cemeteries at the edge or in the middle of the settlement. In the Bronze Age, however, only three (in)complete skeletons were found within settlements, none of which were placed in formal burial pits. Instead, they were deposited inside ditches (Table 6).

PERIOD	SITE	CONTEXT
LATE BRONZE AGE	Bovenkarspel-Het Monument (1977)	Ditch
	Bovenkarspel-Het Valkje	Ditch
	Bovenkarspel-Het Valkje	Ditch

Table 6: Formal burials found inside Bronze Age settlements.

One such incomplete skeleton was discovered at Bovenkarspel-Het Monument (1977), placed within a ditch, while a double burial from the Late Bronze Age at Bovenkarspel-Het Valkje was found buried inside a refilled ditch (Roessingh, 2018, pp. 267–268). Both ditch burials were located in the middle of the settlement, rather than at the edges, and seem to date to a phase when the settlement was still actively in use, towards the end of the Late Bronze Age (Roessingh, 2018, pp. 267–268). A similar deposition pattern can be observed for both disarticulated human remains and complete skeletons within settlements, as both were primarily deposited inside ditches.

But why the decline in burials within settlements? Could this be linked to a shift in funerary practices, from inhumation to cremation (Sørensen & Rebay, 2008, pp. 60–61)? While disarticulated remains are found in settlement context, ‘normal’ burials in Middle Bronze Age B West Frisia usually involved cremation. Although settlement burials largely ceased, evidence of a continued connection between death and settlement is seen in the placement of settlements around existing barrows. At De Meteren, one barrow was placed directly next to the settlement, with a three-aisled house, likely a mortuary house, built on top of it (Bourgeois & Fontijn, 2008, p. 52). Later, a second three-aisled house, differing from typical mortuary houses, was constructed there, which may also have served a mortuary function, suggesting ongoing links between the living and the dead. De Meteren-De Bogen barrow contained burials ranging from the Neolithic to the Iron Age, alongside scattered disarticulated human remains (Meijlink & Kranendonk, 2002, pp. 683–687). A similar relationship is seen in West-Frisia, where barrows were integrated and new settlement structures built near them (Roessingh et al., 2024, pp. 96–99).

6.4 A continued trend or new choices in the Iron Age?

The depositional locations within the layers and settlement features remained largely unchanged, with human remains continuing to be deposited near and within settlement features, similar to the Bronze Age. This shows that placing remains near burial pits or in refuse zones, as seen in Neolithic settlements, was limited to that period. In contrast, the Bronze Age and Iron Age show a similar pattern of placing disarticulated human remains closely related to settlement features.

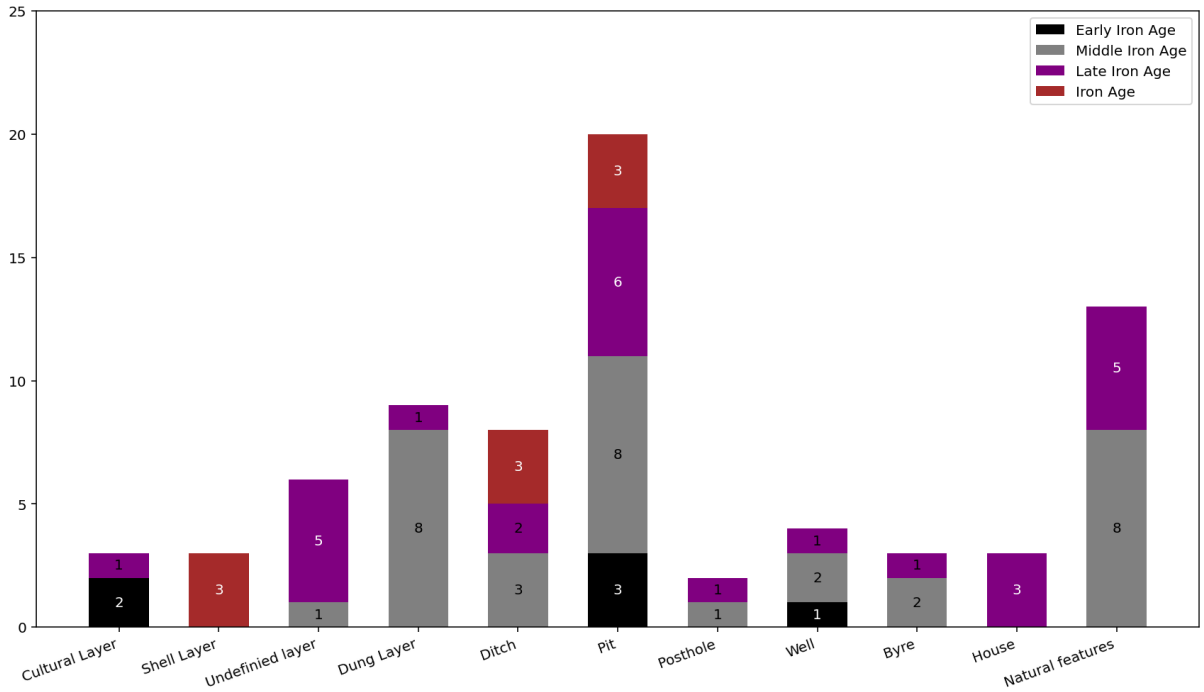

Figure 25: The deposition locations of the disarticulated human remains, including settlement features, layers, and natural features, are represented. Where the Iron Age shows a more varied pattern where all different depositional locations are present.

In previous periods, a single depositional location, whether natural features, the cultural layer, settlement features, or burial features, tended to dominate, with most skeletal elements found in one of these four contexts. In the Neolithic, this was mainly the cultural layer, while in the Bronze Age, settlement features like ditches were more commonly used. In contrast, Iron Age settlements show a more varied pattern, with all four depositional locations actively used. Interestingly, the Early Iron Age is underrepresented compared to the Middle and Late Iron Age. This appears to be due to the limited number of Early Iron Age settlements relative to later periods. Whereas there is more variety, the locations of deposition continue to be close to where people lived, with the Iron Age showing more disarticulated human remains in connection to the farmyard and household. These remains were placed directly inside postholes of houses and within the house layer itself.

At the Assendelft-N site, a femur was deposited inside the posthole of House 1, likely placed during the construction of the house (Van Gijn, 1987, p. 101). At the Ezinge settlement, skull fragments were found inside the byres and houses of the people who lived there (Nieuwhof, 2015, p. 195). Also at Ewijk-Keizershoeve, a settlement from the transition between the Iron Age and Roman Period, a humerus was deposited inside a structure that was part of the house plan (Blom et al., 2012, p. 370).

This connection to the household extends beyond direct depositions, with human remains also found in more indirect contexts, such as in settlement features or within the cultural layer near the house. At Didam-Kerkwijk, a humerus was discovered inside a water well near smaller buildings and granaries (Figure 26), about five meters from houses 2, 3, and 4, where houses were continuously rebuilt on top of each other after destruction (Baetsen & Cuijpers, 2011, p. 217). This well was possibly part of the farmyard system and connected to the farmhouse. Just as skull fragments were found inside the house and byres at Ezinge, others appeared five to ten meters away, still likely tied to the farmyard (Nieuwhof, 2015, p. 193).

Figure 26: An excavation plan of Didam-Kerkwijk shows that the well was connected to the granary and the house (H2/3/4). Based on Baetsen & Cuijpers, 2011, p. 217 and modified by G. Verhoeven.

Figure 27: The deposition of a complete skull at Houten-Castellum, that is linked to a ritual practice (Panhuijsen, 2017, p. 741).

While this thesis focuses on settlement context, the distinction between settlement, ritual, and burial context in the Iron Age can sometimes become ambiguous. These contexts do not always exist separately but occasionally blend together. This is evident at Houten-Castellum, where four skulls, 72 disarticulated human remains, and one inhumation (along with a secondary burial) were found not only in pits but also within the gullies. The skulls are considered a 'special deposition' due to their completeness (Figure 27), whereas the other skeletal remains are highly fragmented (Panhuijsen, 2017, p. 741). These complete skulls seem to be linked to multiple contexts, a possible cultic site marked by a ritual rectangular enclosure, a potential cemetery suggested by the inhumation grave and the concentration of disarticulated remains near the gully, and several settlement features (Panhuijsen, 2017, p. 746). This raises important questions: Do these remains belong to the settlement, ritual, or burial context? Or were these practices intertwined in ancestor worship? Could a separate ritual enclosure have influenced rituals that strengthened social bonds between the ancestors and the living community? Another ritual or special deposition from the Late Iron Age was found at Grijpskerke-Kievitsweg, where multiple households came together to deposit 660 kg of pottery, burnt clay, a complete dog skeleton, other animal bones, and the complete pelvis with lumbar vertebrae of an individual. All these objects were deposited at the same moment in 185 B.C.

This suggests a strong connection between different households, likely living at separate nearby locations, who were brought together by an important and impactful event (Van Dierendonck, 2016, p. 19–20).

6.4.1 Reappearance of the burials inside the settlement during the Iron Age

PERIOD	SITE	CONTEXT	INHUMATION/CREMATION
IRON AGE (UNSPECIFIED)	Houten-Zuid 21 (G1)	Ditch (G7)	Inhumation
	Houten-Zuid 21 (G2)	Ditch (G7)	Inhumation
EARLY IRON AGE	Culemborg-Hoge Prijs	Burial pit (near H1)	Cremation remains (C1)
MIDDLE IRON AGE	De Meteren (G4)	Burial pit (inside barrow)	Inhumation
	De Meteren (G5)	Burial pit (inside barrow)	Inhumation
	Culemborg-Hoge Prijs	Burial pit	Cremation remains (C1)
	Houten-Castellum	Burial pit	Inhumation
	Ezinge	Burial pit	Inhumation
	Middelstum-Boerdamsterweg	Ditch (near granary)	Inhumation
	Lent 9/57	Burial pit	Inhumation
	Tilburg-Tradepark Noord	Burial pit (near H44)	Cremation remains (C1) (1/3)
	Houten 9	Gully	Inhumation
	Velsen-Hoogovens II	Burial pit	Inhumation
LATE IRON AGE	Geldermalsen-Hondsgemet	Burial pit	Inhumation
	Rockanje (08-52)	Burial pit (near farm)	Inhumation
	Ezinge	Burial pit (near H11)	Inhumation
	Ezinge	House layer (H22)	Inhumation
	Ezinge	Burial pit (near H11/16/20)	Inhumation
	Ezinge	House layer	Inhumation
	Ezinge	House layer (H15)	Inhumation

Table 7: Formal burials found inside Iron Age settlements.

Whereas settlement burials were recurring at multiple sites during the Neolithic but became less common in the Bronze Age, they became more frequent again during the Iron Age, particularly in the Middle and Late Iron Age. A total of 20 burials were found across 12 settlements (Table 7), indicating that 52% of these sites contained burials within the settlement. While settlement burials in earlier periods consisted solely of inhumation burials, cremation remains were also buried within settlements during this later period. In all three periods, settlement burials were found in close proximity to settlements or near settlement features such as ditches and wells, but never directly associated with farmyards or households. This changed in the Iron Age, where burials have been found in connection to the farmyard. The case study of Ezinge displays this shift: two skeletons were discovered underneath the house platform of House 15 and another unspecified house. These skeletons may have been buried after the houses were constructed (Nieuwhof, 2015, p. 196) A similar case is seen at Velsen-Hoogovens II, where a complete skeleton was found between the postholes of two sheds, possibly marking the end wall of a house (Van Heeringen, 1992, p. 160). Also, a partial skeleton was buried directly next to a granary at Middelstum-Boerdamsterweg (Taayke, 1996, p. 52).

Cremation burials also became more use inside the Iron Age settlements, often located near or even within the farmyard. For example, at Culemborg-Hoge Prijs, cremated remains were buried about 10 meters from the farmyard of House 1, possibly belonging to a member of the household (Verhelst et al., 2015, p. 109). Similarly, at Tilburg-Tradepark Noord, cremation remains were found approximately 20 meters from House 44. Based on the phasing and dating, these remains may have belonged to someone who once lived in that house (Tol, 2015, p. 332). These findings demonstrate that, in the Iron Age, both disarticulated human remains and burials were more closely connected to the house compared to those of the Neolithic and Bronze Age.

7. What kind of people were buried in the settlement?

To understand the identities of the individuals represented by both disarticulated human remains and burials, this chapter will look at their health, age, and biological sex. Before looking into who these individuals were, as already stated in Chapter 2, it is important to acknowledge the limitations of the available data. For around 35% of the human remains (178 out of 511 human remains), there is no information on the age at which they died, and for biological sex and health, the percentage is even higher. This means that many individuals in this study remain unidentified in these aspects. Most available information comes from the more complete skeletons, though some details also come from disarticulated remains when a physical anthropologist was present during excavation. Due to these limitations, the analysis in this chapter offers only a partial view of the individuals behind the depositions and burials.

7.1 What was the age of these individuals?

The age of the individuals, based on the disarticulated human remains, ranges from perinatal (those who died within 28 weeks of birth) to older adults, with some estimated to be up to 60 years of age. This variation is seen not only in the disarticulated remains but also in the articulated skeletons, with both children and adults buried inside and near the settlement.

While all age categories are present in the deposition of human remains in prehistoric settlements, it seems this practice was mostly directed towards adults. Over 74% of the disarticulated human remains have been identified as adults (Figure 28, 29, and 30) Only a small number of subadult disarticulated remains were found, and a similar trend is observed in the settlement burials. Out of 42 burials inside the settlement, only 4 are children. This includes the two child burials from the Neolithic, at the Schipluiden site, one of a 2-year-old and another of an 8-year-old. In the Bronze Age, no child burials were found, and only two, one juvenile and one adolescent, from inhumation graves in the Middle Iron Age at two separate sites. Although some children were buried inside the settlement, they were far less common than adults, the majority of the remains belonged to adults.

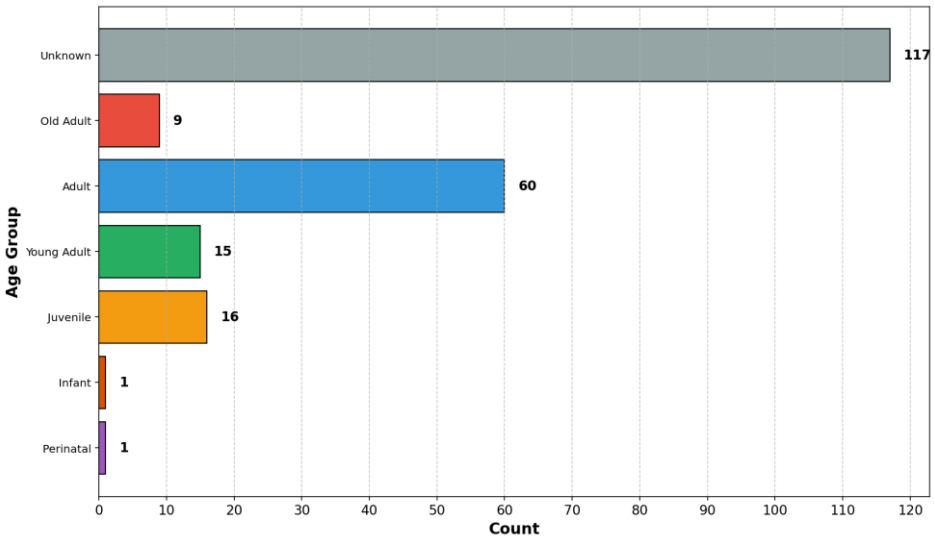

Figure 28: Ages of individuals buried in the Neolithic settlements.

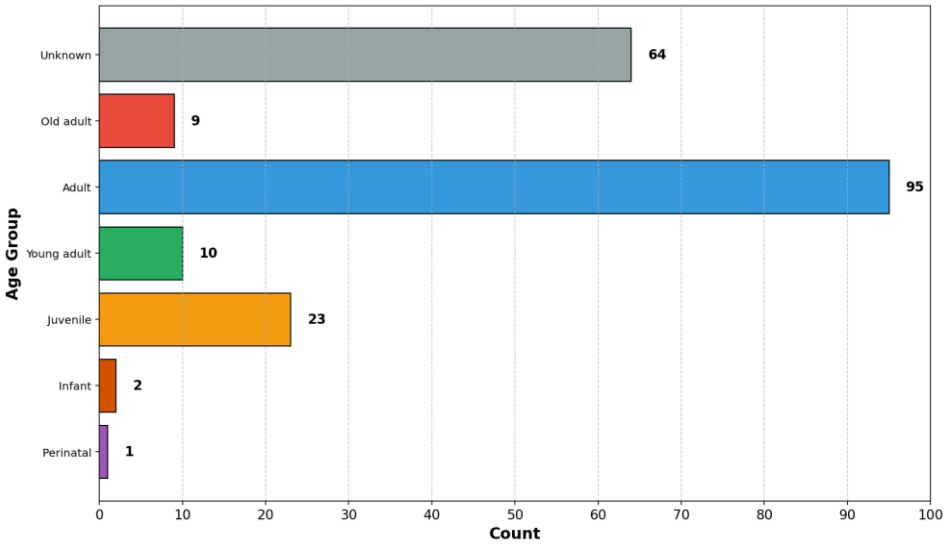

Figure 29: Ages of individuals buried in the Bronze Age settlements.

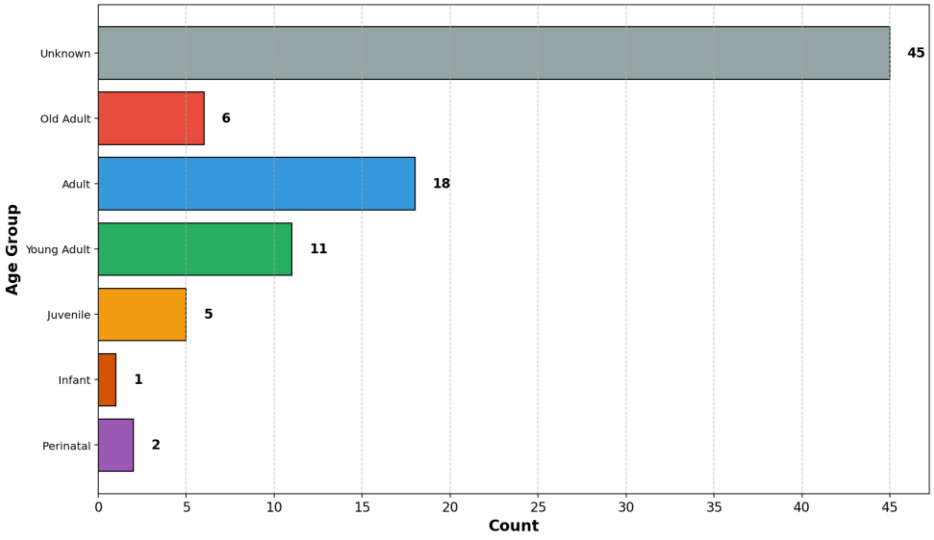

Figure 30: Ages of individuals buried in the Iron Age settlements.

7.2 How healthy were these individuals?

Of the 42 skeletons recovered from burial pits within the settlement, most do not show signs of disease or other pathological conditions. While the majority exhibit no signs of poor health, a few cases do show evidence of ailments. For example, the ditch burial from Bovenkarspel-Het Monument (1977) includes a 50-year-old woman who suffered from illness or starvation in her youth, had osteophytosis, lost many teeth, and had a fractured right rib (Roessingh, 2018, pp. 267–268). Similarly, the burial from Sijbekarspel (SBK'89) reveals health issues in childhood, as indicated by the presence of Harris lines, suggesting she may have suffered from illness or malnutrition (Van Heeringen & Theunissen, 2001, pp. 210–211). The skeletons from the Iron Age sites show no recorded health conditions. Most of the skeletons indicate a healthy but difficult life (Smits & Louwe Kooijmans, 2006, p. 104). No pathological conditions that directly caused an individual's death have been identified in the dataset.

Regarding the disarticulated human bones deposited within the settlement, although their fragmentary nature and the absence of a physical anthropologist mean that analyses on ailments are limited, most do not show signs of disease. As shown by the thoroughly studied human remains from the Bronze Age West Frisia collection. Among these remains, only a few show signs of disease: two cases of osteoporosis, a vertebra and a cranial fragment, indicating weak and brittle bones, and another cranial fragment with evidence of meningitis, an infection or inflammation of the membranes around the brain and spinal cord (Roessingh et al., 2024, p. 119). A few complete crania from the Iron Age display signs of cribra orbitalia and porotic hyperostosis, while another case suggests a haemolytic form of anemia (Panhuijsen, 2017, p. 882). For the Neolithic period, no known cases of disarticulated human remains show signs of illness or ailments. All these diseases are related to nutritional deficiencies, stress, and possible environmental hardships. They indicate that some individuals in the settlement may have experienced malnutrition, periods of illness, or challenging living conditions, which affected their bone health (Macintosh et al., 2016, p, 13).

7.3 Gender of the individuals

The biological sex of individuals found inside the settlement is the category with the least available information. Most of the skeletons have been sexed, providing information on the biological sex of the individuals. Out of 31 sexed skeletons and around 103 sexed skeletal elements, the data reveals a greater number of male individuals than females (Table 8). About 20–25% of the individuals in the dataset have been sexed. Among these, males are nearly twice as numerous as females.

Period	Male	Female	Unknown
SKELETONS			
Neolithic	14	3	3
Bronze Age	0	3	0
Iron Age	9	2	8
DISARTICULATED HUMAN REMAINS			
Neolithic	28	11	161
Bronze Age	21	12	168
Iron Age	19	12	37

Table 8: Biological sex of the (42) skeletons and disarticulated human remains buried/deposited inside the settlements.

8. Linking identity to deposition practices

8.1 The Neolithic identity?

The depositional locations of both settlement burials and disarticulated human remains suggest that different options existed for the treatment of the body after an individual passed away. Burials represent the idealized final phase of identity, with grave goods being important within the cemetery, while for settlement burials, the positioning of the body was more important (Hofmann, 2015, p. 120). As seen in all Neolithic settlement burials, individuals were placed in carefully prepared burial pits, most often laid on their left or right side, and in some cases with flexed legs. The majority of these burials contained only a limited number of grave goods (Louwe Kooijmans, 1974, pp. 249–253; Smits & Louwe Kooijmans, 2006, p. 102). By placing the dead in cemeteries or barrows, a clear separation is made, allowing for different rites to remember these individuals and for them to continue being remembered even after the specific person is forgotten. This is different with settlement burials, where there is no direct separation between the living and the remembrance of the dead. Here, the identity of an individual may have been shown in a different way, as people were in daily contact with the deceased within the settlement (Hofmann, 2009, p. 231). The fact that not everyone was buried inside the settlement is evident from the limited number of settlement burials and the presence of disarticulated human remains in areas near the burials and refuse zones. This suggests that bodies were handled within the settlement, but not buried there. This practice may reflect bodily movement, where specific skeletal elements were curated or removed, pointing to a different form of treatment that is archaeologically less visible (Chapman et al., 2024, pp. 165–167).

It seems that fragmenting the body was an expression of identity during the Neolithic and that the identity was expressed differently through the direct contact with the settlement burials compared to the cemetery burials (Hofmann, 2009, p. 231). The disarticulated human remains and their depositional locations may directly reflect the secondary treatment the body underwent after death (Hofmann, 2015, p. 117). Perhaps the most choices around expression of identity occurred during the liminal phase, with choices made within the settlement, while the rites of incorporation, whether placed, carried, or deposited outside the settlement, are not visible in the archaeological record.

The choice of depositional locations differs from later periods, as during the Neolithic the connection between the household or settlement and identity expression is less clear. Disarticulated human remains are mostly found near refuse zones, borders, and burials. Perhaps there was no need to reinforce the relationship between the living and the dead within the settlement, since the key identity-related decisions were made within the settlement itself. These individuals who did not receive burial inside a cemetery or settlement may have been recognized as ancestors or as part of identity production within the landscape (Bickle & Fibiger, 2014, p. 210).

8.2 A new sense of self during the Bronze Age?

During the Bronze Age, the expression of identity through disarticulated human remains becomes more connected to the settlement and household and its relationship to the land. Believing that identities were more relational than categorical, identity was seen not as a matter of individuality, but as rooted in one's placement within sociocentric relationships (Brück & Fontijn, 2013, pp. 205–208). This may explain why human remains are often found in liminal areas and along borders, places typically linked to movement, transitions, or shifts in space. For example, at Eigenblok-Oost, cranial fragments were placed right at the front entrance, possibly as a 'welcoming or abandonment offer' (Jongste & Koot, 2005, pp. 623–628). Human bones are found in ditches and in the cultural layer near features, indicating a separation between the social and natural spheres. A similar pattern appears in the division between wet and dry areas, with depositions inside depressions and the use of circular or ring ditches to separate the 'living' and 'dead' spheres. In some cases, older materials, including human remains, often broken or burnt, were kept for years before being reused to establish new social relationships (Brück & Fontijn, 2013, pp. 205–208). All of this points to a more deliberate approach in how and where human remains were placed.

Fragmenting the body and distributing it across the settlement primarily marked the end of life cycles for places, bodies, and objects (Louwen, 2021, p. 238). Such practices point towards a community that maintained a close relationship with the household in which they lived. During the Bronze Age, most farmsteads consisted of only one generation, with no sign of permanent occupation over centuries. This shows a high degree of mobility and suggests that places to live were fluid and flexible (Gerritsen, 2003, p. 190). Often made up of extended family households (Fokkens & Arnoldussen, 2008, p. 10). The status of houses, which were 'born' and 'died,' may reflect similar changes experienced by individuals, with both household members and the house itself passing through different phases (e.g., childhood to adulthood). Including the death of an individual might have been connected to the death of a house (Brück, 2006b, p. 309). The house functioned as a material personification of social identity within the community, serving as a cultural biography in which different phases of the house were marked by different rituals (Gerritsen, 2003, p. 105). Being part of the community was likely closely tied to kinship, with most members related to one another. Territorial markers may have served both as signals to outsiders and as internal symbols, reflecting and reinforcing the community's shared values (Gerritsen, 2003, p. 190). Moreover, in a period where resources and land became increasingly important, as hierarchy and wealth were tied to connections within the Bronze network (Kristiansen, 2014, p. 1105), it may have become more crucial to embed oneself into the living locations and landscape through the fragmentation of the body (Brück, 2006b, p. 309). Abandoning land or houses did not always sever social ties; some sites were revisited centuries later, suggesting human remains helped sustain collective identity despite gaps in occupation (Fokkens & Arnoldussen, 2008, p. 12).

Here, the fragmentation of the body is not only seen in the 'non-formal' burial practices inside the settlement or the disarticulated human bones found in the landscape, but also in the 'formal' burials, where during the Bronze Age, cremation became the norm. The weight of the cremated remains in burials never fully accounts for an entire person, suggesting that not everything was placed inside the burial (Brück & Booth, 2020, p. 2). Both the fragmentation of bodies and the use of urnfields and barrows served as territorial markers in the landscape, emphasizing the ancestral claim to the land (Louwen, 2021, p. 214). This demonstrates that ancestral claims to the landscape could take diverse forms, ranging from intimate practices, such as depositing items within house ditches, to highly visible markers, such as barrows and urnfields.

8.3 A continued choice in the Iron Age?

Whereas the Iron Age continued the practice of deposition near settlement features, the household became increasingly important, reflected in the deposition of both disarticulated human remains and skeletons within the house, in house features, and throughout the farmyard. Small changes in deposition patterns may be linked to a shift toward long-term occupation, as people began to live in the same house for extended periods, sometimes lasting centuries (Gerritsen, 2003, p. 189). Strong ties were formed to a chosen location. Houses might even have started with a 'construction offering,' such as deposits of animal bones, pottery, or occasionally human remains (Webley, 2018, pp. 702–703). These depositions may have served as a way for occupants to claim the house as their own, embedding their identity into its biography (Gerritsen, 2003, p. 80). Similar practices may have accompanied abandonment, as households left behind objects in postholes or near the house, acts often evidenced by deliberate object placement and brief filling phases (Gerritsen, 2003, p. 97)

As houses became more permanent landmarks in the landscape and communal burial monuments disappeared, the house gradually became the symbolic center of social identity. Families began to live in the same place for multiple generations (Gerritsen, 2003, pp. 193–194). Status was increasingly tied to land and livestock, making it important to stay rooted in one location (Harding, 2012, p. 284). With the continuity of the farmyard, feelings of identity and belonging may have shifted toward the household rather than the communal burial ground, reinforcing a stronger sense of territory and ancestral connection tied to the home. The appearance of tightly clustered burials near Iron Age settlements may point to a practice of burying only direct household members, reflecting a more intimate connection between the living and the dead (Gerritsen, 2003, pp. 193–194). This supports the view that Bronze Age households included extended families, while in the Iron Age, farmyards typically housed a single household, making burials within them more intimate, likely involving close relatives such as parents (Fokkens & Arnoldussen, 2008, p. 10)

The growing importance of the household and its members can also be seen in Iron Age terps, where each individual received a similar plot of land, including a farmyard and arable land arranged in a radial structure. As terp populations expanded and land was further divided, family identity likely gained greater importance, possibly expressed through disarticulated human remains and burials. The number of household depositions increased as more people lived on the terp and competition for arable land intensified, with some families likely holding dominant positions in this hierarchy (Nieuwhof & Nicolay, 2018, pp. 63–64).

In sum, while depositional locations in both the Bronze Age and Iron Age were closely tied to settlement features, their contextual meanings differed subtly across periods. Bronze Age practices emphasized borders and liminal phases, whereas the Iron Age saw a shift toward the household and farmyard as focal points. As house ancestors, the dead became intimately tied to the material space of the home, where disarticulated remains and skeletons were placed not only as part of ritual but as enduring links to the identity of the household. A deeper connection developed between people, place, and memory, especially as mobility decreased and houses became more permanent (Fokkens & Arnoldussen, 2008, pp. 9–10).

8.4 Do adults hold ancestor status over subadults?

While the exact reasons why certain individuals were given depositions inside the settlement and others were not remain unclear, it does not appear to be related to health. Both individuals in poor health and those in good health are found deposited within the settlement, although there is an uneven distribution leaning towards healthier individuals. Among the visible factors on the skeletons, age seems to be one of the most important. There is a clear preference for adults, with only a minimal number of subadults found among the disarticulated human remains (Figure 28, 29, and 30). There is a slight preference for male individuals over female ones (Table 8), but this could be influenced by the limited data available and the fact that male skeletal traits are more easily recognized by physical anthropologists. Therefore, there might also be a slight research bias (Baetsen, 2008, p. 110). This is why the focus here is on age as a key factor in understanding the reasoning behind the deposition choices.

The fact that mostly adult human remains have been found suggests these individuals were more often selected for curation and later deposition near settlement features. In contrast, subadult remains do not appear to have been treated the same way. Perhaps this is connected to how the life cycle was perceived, and how younger and older individuals fit within a community. This can be seen in the idea of the life cycle suggested by Van Gennep, where people go through different transformations, from birth to childhood, then puberty, adulthood, and marriage and older. These stages involve specific practices and rituals, where a person's social status changes with each new transformation, but are also separated from a different age group, and where individuals have to find their new place in the community (Van Gennep, 1960, pp. 182–184).

During the Bronze Age and Iron Age, human remains were often deposited in settlement features in close relation to the settlement and houses, likely as part of ancestral land claims (Chapman, 1994, p. 45). This means that an individual needed or had a certain status, perhaps based on their social role or abilities within the household or community, to become recognized ancestors. (Van Gennep, 1960, p. 68). In other words, it would be only possible to develop this if they at least reached adulthood. In this view, those not considered adults at the time of death may not have held such status, either because they were not fully developed or perhaps not seen as full members of society, and thus had not yet had the chance to establish their social standing (McSparron & Murphy, 2023, p. 104). Subadults might have been seen as closer to death, as the mortality rates of children were very high, more so than for adults. This is supported by the deposition of child remains in liminal locations such as caves, where the act seems to reflect a transition between the ‘living’ sphere and the ‘death’ sphere (Armit et al., 2011, p. 15; Brück, 2019, pp. 54–55). The different treatment of adults and children is visible not only in non-mortuary but also in mortuary context, across both egalitarian and hierarchical societies. Children received different burial practices compared to adults and are less visible in the mortuary context, possibly due to their bones being more fragile, but also because they received less visible or alternative burial practices (McSparron & Murphy, 2023, p. 104). Overall, while sex and health did not seem to play a major role in the choice of who was deposited inside the settlement, age seemed to matter. Possibly reflecting a certain status or the ability to become important enough, or to possess a skill that allows one to be considered an ancestor and thus claim ancestral land rights.

9. What happened to individuals after their death in the settlement?

9.1 What are the choices between death and deposition within the settlement?

What we know so far is that individuals were often deposited in and around refuse zones or settlement features across all three periods, with most of these being adults placed inside the settlement. But central to understanding these practices are the choices that came *before* the deposition of the remains. A whole series of decisions must have been made in advance, before disarticulated human remains ended up inside the settlement, which is more or less the final stage of that process (Hertz, 1960, pp. 37–38). Central to understanding these choices are the post-mortem damages, specifically the non-pathological marks found on a small portion of the bones. These marks are not related to disease but instead result from human activity, environmental processes, or other post-mortem changes. In this context, they may include old cut marks, signs of erosion, weathering, possible gnawing, burning, or other human-made modifications to the bones. Out of 511 catalogued disarticulated bones, 70 show signs of damage after death, about 14%, not showing the full picture, since only the bones from West-Frisia were reanalysed in detail. The bones from settlements in other regions were not a main focus during excavation, so any signs of damage there were not systematically recorded. Still, the bones that *do* show damage point toward a clear and consistent pattern of treatment after death. Some information is also provided regarding the selection of skeletal elements, suggesting that certain choices may reflect specific preferences. Not only do the disarticulated human remains tell a possible story about the choices made before deposition, but the burials inside and near the settlement also complement this story. Out of 42 skeletons, 18 show incompleteness without any signs that this was caused by excavation methods, but rather that skeletal elements were removed. Around 10 skeletons show positioning that would not be possible if these skeletons had been buried directly.

To understand and explain each step in the funerary process leading to the deposition of human remains in a settlement context, prior to the final phase, the framework of Van Gennep's three phases of rites of passage will be used. This means shifting away from the previous negative view of non-mortuary depositions and burials, and instead focusing on how the choices leading to deposition have influenced the broader funerary process, and how these factors have contributed to it. Firstly, we begin with the rites of separation phase, where the dead are symbolically and physically separated from the living. This is followed by the rites of transition, also known as the liminal phase, during which the individual exists in an in-between state, not fully part of the living, yet not fully integrated into the community of the dead, undergoing a process of transformation. Finally, the process concludes with the rites of incorporation, wherein the individual assumes a new role within the community and is given their final resting place (Van Gennep, 1960, pp. 16–17).

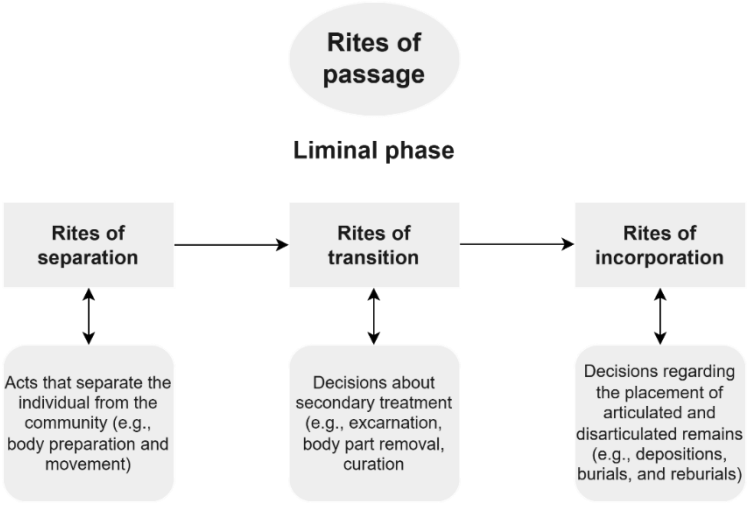

Figure 31: Flowchart based on the rites of passage phases, focusing on the choices between the living and the deposition of burials and disarticulated human remains in the settlement.

9.2 Rites of separation: choices directly after death

The pre-liminal acts surrounding a person's death, which separate them from the living community, are generally simple and likely involve invisible body preparations, such as cleaning and washing the body (Van Gennep, 1960, p. 146). While these rituals were likely part of the prehistoric funerary process, they are no longer visible in the archaeological record. Another aspect of pre-liminal acts involves moving the body to a designated location, either within or outside the settlement. It is likely that the body was moved outside the house (Fowler, 2013, p. 516). The movement of the body most likely remained within the settlement borders or near the settlement's edge, rather than being moved far outside the settlement upon death. Going

I would argue that the Neolithic depositional locations, such as refuse zones and areas near burials, reflect both the movement and manipulation of the body within the settlement. This likely began at a designated location or an excarnation platform situated nearby. Since these individuals did not receive a burial inside the settlement, it suggests that the deceased was likely held within the settlement before being moved for the rites of incorporation to their final resting place outside the settlement. This movement is most clearly seen at the Schipluiden site, where both disarticulated human remains and burials were found. Two clusters of remains from the same individual (Individual 15) were discovered 75 meters apart. Evidence for body movement is also found at other sites with both burials and disarticulated remains, such as the Hardinxveld-Giessendam sites, where the disarticulated human remains do not belong to the skeletons (Smits & Louwe Kooijmans, 2001a, p. 427; Smits & Louwe Kooijmans, 2001b, p. 485). But also at the Bronze Age De Meteren barrow, 55 disarticulated human remains on the flanks that do not belong to the individuals buried inside (Meijlink & Kranendonk, 2002, pp. 683–687), further suggesting movement of the body. After the body was placed at a designated location, such as a platform or perhaps within a specific mortuary house, secondary practices like decomposition were likely carried out, marking the beginning of the transition phase.

9.3 Rites of transition: Secondary practices and body manipulation

Following the pre-liminal acts, such as washing the body and moving it to a designated location to await burial or further secondary treatment. During this stage, the body often underwent physical alteration as part of the separation between the physical self and the soul. These changes, ranging from active interventions like burning to more passive processes such as natural decomposition, reflect deliberate choices that carried more importance than the earlier rites of separation. During this phase, expressions of identity become most visible through the decisions made about the body's treatment, such as its separation and curation. This transitional phase could span days, weeks, or even years, making it a complex, multi-staged process (Fowler, 2013, p. 516).

9.3.1 Decomposition

Leaving the body above the ground?

The next step, following the pre-liminal acts, such as moving the body to a designated location, raises the question: what should be done with the body? While several possibilities may have existed, the evidence of post-mortem damage, along with choices made in the treatment of buried remains, suggests that the most likely option involved leaving the body above ground to decompose for an unknown period of time. This appears to have been a process of natural decomposition, with no direct or clear evidence substantial enough to attribute the majority of post-mortem damage to human intervention aimed at removing flesh from the bones. Although it takes around 200 days for a body to fully decompose, this duration can vary considerably depending on several factors, including what the individual was wearing, the position in which the body was placed, the burial environment, and the surrounding climate (Mickleburgh & Wescott, 2018, pp. 165–166). The basic requirements for identifying excarnation often include gnawing marks, disarticulated human remains or skeletons, and evidence of skeletal removal from what are now incomplete skeletons (Carr & Knüsel, 1997, p. 169). As previously noted, I believe that these bodies were kept nearby, within or close to the settlement, to allow for the next phases of the rites of passage to take place.

The most recurring post-mortem damages on the bones is erosion. Erosion typically does not occur in normal burials, or it is associated with poor soil conditions, suggesting that these skeletal elements underwent post-mortem treatment. Erosion is often caused by environmental exposure, which may result from bones being left on the surface for secondary practices (Booth, 2016, p. 2). Similarly, the signs of weathering on the disarticulated human bones suggest that they were also left above ground and exposed to environmental conditions. It is possible that the individual was left to decompose above ground, perhaps on a wooden or stone platform, exposed to natural processes and weathering. Traces of erosion, occasionally accompanied by gnawing marks, suggest that the remains were in some cases accessible to animals, indicates further the practice of above ground exposure. Still, the presence of gnawing marks is minimal and does not provide sufficient evidence to conclude that animals played an intentional or important role in the decomposition process. This would suggest that the remains were likely placed or kept in a location under supervision, which would explain the limited or complete lack of animal access to the decomposing bodies. Others have proposed that animals, particularly dogs, may have contributed to a secondary phase of treatment, where the body was left to decompose naturally (Nieuwhof, 2015, p. 273). Nonetheless, the limited occurrence of gnawing marks, found on only one burial and eight disarticulated human remains, suggests that the involvement of animals was incidental rather than deliberate. There is no indication that either pets or roaming animals were purposefully included in this practice.

Figure 32: Cut marks present on the joint surfaces of a clavicle from Andijk-Noord (Roessingh et al., 2024, p. 59).

What stands out in the research from West Frisia is the contrast in how animal and human remains were treated. Animal bones often show signs of butchery and gnawing, indicating they were left in open, unprotected areas. In contrast, human remains do not show these same signs of damage, suggesting they were likely kept in more sheltered parts of the settlement, perhaps even inside houses, away from animals (Aal, 2015, p. 139). If human remains had been treated the same way, we would expect to see more gnawing and cut marks. This reinforces the idea that human remains were deliberately protected from animal access. Further supporting this is the limited number of cut marks on human bones, suggesting that any secondary treatment likely involved minimal human intervention. The overall number of cut marks on human remains is much lower than on animal bones from the same period, suggesting that defleshing was not the primary focus of secondary treatment of the body.

Most of the cut marks were observed on various long bones, including the clavicle, radius, and tibia, as well as on mandibles. A total of 15 cut marks were identified in the dataset. These cut marks were found on three disarticulated human bones from the Neolithic, ten from the Bronze Age, and two from the Iron Age, in addition to one complete skeleton from the Iron Age. For both the Neolithic and Bronze Age remains, the cut marks are primarily located on the extremities of long bones (Figure 32). These marks appear at the joint attachments and are aligned along the long axis of the bones. The positioning of the cutmarks might suggest that the bones were intentionally separated from the body during a defleshing process but this seems unlikely, as only two cut marks in the dataset could be identified as having been made with Bronze Age tools. Microwear analysis shows that these possible cut marks are either not clearly visible or could be modern, which creates uncertainty about whether the marks on the long bones and clavicles are from older or more recent activities (Roessingh et al., 2024, pp. 70–73). Only the right clavicle and scapula from the flank of the barrow show older traces of bronze, according to the microwear analysis (Roessingh et al., 2024, p. 74). It is unknown whether the cut marks on the Neolithic and Iron Age remains are prehistoric or modern, as no microwear analysis was performed on these bones.

The overall low number of cut marks, and even fewer that can be confidently dated to prehistoric handling, suggests that excarnation was likely not carried out by humans through deliberate defleshing or dismemberment, nor extensively by animals feeding on the bodies. Instead, the presence of erosion and weathering, along with the very limited occurrence of gnawing marks, points more toward a natural process of excarnation driven by environmental factors rather than human intervention. While excarnation appears to have been one option, it is also important to consider inhumation followed by exhumation, as both practices could result in similar types of post-mortem damage visible on the bones.

…Or inhumation and exhumation?

Leaving a body above ground is not the only way to allow it to decompose before carrying out secondary treatments, such as repositioning the body, possibly in an unnatural position, for burial, or removing skeletal remains. Erosion and weathering, along with only a small amount of gnawing marks, could also happen if someone was buried and then exhumed after an unknown amount of time, especially if the burial was done in a way that kept animals from accessing the body (Booth & Madgwick, 2016, p. 22). While that could be a possible alternative that leads to similar results as surface exposure, there is very little archaeological evidence from the settlements in the dataset that supports this idea would argue that most of the disarticulated human remains were found either in cultural layers or in features that appear to represent a depositional moment, rather than indicating inhumation followed by exhumation.

Also, the pits that did contain human remains often included other material objects, and these pits did not really have the size or shape of typical burial pits. If exhumation had happened, you would expect to see some kind of archaeological traces of that, like newer soil cutting into older pit layers or signs of reopening, but these signs are not really observed during the excavations.

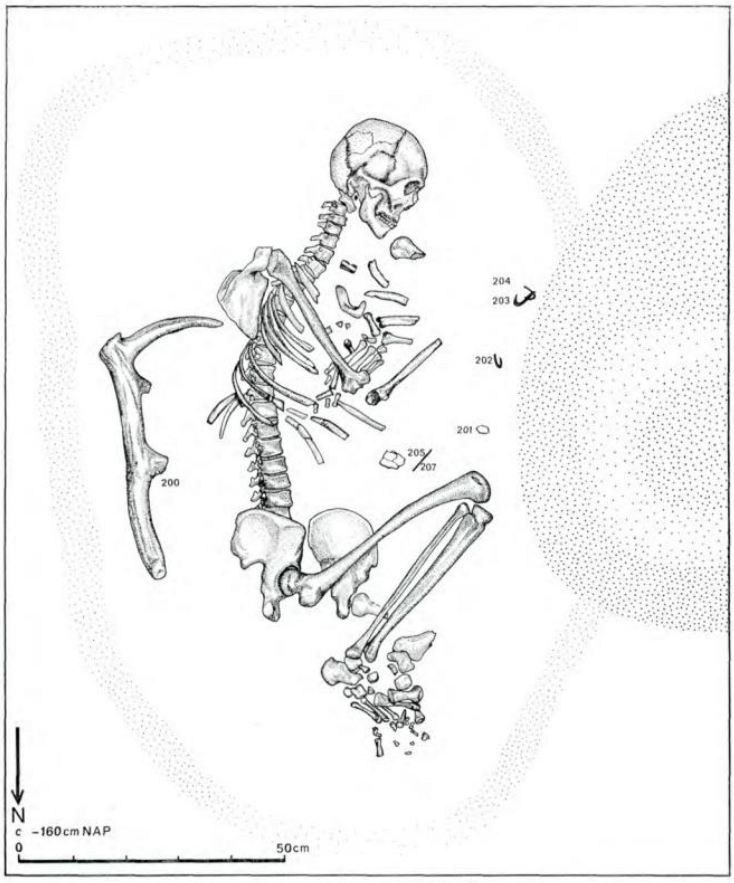

Figure 33: In Grave 2 at Molenaarsgraaf, the right arm and left leg were removed, with the left radius found inside the pit beside the rest of the remains (Louwe Kooijmans, 1974, p. 252).

Only one burial, Grave 2 at Molenaarsgraaf from the Late Neolithic, shows evidence of the re-opening of a burial. A burial pit was initially dug at the end of the first occupation phase and re-opened during the second phase of the settlement (Louwe Kooijmans, 1974, p. 251). The re-opening occurred not long after the individual was initially buried. This excavation was not caused by animals, as the burial pit had been refilled after it was disturbed. It remains unclear whether this action took place during the transitional or incorporation phase, as the individual was likely buried with grave goods. Both the right hand, parts of the arm, and the entire left leg were removed from the pit (Figure 33). Only the left radius, the long proximal part, was recovered from the pit next to Grave 2 (Louwe Kooijmans, 1974, pp. 251–253). The other missing skeletal elements were not found at the site. These human remains were not broken off from the body, as evidenced by the left radius being found in the pit next to the grave. This suggests that the body had decomposed to a substantial extent, with the joints no longer well preserved, making it otherwise impossible to remove skeletal elements. The authors propose that there was likely a gap of two to three decades between the initial burial and the re-opening of the pit. This does not necessarily mean the removal of bones occurred at the same time (Louwe Kooijmans, 1974, p. 250). Removing legs or arms could have been done anywhere between 22 weeks and 4.5 months after death (Haglund et al., 1989, p. 589).

This singular grave demonstrates that the re-opening of a burial to remove skeletal elements (and possibly, as the authors suggest, grave goods) indicates that inhumations were later exhumed. It is possible that the skeleton was removed to facilitate the removal of skeletal elements. While this perspective does not apply to all other pits and burials, it does highlight that reburial and exhumation could have been part of the liminal phase. Inhumations and exhumations may have also occurred outside the settlement, where no evidence remains. Although little direct evidence supports this practice of decomposing bodies, it must have been discussed, as I have addressed it earlier in this chapter, and remains a plausible possibility that should be considered before moving on to the next phase of the liminal phase.

9.3.2 Body manipulation

Unnatural positioning

Unnatural positioning refers to the postmortem arrangement of bodies in ways that would not be physically possible if the soft tissues were still intact. After death, the circulatory system ceases, leading to decomposition and the breakdown of muscles, ligaments, and joints. This process allows for disarticulation, making it possible to reposition limbs or other parts of the body (Mickleburgh & Wescott, 2018, pp. 158–159). Evidence of such manipulation, sometimes occurring after a period of decomposition, suggests that bodies were not always immediately or permanently buried at their final phase. Observed in both 'atypical' burial locations, such as within or at the edge of settlements, and in formal cemeteries (Smits & Louwe Kooijmans, 2006, pp. 96–99). The recurrence of these practices across all three periods points to a consistent and intentional engagement with the dead during the funerary process. Out of the 42 skeletons, 10 show signs of unnatural positioning, with 6 from the Neolithic, 1 from the Bronze Age and 3 from the Iron Age. Where 9 out of these 10 show the flexing of the legs towards the body in a manner that would be impossible if the flesh were still intact, indicating a manipulation of the body beyond its natural movement (Knüsel, 2014, p. 42). While full decomposition can take up to 200 days, the disappearance of soft tissue, particularly around the legs, can occur much earlier, based on experimental research. From around day 11 onwards, decomposition may have progressed enough to allow for increased joint mobility, making lateral movement of the legs toward the torso possible (Mickleburgh & Wescott, 2018, p. 163).

Although binding the legs toward the torso appears in all periods, the treatment of the dead in the Neolithic and Iron Age does show differences. In the Neolithic, highly flexed individuals buried in the small cemetery within the Schipluiden settlement (Figure 35), were placed in carefully prepared burial pits that fit the bodies (Smits & Louwe Kooijmans, 2006, pp. 96–99). In contrast, Iron Age examples of flexed skeletons show a different approach. For example, the flexed skeleton at Ezinge does not appear to have received a properly sized burial pit, it was too small (Figure 34), and the body seems to have been ‘thrown’ in (Nieuwhof, 2015, p. 197). A similar situation is seen at Houten-Zuid 21, where the pit was also too small, and additional signs like cut marks on the heel bone and a thickened skull were observed (Vos & Lanzing, 2001, p. 33). Lent 9/57 also shows a poorly fitting burial pit. These cases may indicate a different treatment or status (Van den Broeke, 2016, p. 143). Compared to the other 17 Iron Age burials, which have consistent, proper burial practices and fitting graves, these seem more ‘deviant’. Maybe in the Neolithic, highly flexed burials were part of a formal burial style, but in the Iron Age, they were more unusual. This could mean that the use and ‘formality’ of highly flexed legs changed over time, as the Iron Age burials with flexed legs appear more ‘sloppy’ or ‘less respectful’ compared to the other burials.

Figure 34: A highly flexed individual from the Neolithic settlement of Schipluiden, carefully buried in a fitting sized burial pit (Smits & Louwe Kooijmans, 2005, pp. 96-99).

Figure 35: A highly flexed individual from the Iron Age settlement of Ezinge, buried in an improperly sized burial pit (Nieuwhof, 2015, p. 197).

The unnatural position of skeletons is not only observed in settlements but is also a widespread practice in cemeteries, such as at Ypenburg-Location 4. In this Neolithic cemetery, 31 graves were found, with 25 individuals buried in an unnatural flexed position (Baetsen, 2008, p. 156), demonstrating that this was a common practice. Besides the unnatural positioning of the legs toward the torso, there are also other manipulations of skeletons that would not have been possible unless the body was partly decayed. For instance, in grave S2-4, the skull did not follow the alignment of the body, which was placed on its right side. Instead, the skull was positioned on its inferior aspect, indicating it was twisted backward or upward relative to the body. Such positioning would only be possible if the ligaments were still intact (Baetsen, 2008, p. 156). Overall, the presence of unnaturally positioned skeletons across all three periods indicates that individuals were not always buried immediately as part of a finalized funerary phase. Instead, bodies were likely kept above ground or exhumed to allow for partial or complete decomposition, enabling secondary treatment. This suggests that the process of dealing with death did not end at the moment of passing, but involved actions carried out some time after death.

Removal of skeletal elements

In addition to the repositioning of skeletons after decomposition, it was also possible, and seemingly common, to remove specific skeletal elements before burial, likely for other purposes. This practice is reflected not only in the final depositional contexts of these bones, where no associated skeletons are found, but also in the incomplete skeletons themselves. Of the 42 skeletons in the dataset, 18 show signs of skeletal removal: 9 from the Neolithic, 1 from the Bronze Age, and 8 from the Iron Age. This distribution suggests that the deliberate removal of skeletal parts was practiced throughout Prehistory, rather than being limited to a single period. Only in Grave 2 at Molenaarsgraaf was the removed skeletal element directly placed in a pit next to the grave. In other cases, the absence of nearby skeletal parts suggests these removed remains were stored, carried, or placed elsewhere. Could this reflect a cultural practice of curating specific bones, perhaps as, relics, or ancestral objects?

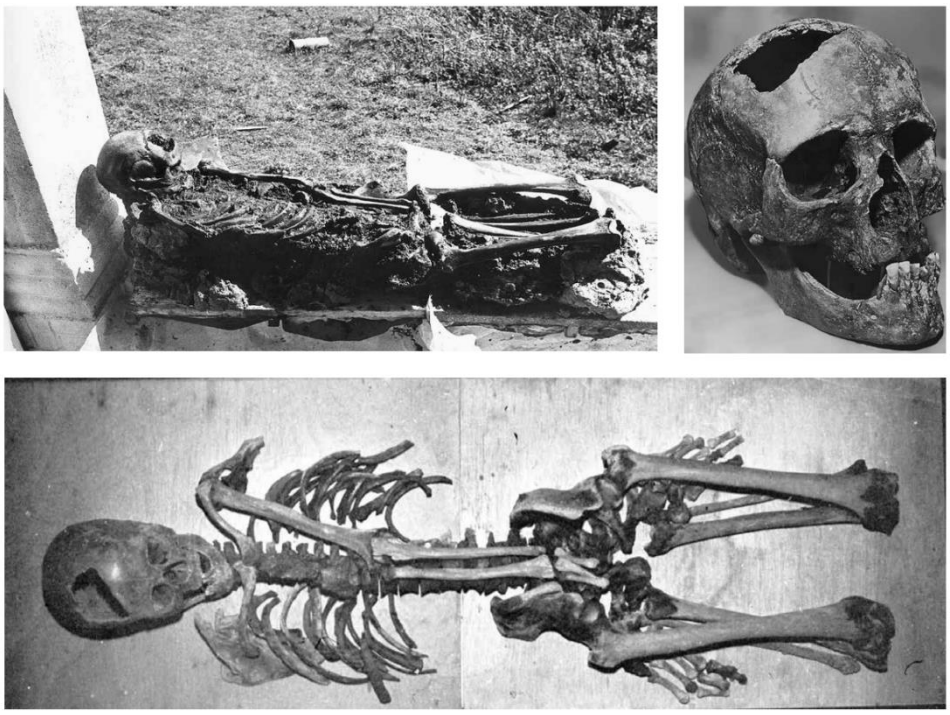

Figure 36: Removal of the right arm following the (re)burial of the skeleton in a ditch at Bovenkarspel-Het Monument (Roessingh, 2018, p. 270).

Aside from Grave 2 at Molenaarsgraaf, which clearly shows signs of being re-opened and possibly having skeletal parts removed during that process, there are no other cases that suggest bones were taken after burial. Instead, it seems more likely that these skeletal elements were removed beforehand, before the individual entered its final phase. One example is the burial at Bovenkarspel-Het Monument (1977), where the right arm was missing and a hole had been made in the skull after death (Figure 36). This suggests the skeleton was probably reburied, inside the ditch. While the high number of skulls and long bones found at sites is often explained by their durability and recognisability (as discussed in Chapter 4), there are some patterns that stand out. The removal of bones does not seem random or just the result of preservation bias, long bones, and especially arms, are often missing. In some cases, up to half the skeleton is gone.

There even seems to be a preference for the right arm. This pattern shows up at several Neolithic sites, such as Schipluiden (G4) (Smits & Louwe Kooijmans, 2006, pp. 96–99), Mienakker (Plomp, 2013, p. 175), and Molenaarsgraaf (Louwe Kooijmans, 1974, p. 252), where the right arm is missing in all three cases. That kind of consistency suggests the removal was intentional with a preference for long bones. The same pattern continues into later periods. At the Bronze Age site of Bovenkarspel-Het Monument, and Iron Age sites like Ezinge, Middelstum-Boerdamsterweg, and Lent 9/57, we also see missing skeletal elements, particularly long bones. While other parts, like legs and ribs, were also taken, there is a clear preference for long bones. In some cases, almost the entire lower half of the body is gone. Since there is no evidence of grave re-opening at these sites, it seems more likely that these bodies were initially kept somewhere else before they were buried during the final phase. This practice of selecting and removing skeletal parts was not limited to inhumation burials either, it also occurred with cremations. At Tilburg-Tradepark, the cremated remains of a roughly 45-year-old man were found in a pit among settlement features. Typically, cremation remains weigh around 2.2 kilograms, but only about a third of that, 0,74 kilograms, was recovered from the pit (Tol, 2015, p. 219). Suggesting that even cremated remains were selectively curated or redistributed in some way.

The removal of skeletal elements, either taken away before a skeleton was buried or by re-opening the burial, as seen in cases like Molenaarsgraaf, and the fact that these specific elements are not found among the other skeletal remains in the same settlement, shows that specific choices were made. In some cases, skeletons were incomplete, but no missing parts were found nearby. Combined with the deliberate placement of disarticulated skeletal remains in boundary features or close to houses, this suggests that there were intentional decisions made regarding the timing between the decomposition of the body and the deposition or burial of human remains. The period between the removal of skeletal elements and their eventual deposition or burial might have been a deliberate choice. The bones may have been kept for varying lengths of time, days, weeks, years, decades, or even centuries, before being placed in their final context (Brück & Booth, 2022, p. 440). This also relates to the rites of incorporation. While most, if not almost all, of the skeletal elements have not undergone C14 dating, histological analysis, or any other type of research to determine whether these human bones were curated over a longer period of time, it remains difficult to make definitive statements about the duration of curation, as has been explored in Britain (Brück & Booth, 2020; Brück & Booth, 2022). There are some cases in which we can discuss the possibility of curation within the Dutch context.

Curation

At Geldermalsen-Hondsgemet, burials and disarticulated human remains were found in features ranging from the Late Iron Age to the Late Roman Period. Within this settlement, two parts of a femur were discovered in a Late Iron Age gully dated between 150 and 19 B.C. However, C14-dating of these femur parts suggests they originate from the Early Iron Age, between 800 and 700 BC., meaning there must have been at least 550 years between the time of death and the deposition of the skeletal elements inside the gully. Combined with visible signs of weathering, this might indicate that the bones were deliberately curated before being placed into the gully fill (Baetsen, 2009, pp. 344–345). Since most of the settlement features date from the Late Iron Age onwards, except for one grave from the Middle Iron Age, it is likely that the individual to whom the femur belonged did not live in the settlement and may have been brought there by relatives as part of a later burial or commemorative act. The Bronze Age settlements of West Frisia also include some C14-dating, both of the features in which remains were found and of the disarticulated human bones themselves. As discussed previously, C14-dating in West Frisia is challenging, as no dates are taken directly from the features, but rather from the material contained within them (Roessingh, 2018, pp. 45–46). This makes it difficult to draw definitive conclusions about the use of a feature and whether the human bones are contemporaneous with it or originate from an earlier period. Some of the C14 dates indicate that the human bones found in West Frisia are older than the features in which they were found. At Andijk-Noord (1973), within the ring ditch surrounding a barrow where around twelve disarticulated human remains were found, the ditch itself is dated to the Middle Bronze Age B (between 1407–1231 BC). One femur (ID26) found within the ring ditch was dated to between 1607–1421 BC, while another (ID29) was dated between 1410–1220 BC. The remaining skeletal elements have not been radiocarbon dated, but these results at least suggest that not all the bones originate from the same time moment, potentially differing by a few decades or even centuries. For the other disarticulated human remains outside of Andijk-Noord (1973), either no radiocarbon dating was conducted, or, when the human bones were dated, the features themselves were dated based on those same bones. This makes it impossible to draw further conclusions about potential signs of curation.

More direct evidence of the curation of human remains is seen at several Iron Age sites, including Ezinge, Geldermalsen-Hondsgemet, and Houten-Castellum, where both complete and partial skulls were deliberately modified and curated within the settlements for different purposes. At Ezinge, for example, two skulls dating to the Middle or Late Iron Age were modified and polished into bowl like objects (see Figure 18 in the Ezinge case study). One of these skull bowls also features a perforated edge, possibly suggesting it served a secondary function as a household ornament. Both were found near the byres or houses. While this specific practice appears unique to Ezinge, no other known settlements provide such clear examples of this type of skull treatment, other instances of human bone modification have been identified elsewhere. At Geldermalsen-Hondsgemet, a femur shows that one side of the joint was removed while the other was sharpened, though the break makes the sharpened end unclear. A hole was drilled below the unsharpened end, though it does not reach the marrow, and the object shows signs of use. At Houten-Castellum, one skull (V45.302) shows a fracture pattern that suggests it may have been displayed on a stake inserted through the foramen magnum. The direction of the force appears to align with that of the foramen magnum, indicating that something penetrated the skull, causing damage to the parietal bone as well. This may imply that the skull was displayed on a stake above ground (Panhuijsen, 2017, p. 744). Another skull from Houten-Castellum (V41.433) shows older damage on the underside, where the lower jaw was removed. Additionally, the front halves of the joint surfaces with the first cervical vertebra on both the left and right sides have disappeared.

There is also minor, symmetrical damage on the upper jaw just behind the wisdom teeth. While this does not provide direct evidence of decapitation, the symmetry of the damage suggests that this skull may also have been prepared for display (Panhuijsen, 2017, p. 743).

The removal and temporary curation of skeletal parts is not only limited to the 'atypical' burials inside and near the settlement but is also observed at the cemetery of Ypenburg-Location 4. In Grave S2-8, an individual was buried in a location where a double grave (S2-44) had already been present. Skeletal elements from the earlier individuals were removed and later re-placed during the burial of Individual 1, as evidenced by the overlapping of skeletal remains over this newer burial (Baetsen, 2008, pp. 160–161). Most of the skeletal elements from both individuals in S2-44 were missing (Baetsen, 2008, p. 186), indicating that keeping bones out of the grave, perhaps only temporarily, to later rebury them with a new individual, was a practice occurring at Ypenburg, and that people continued to handle the bones after death. The complete removal of skeletal elements from both individuals, without any indication of reburial, suggests that something else occurred with the bones outside the burial context. It remains unclear whether these elements were already missing when the two individuals were initially buried in S2-44, or if they were removed later, during the subsequent burial of S2-8 over the original grave (Baetsen, 2008, p. 186).

9.4 Rites of incorporation: deposition and burial?

At last, in the final step of the *rites of passage*, the rites of incorporation becomes important. The rituals and acts preformed in the previous phase, made it possible for the deceased to transform themselves, by the acts of destruction, such as cremation, breaking bones, or many other secondary practices. Allowing them to take on a new role within both the dead but also living community (Van Gennep, 1960, p. 147). At the settlements, we observe three different final treatments of human remains: formal burials either within or just outside the settlement; partially deposited, disarticulated human remains placed in settlement features; and disarticulated remains scattered within the cultural layer.

Some individuals were buried within or near the settlement, either in designated burial pits or within settlement features. There does not appear to be any clear correlation between the choice of burial location, burial pits versus settlement features, and the post-mortem damage observed. In both contexts, evidence suggests that the deceased underwent secondary treatments, including skeletal removal, decomposition or exposure above ground, and, in some cases, gnawing marks, cut marks, and other modifications. But no direct link between why certain people received different kinds of secondary treatment. The final treatment of the skeletons also varies. Some individuals were placed in more 'typical' burial pits, occasionally accompanied by a few grave goods, as seen at Schipluiden. Others, such as those at Ezinge, were buried in less formal pits, with no grave goods and no significant differences in treatment compared to those buried in settlement features. Overall, there is little to indicate a strong distinction between individuals based on the type of burial they received.

For the disarticulated human remains, the picture becomes more complex, as it remains unclear what happened to the rest of the individual not included in the deposition within the settlement. As demonstrated by individual 15 at Schipluiden, it is possible that individuals were retained within the community for secondary treatments and subsequently buried or deposited outside the settlement. There are recurring patterns in depositional practices across different periods. During the Neolithic, most disarticulated human remains are found near refuse zones and burial areas. In the Bronze Age, depositions appear more frequently in boundary contexts, marking divisions between the social and natural spheres, dry and wet environments, or the domains of the living and the dead, particularly in features such as ring ditches.

In contrast, the Iron Age reveals an increasing emphasis on the household and farmyard, with many human remains deposited in close association with the household. The post-mortem damage observed across these periods suggests processes of decomposition and an indeterminate period during which skeletal elements were curated prior to deposition. No consistent pattern emerges across the three periods to suggest that certain types of post-mortem treatment were preferred, with the exception of skull modification observed at a single site, Ezinge. While the placement of remains in settlement features or within the cultural layer, such as cranial fragments placed at house entrances, inside wells, or in other recurring locations, may suggest intentionality, this is less evident in the Neolithic. The location of these depositions, often near settlement boundaries or adjacent to the settlement burials, raises questions about their nature: were these intentional acts, or could they represent the residual outcome of secondary treatment processes, where individuals were ultimately deposited or buried beyond the settlement in ways that are not currently archaeologically visible? This remains unresolved and open to further interpretation.

10. From household waste to identity expression!

Central to this thesis is understanding the role of disarticulated human remains found in settlements throughout Dutch Prehistory. This study aims to approach the presence of disarticulated human remains from a different perspective. Since the first findings in West Frisia in 1981, the prevailing interpretation has been that these remains were merely 'household waste' (Brandt & IJzereef, 1981, p. 56). In contrast, this thesis proposes that the presence of human remains within settlements reflects a deliberate choice, forming part of an expression of identity. This means moving away from the broader perspective on human remains found outside the non-mortuary context, which are often described as 'non-formal', 'deviant', or 'atypical', and are taken less seriously compared to bones found in a mortuary context. In mortuary context, a standardized format and clear rules about the layout and placement of a grave are key to being considered 'formal'. In contrast, 'non-formal' contexts do not follow these rules, the placement of the body, as well as any associated objects, is not clearly visible. These 'non-formal' depositions are often linked to individuals with low social status or other negative associations (Müller-Scheessel et al., 2020, pp. 172–174). This thesis takes a more neutral approach, without pre-defined interpretations based partly on contemporary perspectives on death and burial, and instead tries to contextualize these human remains on a broader scale, both in terms of the data and the interpretation of the funerary process.

By examining these depositions within settlements from two angles, through case studies and an analysis of all skeletal elements per period, this thesis offers new interpretations and identifies recurring patterns. The research is based on a collection of nearly 84 settlements and over 511 human remains, including three case studies that highlight both the treatment of disarticulated human remains and complete skeletons. These findings contribute to answering the central research question: '*What are the funerary practices associated with disarticulated human remains found within prehistoric settlements across Northwestern Europe?*'

Studying the disarticulated human remains and the skeletons found inside the settlement is about trying to understand why prehistoric individuals placed their relatives or ancestors as depositions within settlements. These depositional locations can give us information into the relationships between communities, and also into how the social and natural spheres were connected, shaping expressions of identity and belonging. But this study is also about the fragmentation and curation of human remains, and what these actions might have meant for those people.

At the same time, the disarticulated human remains, along with their connection to the burials in the settlement, also tell us a story about possible secondary treatments practiced during rites of transition. These practices are often considered invisible in the archaeological record. This period, also called the liminal phase, includes the most important rites for expressing identity and ritual meaning. A limited amount of post-mortem damage, such as weathering, gnawing, erosion, cut marks, modifications, and burning, shows that these remains were kept above ground for an unknown period of time. This could have been during the natural decomposition of the body or even after this process. It seems that the human remains were curated and fragmented by the living community before they were finally deposited inside the settlement.

10.1 The intentional dead

The conclusion of this thesis, based on the collected data, is that the disarticulated human remains deposited within Dutch settlements during the Neolithic, Bronze Age, and Iron Age are not merely 'household waste' or 'objects that had value and lost their value,' but rather deliberate and intentional choices that have been part of an expression of identity! There are recurring patterns in the data**.** These patterns relate both to who these individuals were and to the kinds of identities being expressed. Identity expression is visible through the depositional locations and the biological data on the bones. In addition, post-mortem damage observed on both complete skeletons and disarticulated human remains supports these patterns. Together, these aspects point to a consistent trend that reflects rites of passage. The disarticulated remains from the Neolithic settlements appear to result more directly from secondary burial practices, as it remains unclear whether their placement, around refuse zones and near burials, was intentional. In contrast, disarticulated remains from the Bronze Age and Iron Age settlements are often found in relation to boundaries: between the landscape and the settlement, between wet and dry areas, and between the living and the dead. In the Iron Age, there is an increased importance placed on the household and the house cycle. These placements suggest a clearer intentionality in the deposition of bones, reflecting symbolic or social purposes within the community. It is within this context that land ownership, and the connection to one's home and household, becomes increasingly important. The post-mortem changes and damage observed on both disarticulated human remains and complete skeletons suggest a deliberate practice in which bodies were kept above ground. During this time, skeletal elements may have been intentionally fragmented and circulated among community members before ultimately being deposited within the settlement. However, more evidence is needed to make definitive conclusions about the exact processes that took place between death and deposition.

When contextualizing the disarticulated human remains found within Dutch settlements alongside other regions such as Britain, it becomes clear that this practice is not isolated to one region. The deposition of disarticulated human remains appears to be a recurring and widespread phenomenon, with similar patterns across regions. In both the Netherlands and Britain, Neolithic settlements show little evidence for the deliberate deposition of such remains within settlement features (King, 2001, p. 324). During the Bronze Age, boundaries around the house and settlement, as well as transitional zones, such as the edges between wet and dry areas, became more important in both regions. (Brück & Booth, 2020, p. 200; Parker Pearson, 2023, p. 156). In the Iron Age, hillforts became more important in Britain, and more people were buried within them, often interpreted as 'family cemeteries' (Harding, 2016, p. 115), while disarticulated remains were also closely tied to the household (Davies, 2022, p. 78).

These parallels reinforce the interpretation that the deposition of disarticulated human remains within settlements was a meaningful and structured practice, reflecting broader social and symbolic practices shared across regions. But also the choice of who was deposited inside the settlement seems similar, with mostly adults being deposited, especially when looking at the disarticulated human remains (Brück, 1995, pp. 249–250; Davies, 2017, p. 128). As mentioned earlier, research in Britain has progressed further in understanding curation and what happens between death and deposition. Booth and Brück (2020, p. 1188) show that many Bronze Age human remains are older than their deposition context, with an average curation period of about 65 years, sometimes up to 200, suggesting a two generation gap. Indicating that the deceased were likely remembered personally or within their families. Histological evidence reveals various post-mortem treatments, including excarnation (weathering and gnawing marks) and exhumation (bacterial bioerosion). Disarticulated bones in settlements likely came from bodies kept in sheltered places and exhumed later, while bones in wells and wet areas show more excarnation signs (Brück & Booth, 2022, p. 213). The practice of excarnation is also linked to four-post structures found in many southern British settlements alongside disarticulated remains (Crozier et al., 2005, p. 116).

The patterns in Britain show that the deposition of human remains within settlements is not limited to the Netherlands but can also be seen in Britain, with many similarities between the two regions. To fully understand whether this deposition practice occurred throughout all of European Prehistory, similar to the widespread use of barrows and standardized burial practices, it is important to expand the research. Future studies should include more regions and countries to assess whether this was a common practice across Europe or specific to certain areas.

10.2 Further research on disarticulated human remains

Although disarticulated human remains have received attention in both academic publications and excavation reports, there is still a lack of important information, both regarding their spatial context within settlements and the specific features in which they were found (e.g., the layer of the feature, associated materials, or its dating). Information about the skeletal elements themselves is often equally limited, including details such as age, biological sex, and, most importantly, whether there are any signs of post-mortem damage on the bones. Further analyses, such as histological, taphonomic, and radiocarbon studies, which are now more commonly applied to human remains in Britain to understand curation and excarnation processes better, would be highly beneficial when applied to disarticulated bones. A starting point would be more consistent documentation of disarticulated human remains, while additional analytical approaches could offer more information into what occurred between death and the eventual burial or deposition within non-mortuary context. But how do we actually tackle the issue of missing information in excavation reports, and how can we improve awareness that disarticulated human remains might be remnants, or even the final stage, of funerary practices that are otherwise invisible in the archaeological record? The Cultural Heritage Agency, through the National Archaeological Research Agenda of the Netherlands (NoaA), is at least a starting point in spreading awareness about the importance of these remains. It includes an operational manual with practical guidance for excavations, which emphasizes better documentation of context and highlights the value of having a physical anthropologist assess post-mortem damage, like signs of exposure or cutmarks. But even though the agenda stresses these points, it is still just a guideline. It is not enforced, so in practice, the recommendations are often not followed.

The problem lies in the Program of Requirements (PvE), which is mandatory before an excavation begins and focuses on pre-determined outcomes expected for a given site. In the case of settlement excavations, the emphasis is usually on the landscape, settlement features, and material culture. Research questions about human remains are only included if a visible burial monument, like a barrow or urnfield, is nearby or expected. This approach leaves no room, time, or budget to investigate disarticulated human remains found within settlements. By shifting this perspective and including research questions specifically addressing disarticulated human remains within settlements, it becomes possible to allocate both budget and time for physical anthropological research.

This is especially important when we consider the persistent negative associations tied to human remains found outside mortuary context, often immediately labelled as 'household waste' or 'discarded objects' from the moment they are found, without further investigation. These assumptions have lingered, shaping interpretation from the outset. Changing the way we approach these remains, starting from a more neutral, or even positive, perspective rather than assuming they are simply discarded refuse, opens up new possibilities. Together with targeted research questions, this shift can increase awareness and encourage more thorough documentation and analysis. In turn, this offers a real opportunity to improve our understanding of funerary choices around excarnation, curation, and deposition outside of formal mortuary context.

The opportunity to move forward lies in not automatically categorizing human remains found outside mortuary context as 'atypical' or 'deviant,' but in recognizing them as equally relevant as those within. By directing more attention and research toward the choices made between life and deposition, we make it possible to bring the invisible death closer to visibility in our understanding of what identity, death, and the afterlife meant to prehistoric communities.

Abstract

While European and Dutch prehistoric burial practices are often explained through the visible and prominent monuments (e.g., megaliths, barrows and urnfields), these only represent a small part of the population, around 10 to 15%. This means that it is currently unknown what happened to the majority of the population after their death. Fifty years ago, in West Frisia, disarticulated human remains were observed in house and circular ditches across ten different Bronze Age sites. This was further expanded with the observation of disarticulated human remains in three prehistoric periods: the Neolithic, Bronze Age, and Iron Age (5300–12 BC). These human remains in settlement context might give information into alternative (or less visible) and unknown burial practices in Dutch prehistory. Since their first observation, however, they have often been disregarded as 'household waste' or as objects that once had value but lost it, and they continue to be negatively viewed. This view has negatively affected both archaeological excavations and how these human remains have been treated.

To move away from this negative interpretation and approach these human remains on a neutral basis, the research question focuses on what the funerary practices are that are associated with disarticulated human remains found in prehistoric settlements. This includes sub questions about what classifies as 'normative' and 'non-normative' burials, patterns in depositional locations, the skeletal elements, and who was deposited inside the settlement, as well as what happened between death and deposition. To answer these questions, a systematic approach was taken by collecting excavation reports from the past 100 years across the Netherlands that mention both the presence of a settlement and human bones within it. Both disarticulated human remains and complete skeletons are included, as they can complement the understanding of what happened. In total, 84 settlements and 511 skeletal elements, spanning the Neolithic to the Iron Age, have been compiled into an Access dataset. The relatively even distribution of settlements across the periods makes it possible to observe changing patterns in deposition choices.

When looking at the disarticulated human remains and their patterns, both in recognition of the locations that were chosen, the skeletal elements, the people who were buried, and when looking at the arguments of why these human remains are considered 'household waste'. It becomes abundantly clear that these human remains are not household waste, or objects that had value and lost their value! Rather, they were part of a broader expression of identity through the practice of deposition in the settlement. With the evolving choice of locations related to the growing importance of land ownership, ancestry, and the household as expressions of identity. At the same time, looking at the post-mortem damages and the skeletons reveals that much happened between when someone died and when they were deposited or buried. These observations point toward fitting choices within the rites of passage, such as secondary practices like excarnation, fragmentation, and curation, indicating that individuals were not buried immediately after death. While the 511 skeletal elements might not fully explain what happened to the unknown 90%, they provide information about less visible burial practices, what occurred between death and the final step in burial rites, and suggest that disarticulated human remains in non-mortuary context, such as settlements, might have been part of the 'formal burial program.'

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Appendices

Appendix A: Dataset

The dataset referenced in this thesis is included as a separate file and can be accessed through the official submission.