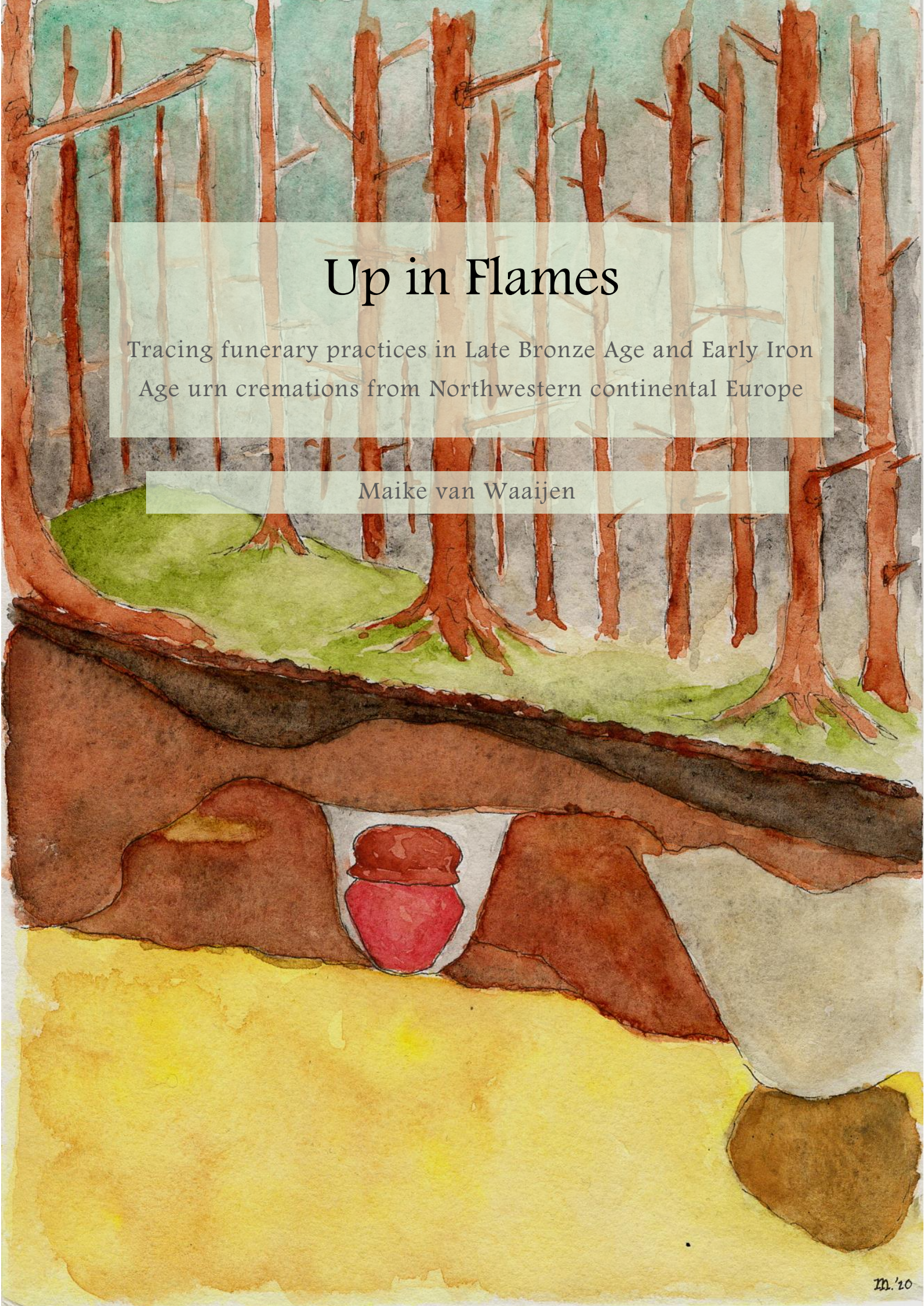

Up in Flames

Tracing funerary practices in Late Bronze Age and Early Iron Age urn cremations from Northwestern continental Europe

Maike van Waaijen

Cover image: Illustration of the archaeological site Venlo-Zaarderheiken (made by author).

Up in Flames

Tracing funerary practices in Late Bronze Age and Early Iron Age urn cremations from Northwestern continental Europe

Maike van Waaijen
S2005166
Thesis BA3 - 1083VTHESY
Supervisor: Prof. Dr. D.R. Fontijn
University of Leiden, Faculty of Archaeology
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Preface

I would firstly like to thank my supervisor, Professor Dr. David Fontijn, whos inexhaustible enthusiasm and critical thinking guided me throughout this thesis and final months of my bachelor. He has made the biggest effort to help me get the most out of myself, even when circumstances seemed to prevent me from graduating this year at all. I could not have wished for a better supervisor.
Furthermore, I would like to thank my family for always being there for me, although I occasionally bored them to death as well (sorry). No bridge was too far for them to help me pursue my dreams, and for that I am ever grateful. I would especially like to thank my Great Honest Uncle Bob for taking me on a fossil hunt on the Jurassic Coast of England when I was sixteen: you showed me how much fun it was to spent an entire day in the pouring rain, as long as there was something to dig for!
And last but not least, I want to thank my boyfriend Jens, for his endless patience, support, and encouragement. I'm sorry my thesis is more than a hundred pages, but I hope you like the pictures.

Maike van Waaijen

1. Introduction

1.1 Research problem

During prospective research organised by the University of Leiden at the archaeological site of Venlo-Zaarderheiken in the summer of 2019, a barely disturbed urn containing cremated human remains was discovered (**fig. 1.1**). The urn was found in a small barrow (object 18) in the middle of a forest (**appendix 1**) (van Waaijen 2019, 9). Based on the typology of the urn and the ceramic vessel used as a 'cover' (probably both a *Schräghals*-type), the burial likely dates to the Early Iron Age (Fontijn *et al.* 2013c, 142–43). Since the site of Venlo-Zaarderheiken was dated to the Late Bronze Age and Early Iron Age, this typo-chronological dating is very likely.

Figure 1.1: Preparation of the urn cremation from Venlo-Zaarderheiken in the field, by Prof. Dr. D.R. Fontijn (left) and the author Maike van Waaijen (right) (photograph by Marion van Westen).

The discovery of this urn cremation came as a surprise, as the circumstances gave the impression that little archaeology would be preserved at this site (van Waaijen 2019, 15). Ploughing activities to accommodate tree-lanting (*Pinus*) left devastating results; barrows that have lasted thousands of years are now damaged and deformed (van Waaijen 2019, 15; 18). Thus, finding the urn in a relatively undisturbed condition felt like finding a pot of gold at the end of the rainbow for the entire excavation team, and especially to the excavators: Bart Gabriels and the author. As the conditions the urn

cremation was in, it was decided to blocklift the artefact entirely. If it was left *in situ*, it would only be a matter of time before it received its *coup de grace*. Additionally, blocklifting the urn allowed the possibility to excavate it under laboratory conditions, which could yield information on the funerary practices at play in this urn cremation. This type of research is rarely done with urn cremations in the Netherlands, as well as in the rest of Northwestern continental Europe. Therefore, the author decided to write her thesis about this subject.

1.1.2 Previous research on urn cremations

Urn cremations are rarely investigated in detail in the Netherlands (so far only 8 cases have been documented: Louwen, *forthcoming*). In other parts of Northwestern continental Europe[1], urn cremations are more commonly investigated, especially in France (e.g. Mordant and Depierre 2005). Research from these regions revealed that particular choices were made about how the contents of urns were organised, such as a structuration of the cremated human remains (e.g. lower limbs at the bottom and cranium on top), the addition of pyre remains, and grave goods (Mordant and Depierre 2005; de Mulder 2011; Smits 2013). Consequently, little is known about the position of the cremated human remains inside urns, as well as the position of additions to the graves (e.g. pyre remains, metal objects, accessory ceramic vessels) (Louwen, *forthcoming*).

Another bias on the topic of urn cremations, is a lack of research methods that clearly define how urn cremations should be studied. Therefore, an evaluation of excavation methods will be conducted in this thesis as well, in order to define a clear method for the investigation of urn cremations from the Late Bronze Age and Early Iron Age.

1.1.3 Scientific significance of research

Burials and funerary practices are investigated, because they form a window to past identities, social structures, ritual behaviour and perhaps even past religion and symbolism. Similarly, burials can be used to investigate paleodemographics, and certain cultural standards related to death (Kähler Holst 2019, 103–4). Nonetheless, research so far has been quite ambiguous concerning funerary practices during the Late Bronze Age and Early Iron Age in the Netherlands.

During the 19th and early 20th century, barrows were often excavated by antiquarians

[1] Research from the British Isles are not considered for this research, since Late Bronze Age and Early Iron Age barrows (which belong to the Urnfield tradition) are a continental phenomenon (Kähler Holst 2019, 106).

who mainly bore in mind their private collections; find contexts were not considered to be of importance (Louwen, *forthcoming*; Gerritsen 2003; Bourgeois 2013, xi; Kähler Holst 2019). The main interest was collecting the artefacts inside the barrows, and little attention was paid to other aspects, such as human remains or the position of other additions to a grave (Kähler Holst 2019).

Nowadays, research focuses more and more on cremated human remains, although the amount of research done on cremated human remians is still remarkably limited. Especially the aspects under study are rarely investigated: the position of cremated human remains inside urns, and the position of other additions in burials. Therefore, the outcomes of the research conducted in this thesis will be relevant to current day research, as there is a large gap of knowledge concerning certain aspects of funerary practices from the Late Bronze Age and Early Iron Age in the Netherlands.

Additionally, little comparisons between 'Dutch' funerary practices and those of other Northwestern continental European regions have been made, and even more rarely on such a detailed scale. The main reason for the lack of comparisons is caused by language-barriers: in France and Germany academics still publish a large part of their research in French and German. Therefore, it is not known if large-scale phenomena can be observed, or if we should consider highly individual funerary practises. Thus, this research will consist of a comparison of North-west European funerary practises as well.

In conclusion, the scientific significance of this research on funerary practices is that specific ideas become evident on the collection of the cremated human remains from the pyre-debris for example, or the position of certain cremated human remains inside a grave. This can give us an isight in the thought-processes of people in the past, as well as their norms and values regarding death and burial.

1.2 Aims and research questions

As mentioned above, the contents of urn cremations and their organisation rarely have been examined in the Netherlands (e.g. Fokkens and van Wijk 2009; Smits 2013; de Bondt 2015; Louwen and Fontijn 2019), and research concerning this subject is also scarce in Belgium, France and Germany (e.g. Delattre *et al.* 2005; Großkopf 2004; Janin *et al.* 1998; de Mulder 2011). Therefore, the author would like to investigate if a certain position of the cremated human remains and other additions to the grave can be recognised within urns. For this research, the following research question will be addressed:

- What choices were made concerning funerary practices in Northwestern continental Europe during the Late Bronze Age and Early Iron Age?

To answer these questions, several sub-questions will be addressed, in order to be able to answer this broader research question:

- Is a positioning of the cremated human remains visible inside urns?
- Is there a more or less complete body present or are specific parts of the body missing, and does this seem intentional or unintentional?
- Did the deceased receive additional contributions (e.g. grave goods like bronze objects, accessory vessels, etc.), and if so, what is their location inside the burial?
- Do burials contain charcoal fragments from the funeral pyre, and if so, where are they located (i.e. as a mix with the cremated human remains, on top of the remains, or at the bottom of urns, etc.)?
- Is the methodology used to study these funerary practices sufficient or is a different approach needed?

This first two sub-questions will be addressed to find out how exactly cremated human remains are positioned inside an urn, and if a specific selection of body parts can be seen. In some cases only certain bone fragments were collected from the pyre, as if a part of the remains represented the whole body of the deceased. Additionally, in several cases a structuring of these body parts can be seen (for example the cranium at the top of the urn and lower limbs at the bottom) (Großkopf 2004; Delattre *et al.* 2005; De Mulder 2011), which is sometimes interpreted as an attempt to reconstruct the body of the deceased (Gramsch 2013, 470). Since the positioning of cremated human remains and collection is rarely examined, this will be adressed in this thesis.

The third sub-question is of importance, because the addition of grave goods can reveal whether it was found important that the dead were accompanied by certain objects in their final resting place. For example, the urn cremation in mound 7 at Oss-Zevenbergen did not contain any grave goods, while many bronze fragments were recovered from the pyre-debris underneath the barrow (van der Vaart *et al.* 2013). On the other hand, highly fragmented materials such as bronze fragments are recovered from urn cremations as well (see de Bondt 2015; van Waaijen 2019). This indicates that perhaps the presence of certain materials was found more important than the actual objects themselves. Hence, to create a better understanding of the role of additions to burials, it is important to investigate if they are present – and where.

For the fourth sub-question, Delattre *et al.* (2005, 148) mention that a very clear correlation is visible between the addition of parts of the funeral pyre and how well the

human remains were cremated. This example indicates that specific choices were made concerning the addition or absence of (parts of) the funeral pyre. Therefore, the fourth sub-question has been added, in order to investigate whether (parts of) the funeral pyre are present within burials, or (specifically) absent.
The last sub-question addresses the methodology on how urn cremations are investigated. So far, a clear method for this has not been established, which makes it difficult to compare research since different methods can yield different results (for example: if urn cremations are sieved instead of excavated per layer, the structuration of body parts and position of bones cannot be investigated). In addition, the excavation of the urn cremation from Venlo-Zaarderheiken involves a lot of improvisation and trial-and-error, and this can cause data to become lost. Therefore, the establishment of a clear methodology for the excavation of urn cremations under laboratory conditions is imporant, to avoid mistakes in the future. For this reason, the final sub-question has been added.

1.3 Methodologies

This research will consist of two methodologies. The first methodology will consist of a literature study (see Chapter 4), whereby similar cases to the urn cremation of Venlo-Zaarderheiken are compared. These cases will come from other archaeological sites in the Netherlands, and Belgium, France and Germany. This method will be used to see if there are clear regional resemblances or differences between the observed funerary practices. Unfortunately, it is not possible to do an exhaustive comparison (as that would be more suitable for a PhD than a Bachelor thesis), thus a selection of sites had to be made.
The second will be the excavation of an urn found at the site of Venlo-Zaarderheiken (Limburg, the Netherlands), under laboratory conditions (see Chapter 5). The cremated human remains, additions to the grave and presence of charcoal and their subsequent positions inside the urn will be analysed and documented. This method answers helps to answer questions about the specific choices made regarding the collection of the cremated human remains from the pyre, as well as the specific position they were placed in. In addition, this method will help defining a clear excavation method for urn cremations, which is another research-aim.
However, due to unforeseen circumstances concerning the outbreak of the coronavirus, a change of the proposed research was necessary, which means only the preliminary results of the case study can be given, and the emphasis will lie on the

comparison with other research results concerning urn cremations in Northwestern contintental Europe.

1.4 Theoretical background

1.4.1 Funerary practices in theory

Within the study of funerary practices, several theories are important to consider. First of all, the complexity of burial rituals is often underestimated by archaeologists (Fokkens and Fontijn 2013, 558), while "burials constitute an intricate phenomenon with many interwoven motives and practices" (Kähler Holst 2019, 102). Especially Bronze Age and Early Iron Age funerary rites have a high degree of complexity, as cremation is time-costly as well as the construction of mounds over the graves (Kähler Holst 2019, 112). Arnold van Gennep (1960), already touched upon the complexity of funeral rites in his work *Les rites de passage* (first published in 1909), by stating that "all […] ceremonial patterns which accompany a passage from one situation to another or from one cosmic or social world to another" (van Gennep 1960, 10) can be classified in three categories: rites of separation, rites of transition, and rites of incorporation (van Gennep 1960, 10-11). Unfortunately, van Gennep is not very specific about which parts of the funerary practices can be considered as which type of rite, although he shortly mentions that the destruction of the body (e.g. cremation) is done to separate body and soul (1960, 164). Still, van Gennep already mentioned the variety in funerary rites between various peoples (1960, 146), which confirms that funerary practices are a lot more complex than is often thought.

The sequence of funerary practices that were probably employed in the Late Bronze Age and Early Iron Age has been investigated further by Arjan Louwen (*forthcoming*).

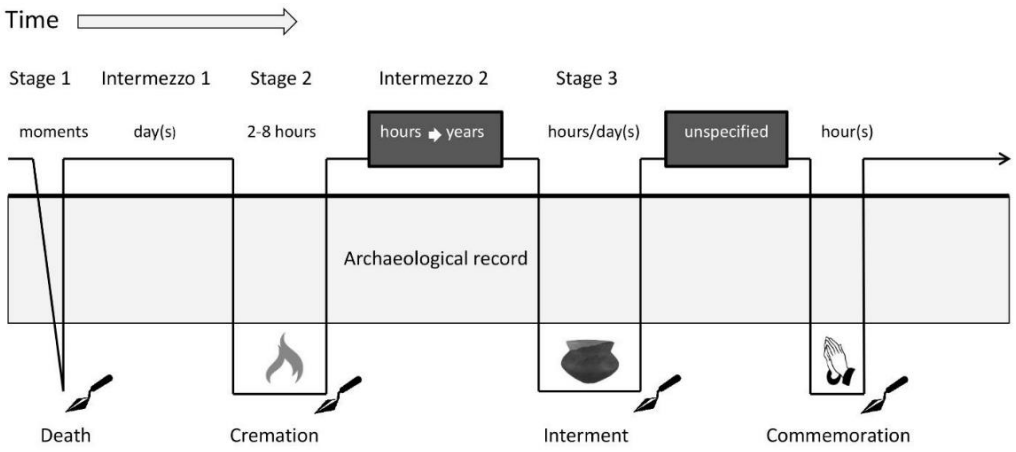

Figure 1.2: A schematic overview of the different stages and intermezzos present in funerary practices, their duration, and their traceability in the archaeological record (Louwen, forthcoming).

Louwen identifies three stages in the funerary practices that are recognisable in archaeological data, and these are alternated by two intermediary phases (intermezzos) that are very difficult to establish for archaeologists (**fig. 1.2**). The majority of the cremation graves from the Late Bronze Age and Early Iron Age in Northwestern Europe seem to follow this pattern, at least for the sites mentioned in this thesis.

Stage 1 concerns the moment an individual dies, which can be traces archaeologically by dating the remains of the deceased (Louwen, *forthcoming*). After stage 1, intermezzo 1 follows, which takes an unspecified period of time (Louwen, *forthcoming*). However, if cremated remains show indications of warping, the corpses are still in an early phase of decay (i.e. a "fresh" corpse), thus a short period of time had to be between death and cremation (Peake *et al.* 1999, 597). The actual cremation on a pyre is described as stage 2; this is revealed by the presence of pyre-debris at archaeological sites, or by the cremated human remains themselves (Louwen, *forthcoming*). Research has demonstrated that it takes between 2 to 8 hours to cremate a complete human body under open-air conditions (which are assumed to be the preshistoric conditions) (Louwen, *forthcoming*). Following the cremation, the process becomes rather unclear. At least an intermezzo (intermezzo 2) is needed to let the remains cool down (without extinguishing the pyre this takes about 2 days: Großkopf and Gramsch 2007, 77), but the time between the cremation and interment could range from a few hours to several years (Louwen, *forthcoming*). According to Louwen (*forthcoming*), this ambiguity occurs as there is no direct need to dispose the remains, since the body has been transformed to a durable state; cremated human remains are not prone to a fast process of decay. Stage 3 comprises the final interment of the cremated human remains, either in containers or as a "loose" deposition in a pit (Louwen, *forthcoming*). The construction of funerary monuments is also of importance, just as their location (i.e. interment in existing urnfields or barrow-clusters or not) (Louwen, *forthcoming*). The sheer size of some burial mounds indicates that they were not built within an hour, thus stage 3 could have taken quite some time as well. Louwen (*forthcoming*) concludes the funerary process in **fig. 1.2** with a commemoration, but this is very difficult to trace archaeologically (Louwen, *forthcoming*). Still, the possibility that commemorations took place exists, just as we lie flowers or stones on graves when we visit a grave in modern times.

1.4.2 Ritual action and relational identities

The incorporation of 'ritual behaviour' in funerary contexts is often present in research

(e.g. the absence of a skull in a grave at the site of La Croix-de-la-Mission in France was interpreted as a ritual act: Peake *et al.* 1999, 600). However, the notion of rational action was not the same for prehistoric peoples as it is according to modern western ideas (Brück 1999, 321–22). Often, archaeologists describe past human behaviour as either secular or ritual (Brück 1999, 322). Especially for the interpretation of funerary practices this secular-ritual dualism becomes problematic, as dealing with death is both related to secular action (i.e. everyone dies, therefore death is part of 'daily-life') as ritual action, which is expressed with funerary rites. In many societies the distinction between ritual and secular action does not exist, which Brück shows by arguing that no such distinction was present in prehistoric societies in Britain (1999, 323). Fokkens and Fontijn (2013, 558) also argue that modern western views see individuals in burials "as mere interments of loved members of society," while not every member of society received a grave after death (Fokkens and Fontijn 2013, 558; Kähler Holst 2019, 104). Therefore, care should be taken in applying modern western ideas on past behaviour, as funerary practices can be a lot more complex.

Burial contexts are often used as a means to investigate the identities of the deceased. This can be done by studying the grave goods for example, or the burial mounds where the graves are located (Brück 2004). However, it should be kept in mind that funerary practices are controlled by the mourners and not by the deceased. This means 'interpersonal links' (social links between the mourners and the deceased) are of key importance (Brück 2004, 325). According to Brück, the identity of prehistoric people was created through their grave goods, together with the origin of these grave goods, placed in the grave by the mourners. For this reason, grave goods are an accumulation of relations, which Brück refers to as "relational constructs" (2004, 325). Although these theories are applied by Brück on Early Bronze Age Britain, her theories are very much applicable on Late Bronze Age and Early Iron Age continental Europe as well (Brück 2004, 326): for example with the so-called 'chieftains' graves (Fokkens and Fontijn 2013, 561). In sum, it should be considered that burial contexts are not just a reflection of the personal identity of the deceased, but a reflection of relationships with the mourners as well.

1.5 Research outline

In the following chapters, firstly an overview of Bronze Age and Early Iron Age funerary practices within Northwestern continental Europe will be given, to establish a clear framework in which the literature study and case study can be placed (Chapter 2). Subsequently, an overview of the site of Venlo-Zaarderheiken will be given, together

with a description of the context in which the urn cremation was found (Chapter 2). Afterwards, the methodologies used for this research will be addressed (Chapter 3). This will be followed by two chapters: the first will concern the results of the literature study (Chapter 4) and the second will give a preliminary report of the case study (Chapter 5). In Chapter 6 the results of the literature study and the preliminary results of the case study will be compared. Finally, a conclusion (Chapter 7) will be drawn about this research, wherein the research questions will be answered.

2. Background

2.1 Bronze Age and Early Iron Age funerary practices on a European scale

2.1.1 Chronologies

Before the case study and literature study can be discussed, it is important to understand the chronological and cultural background of the regions under scrutiny. The chronologies still in use today in Northwestern Europe are largely based on the Paul Reinecke's chronology (Louwen, *forthcoming*), and are mainly based on copper and bronze typologies (Roberts *et al.* 2013, 20). Radiocarbon dating techniques have refined this chronological scheme from the 1950's onwards (Roberts *et al.* 2013, 20). It is important to mention that not all regions have the same chronology, as is evident in **fig. 2.1**. To avoid any confusion on this matter, the chronologies used in **fig. 2.1** are followed in this thesis. Thus, the Late Bronze Age in Northwestern continental Europe starts between 1350-1100 BC, and ends *ca.* 800 BC with the beginning of the Early Iron Age (Louwen, *forthcoming*). Subsequently the Early Iron Age spans from roughly 800-

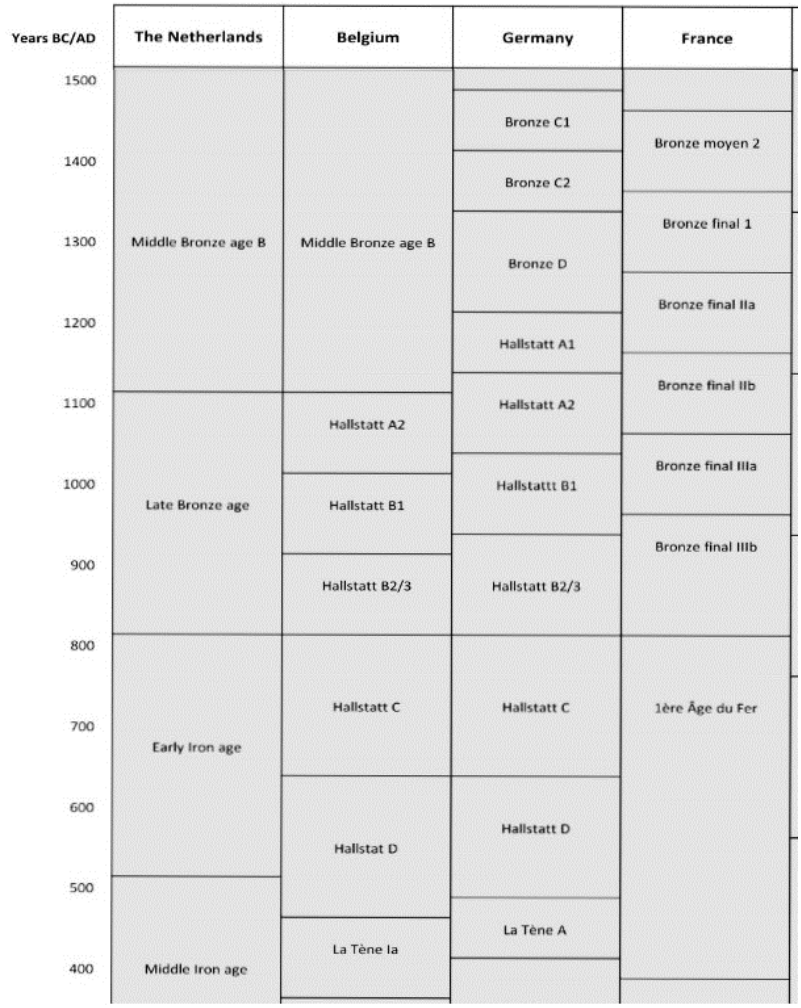

Figure 2.1: The chronologies from the Middle Bronze Age to the end of the Early Iron Age in Germany, France, the Netherlands, and Belgium (after Louwen, forthcoming).

500 BC (Louwen, *forthcoming*). A more detailed overview of the funerary practices per period will be given below.

2.1.2 Bronze Age funerary practices

During the Bronze Age, funerary practices were highly variable. Sometimes intricate monuments were erected, while in other cases the dead received a seemingly thoughtless deposition (Kähler Holst, 2019, 103). From the Middle Bronze Age onwards, the erection of barrows as burial monuments becomes more and more frequent (Kähler Holst 2019, 103).

Towards the Late Bronze Age, cremation practices became dominant, as opposed to inhumation burials (Kähler Holst 2019, 103-104), although cremation practices were already present from the Middle Bronze Age onwards in some regions (Fokkens and Fontijn 2013, 558). The development and subsequent dominance of cremation practices goes more or less hand in hand with the emergence of Urnfield traditions (Kähler Holst 2019, 103-104). While in the Early and Middle Bronze Age only a very small segment of the population was interred in barrows (Fontijn and Fokkens 2008, 360; Kähler Holst 2019, 113), Urnfield cemeteries seem to reflect a more even distribution of the population (Fontijn and Fokkens 2008, 362). Additionally, Early and Middle Bronze Age barrows were often scattered throughout the landscape, whereas Urnfields show dense clusters of these funerary monuments (Gerritsen 2003, 121). Since large monumental burial mounds with lavish grave goods seem to be absent in the Late Bronze Age, urnfields are often interpreted as evidence for the development of local communities (Kähler Holst 2019, 112–13). Instead, the deceased received small individual mounds or flat graves, as opposed to the large Middle Bronze Age barrows with numerous secondary interments (Fontijn and Fokkens 2008, 360). However, these funerary practices would change drastically in the Early Iron Age (further explained below) (Fontijn and Fokkens 2008, 362).

Urnfield traditions seemed to be regulated by a kind of standardisation of funerary rites, whereby human remains were cremated and received little grave goods (Kähler Holst 2019, 106). This could suggest the emergence of "a better-defined and fixed set of conceptions" (Kähler Holst 2019, 106) at the end of the Bronze Age, although local variations remain present (Kähler Holst 2019, 106; Louwen *forthcoming*). Such standardisation is also visible in the grave good assemblages; although grave goods were present in Bronze Age graves, the amount of artefacts in these graves was limited (Kähler Holst 2019, 106–7). Even more rare were metal artefacts and weaponry, perhaps because of a 'taboo' on martial items in Bronze Age graves (Fontijn and

Fokkens 2008, 360). Grave goods that we do find in Bronze Age burials consist of ornaments, dress items, toilet equipment and containers (Kähler Holst 2019, 107). These items are often interpreted to reflect the identity of the dead, although this perspective has received a lot of critique in the last decades (Brück 2004; Brück and Fontijn 2013; Kähler Holst 2019, 107). Therefore, we should be careful with the application of social roles based on grave good assemblages, as these interpretations are often based on contemporary western perspectives (such as the common interpretation of weaponry belonging to male warriors) (Brück and Fontijn 2013, 201; 210).

The destruction of objects related to the deceased was an important practice in the Bronze Age, as becomes evident from the practice of cremating the corpse, but also by the often destroyed state (fragmentation, often related to secondary burning: see Chapter 4) grave goods were placed inside graves. One example of this practice is cleary visible in the pyre remains found at Oss-Zevenbergen, whereby numerous bronze fragments with traces of secondary burning were found among the charcoal (see Chapter 4.2.2) (van der Vaart *et al.* 2013, 129). Although some studies tried to link the emergence of cremation rites to the deliberate destruction of grave goods, a correlation between these two phenomena is not always established (Bradley 1982, 118). According to Brück and Fontijn (2013, 209) "the deliberate destruction of grave goods symbolized the changing relationships between the living and the dead," which means that both the body of the deceased as any items linked to this person had to be destroyed as part of the funerary rite. Other treatments of the dead consisted of the blending of cremated human remains in burials (Kähler Holst 2019, 108).

2.1.3 Early Iron Age funerary practices

Around 800 BC, a transisition from the Late Bronze Age to the Early Iron Age becomes evident, which is mainly based on the wide-spread use of iron in Europe (Brun 2018, 3). However, regarding funerary practices in Northwestern Europe, there is a lot of continuity with the previous Late Bronze Age traditions (Brun 2018, 4). Especially in the Netherlands the Urnfield tradition that was present from *c.* 1200 BC continues until the end of the Early Iron Age (±500 BC) (Fokkens and Fontijn 2013, 557). Moreover, the practice of destructing the corps through cremation, and the destruction of grave goods continues in the Iron Age (Bradley 1982, 118; Brück and Fontijn 2013, 209). In addition, not all individuals were buried; according to Brun (2018, 2) it is possible that some communities did not bury their dead at all. The reason why some individuals were buried and others not is currently unclear (Brun 2018, 2). In the past

buried individuals were interpreted as political, economic and/or religious elites, especially if ostentatious burial monuments and grave goods were present (Brun 2018, 2). Nonetheless, nowadays it is argued that the interpretation of 'elites' is heavily influenced by modern western perspectives on archaeological phenomena (Brück and Fontijn 2013, 212–13).

Although the funerary practices themselves do not suffer drastic changes, the effort invested in them does increase (Brun 2018, 4). This is visible with the construction of ostensible 'princely' or 'chieftain's' graves (*Vorstengraven* in Dutch, or *Fürstengraber* in German) (Brun 2018; Fokkens et al. 1989; Fontijn, van der Vaart, and Jansen 2013, 15). A possible chieftain's grave could be located in the south of the Netherlands at the site Venlo-Zaarderheiken. At this site object 5 has a substantial size (**appendix 1**), and ^{14}C-dating indicated a *terminus post quem* date in the Early Iron Age (900-804 cal. BC) (Jansen *et al.* 2019, 6). Furthermore, where Late Bronze Age urnfields seem egalitarian with a more or less even distribution of societal members (i.e. men, women and children were all buried instead of specific members of society), the Early Iron Age seems to bring along a certain hierarchisation within urnfields. Barrows are either small with "simple" graves (little grave goods of low value), or enormous with lavish grave goods (Fontijn and Fokkens 2008, 362). Additionally, the substantial presence of weaponry in Early Iron Age burials is discontinuous with the Late Bronze Age: the remarkable absence of weaponry in Bronze Age burials forms a heavy contrast with Early Iron Age graves (Fontijn and Fokkens 2008, 354).

Due to the presence of long-distance exchange networks, it became more easy to obtain exotic luxury items (Brun 2018, 4). An important example is that of bronze *situlae*, which have a Mediterranean origin (Brun 2018, 9). These are often found as grave goods in lavish burials (Brun 2018, 9), such as the *situla* found at Baarlo-De Bong (Limburg, the Netherlands) (Jansen *et al.* 2019, 2). More or less standardised sets of grave goods can be discerned in the 'richer' graves in Northwestern Europe, which could indicate a large-scale ideology or model on burial practices (Brun 2018, 17). These sets of grave goods often consisted of weaponry such as swords, horse gear and large bronze vessels (Fontijn and Fokkens 2008, 354, 362). The bronze vessels were sometimes used as containers for cremated human remains, and/or for horse gear (e.g. mouth guards) – at least in the Netherlands (Fontijn and Fokkens 2008, 363).

Additionally, tableware is frequently present in graves as well, although there are no Dutch or Belgian examples of this practice. The addition of tableware has been interpreted as remains of funeral feasts and/or feasting traditions (Brun 2018, 17). Nonetheless, these interpretations are largely based on ethnographic accounts of such

feasting traditions (Brun 2018, 17), hence it remains uncertain whether this interpretation is applicable on Early Iron Age societies.

All in all, the Early Iron Age funerary practices show continuity with the practices of the Late Bronze Age, although some significant changes are visible as well. The main differences are an increase of effort in some burials (so-called 'chieftain's' graves), a hierarchisation in Urnfield cemeteries, and the presence of very luxurious goods acquired through long-distance travel (Brun 2018, 4; Fontijn and Fokkens 2008, 362).

2.2 The case study: Venlo-Zaarderheiken

Venlo-Zaarderheiken is located in the province of Limburg (the Netherlands), close to the border with Germany (**fig. 2.2**). Two ^{14}C-dates indicated a use of the site at least in the Early Iron Age: 900-804 cal BC (95.4% probability) and 771-509 cal BC (95.4% probability) (Jansen *et al.* 2019, table 2). The site is situated near the highway crossing of the A67 and A73 in a forest used for the plantation of pine trees (*Pinus*). Before the site itself is and the discovery of the urn cremation are described, it is important to introduce the research project they are part of, and the current status of barrow-research in the Netherlands.

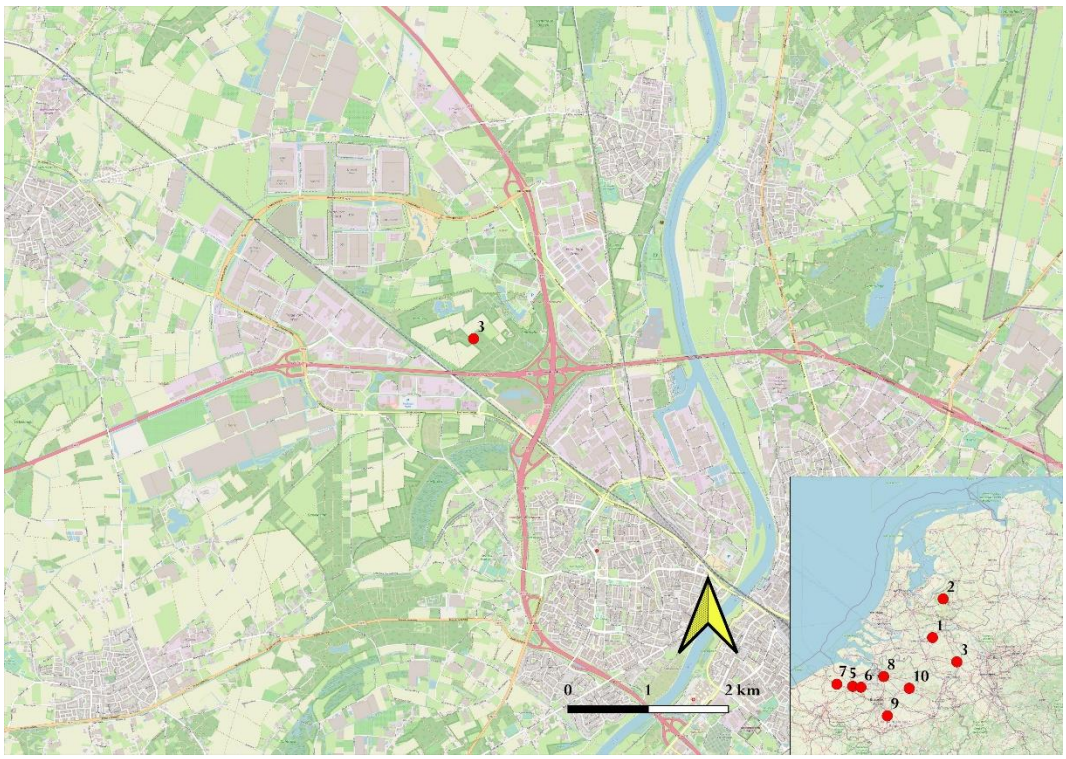

Figure 2.2: Map with the location of Venlo-Zaarderheiken (3) (made made with OpenStreetMap).

2.2.1 The Forgotten Barrows project (Vergeten Grafheuvels)

The University of Leiden has a substantial history concerning the research of prehistoric burial mounds, such as the *Ancestral Mounds* project and the *Beyond and before barrows* project (Jansen *et al.* 2019, 2). To investigate the site of Venlo-Zaarderheiken (in combination with Baarlo-De Bong), a collaborative project was set up between the University of Leiden, the municipalities of Venlo and Peel en Maas, and the Museum of Limburg (*Limburgs Museum*) (Limburgs Museum 2018, 1; Meurkens *et al.* 2019).

The first field campaign at Venlo-Zaarderheiken was held in 2018, with the main goal to localise barrows ('objects') and investigate whether they were anthropogenic or not (Jansen *et al.* 2019, 6). This was done with corings or small sections (in previous disturbances) (Jansen *et al.* 2019, 6). However, in most cases the results of the corings could not give a clear answer to the question if the objects were anthropogenic or natural creations, and restricted access to the site prevented research for the majority of the objects (see striped area: **appendix 1**) (Jansen *et al.* 2019, 6).

During the campaign of 2019, the large objects 19 and 20 received cross-corings (rows of corings that together form a 'cross'), while objects 18 and 60 were partially excavated using a box-method (van Waaijen 2019, 14). Object 61 was excavated with the traditional quadrant method, as it presumed to be a possible *Langbett* (van Waaijen 2019, 14). In object 18 (further explained below) thin anthropological layers could be recognised, and object 60 seemed to have anthropological origins as well. Excavations in object 61 yielded no clear results (van Waaijen 2019, 14-15).

2.2.2 Status of barrow-research in the Netherlands

Estimations have indicated that Europe was probably covered with barrows during the Bronze and Early Iron Age (Bourgeois 2013, 3). The Netherlands were no exception to the rest of Europe, and at some point in time there probably were thousands if not millions of barrows as well (Jansen *et al.* 2019, 2). Unfortunately, the majority has now disappeared (Jansen *et al.* 2019, 2). For those that did survive the test of time, the majority was looted by 19th-century antiquarians whose main objectives were filling their private collections and museums (Bourgeois 2013, xi; Kähler Holst 2019, 102).

From 1961 onwards, research came to an abrupt halt due to new laws concerning archaeological heritage that prohibited research in all known barrows in the Netherlands (Fokkens and Fontijn 2013, 550). However, selection processes were quite ambiguous, and large numbers of barrows that were (re)discovered after this law do not fall under this kind of protection. Therefore, these barrows can be considered as

fair game to anyone who wishes to dig in them. Consequently, a lot of the barrows at Venlo-Zaarderheiken are now disturbed or even (partially) removed, as can be seen with the near complete disappearance of object 48 at Venlo-Zaarderheiken (**appendix 1**).

2.2.3 The discovery of Venlo-Zaarderheiken

Although Late Bronze Age and Early Iron Age barrows have lasted thousands of years, some of them have only very recently been (re)discovered. This is also the case with two barrow-clusters located in Limburg (the Netherlands), in the vicinity of Venlo (Meurkens *et al.* 2019; van Waaijen 2019). The barrow-clusters of Baarlo-De Bong and Venlo-Zaarderheiken were discovered by local archaeologist Twan Ernst, whilst analysing AHN2-maps (*Actueel Hoogtebestand Nederland*) (Meurkens *et al.* 2019). These maps indicated 60 possible 'objects' at Venlo-Zaarderheiken (**appendix 2**), but it was not possible to see whether these mounds had anthropogenic or natural origins, and if they were prehistoric barrows (Meurkens *et al.* 2019).

Interestingly, there was no information known about Venlo-Zaarderheiken, although a lot of the mounds were looted (as indicated by the large holes in their centres) (Fontijn *et al.* 2018). Therefore, it seems likely that at least some people knew about the existence of these barrows (van Waaijen 2019). Another clue of the existence of this barrow-landscape was given during a rescue excavation at the Floriade-terrain by the archaeological company ADC (Hakvoort and van der Meij 2010), to the north of Venlo-Zaarderheiken. During this excavation several features of barrows were found, which dated to the Bronze and Iron Age (Meurkens *et al.* 2019). This indicates that the barrow-cluster of Venlo-Zaarderheiken was probably much larger than what is left of it today (van Waaijen 2019).

The recent discovery of Venlo-Zaarderheiken also has a problematic side, as this means it does not fall under the Monuments Law and is therefore unprotected. Consequently, the persistence of the archaeology is challenging, as forestry activities and plans for the creation of a golf-course in this location cannot be halted legally (Jansen *et al.* 2019, 5). Research is thus needed to show the value of this site.

2.2.4 The site: Venlo-Zaarderheiken

The site Venlo-Zaarderheiken is located on the west side of the river Meuse **(fig. 2.2**), on a sandy ridge (van Waaijen 2019, 8) The top soil at this location consists of a Moder Podzol covered by a Humus Podzol; the latter is also visible within the body of some burial mounds, which means soil-degradation already started in prehistory (Fontijn *et*

al. 2018; van Waaijen 2019). A proper reconstruction of the past environment cannot be created yet, as the pollen samples have not been analysed. However, the vegetation was probably very similar to that of Baarlo-De Bong: a Late Bronze Age/Early Iron Age site nearby (van Waaijen 2019, 7). At Baarlo-De Bong, a deciduous forest was present, with alternations of heath (*Erica*) pastures around the barrows (Jansen *et al.* 2019, 3; van Waaijen 2019, 7). According to Doorenbosch (2013, 241), barrows were usually surrounded by heath, therefore it seems very likely that this was also the case at Venlo-Zaarderheiken.

Most barrows are part of a barrow landscape, wherein barrows of different time-periods cluster together (Kähler Holst 2019, 112). The site of Venlo-Zaarderheiken does not seem to be an exception within this phenomenon, since the barrows at this site form a dense cluster of various sizes (**appendix 1**). Unfortunately, it is estimated that approximately the first 50 centimetres of the soil have been disturbed. This has been caused by a forestation plough, together with the clumps of earth attached to the small pine trees that have been planted (**appendix 3**) (van Waaijen 2019, 18). This also means that any archaeological features and finds within this layer have conditions varying from quite disturbed to more or less destroyed. The space between the plough blades seems to have been approximately 70 centimetres, and the consequences are quite perfectly shown in trench 6: finds are either nearly entirely destroyed (like a sherd cluster: **fig. 2.3**) or just missed (like the urn cremation) (van Waaijen 2019, 82).

Figure 2.3: Photograph of a sherd cluster (V27) (yellow arrows) that is aligned with a plough mark (red dashed line) found in trench 6 at Venlo-Zaarderheiken (photography by Marion van Westen).

2.2.5 Trench 6

Trench 6 was dug on the southern side of the burial mound (object 18) (**fig. 2.4**). Object 18 is only a slight elevation on LiDAR-images (**fig. 2.4**), and based on corings placed in 2018 it was not clear whether this elevation was a barrow or not (van Waaijen 2019, 14). To acquire more clarity on the nature (i.e. anthropogenic or not) of this mound, a box (approximately 3x4m: **fig. 2.5**) was created on a flank of the mound. The southern side was chosen because it was the least vegetated, and therefore easiest to excavate. The centre of the mound was not excavated, as it was not the goal of the excavation to find the central grave. However, this made it even more surprising to discover an urn cremation, as it was not the intention to fine a grave.

The urn cremation (V33) was discovered close to the western profile (profile 93) of the trench (**appendix 3**). In this profile a light pit-like feature with a light grey filling was visible (see S1: **appendix 3**). A similar feature (layer 7: **appendix 3**) could be seen in the eastern profile (profile 91), which probably corresponds with several sherds of another vessel found near that location (van Waaijen 2019, 82). Both the urn as the sherd-concentration (probably also belonging to an urn) did not seem to be located at the centre of the burial mound. However, this is hard to say, as extensive forestation activities have altered the surface (and subsequently the soil), so much that it is hard to establish the entire volume of the burial mound in the present landscape. Nevertheless, the urn and the other sherd concentration were located almost directly underneath the top soil, so it does not seem likely that they belonged to the central grave of the burial mound. Therefore, they are regarded as secondary insertions.

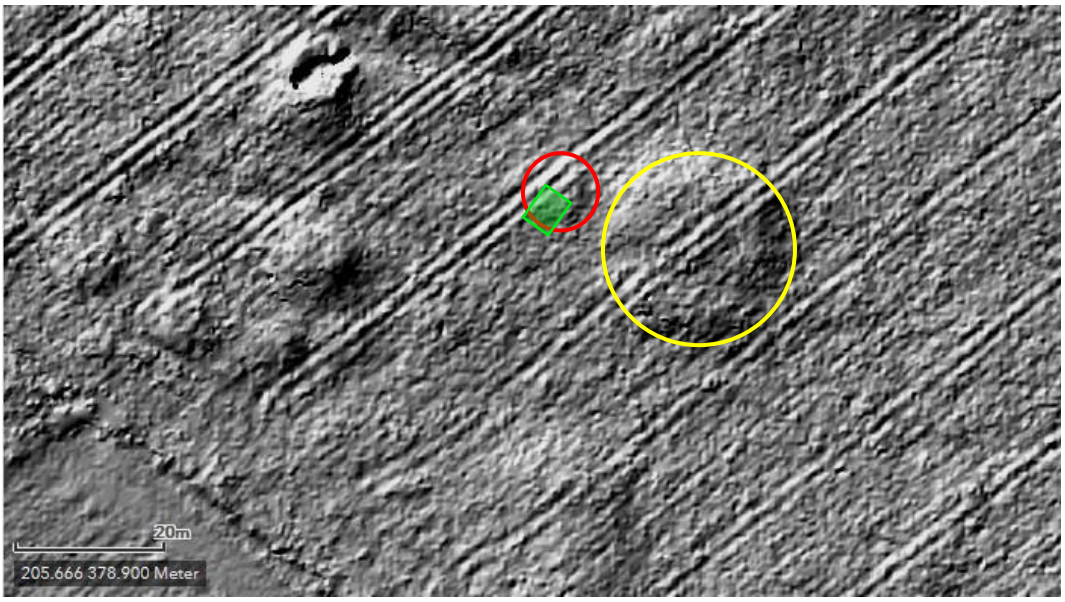

Figure 2.4: LiDAR image indicating object 18 (red circle) next to object 20 (yellow circle), with trench 6 (green square) dug into the southern side of object 18 (after www.ahn.nl).

Figure 2.5: Level 1 in trench 6 on the flank of object 18 (photograph by Marion van Westen).

2.2.5 The discovery of the urn cremation (v33)

The first indications of the presence of the urn cremation were several relatively large ceramic sherds just below (±15 cm) the top surface of the mound (**fig. 2.6**). At first it seemed a vessel had been turned on its side, as the sherds seemed to belong to its belly. However, as the excavation continued, it became clear that these sherds were laying on top of the actual urn, and probably covered the contents of the urn underneath. In addition, some cremated human remains were already visible in the field, which verified the interpretation of the find as an urn (van Waaijen 2019, 81–82).

After consultation with the local authorities, it was decided to perform a blocklift; based on the current circumstances it did not seem wise to leave the urn cremation *in situ*, since ongoing forestation activities would probably only damage it more (*pers. comm.* Prof. Dr. D.R. Fontijn to the author).

For the blocklift, a square block (±30x30cm) of soil containing the urn cremation was created. During this process several sherds that were sticking out of the block and/or profile were removed, to keep the package as dense as possible (van Waaijen 2019, 86). Once the block was small enough, it was cut from the profile and wrapped tightly in transparent and black plastic foil. After this, the urn was placed in a crate, which was filled with blocks of wood, sticks and sand, to stabilise the fragile urn during transport (van Waaijen 2019, 86). Lastly, the crate was transported through the forest in a wheelbarrow, as it was not possible to access its find location directly by car (van Waaijen 2019, 87). All in all, during excavation and extraction from the trench, the urn has received as little disturbance as possible. Therefore, it is especially well-suited for this research.

Figure 2.6: The location of the urn cremation in relation to the top surface (±15 cm below the surface) as indicated by profile 93 (photograph by Marion van Westen).

3. Methodology

The research for this thesis is twofold: on one hand a literature study will be conducted, whereby several aspects of urn cremations from various regions in Northwestern Europe will be examined (**fig. 3.1**), and on the other hand the research will consist of a case study, whereby an urn cremation from the Late Bronze Age/Early Iron Age will be excavated under lab conditions. Both methodologies will be further explained below.

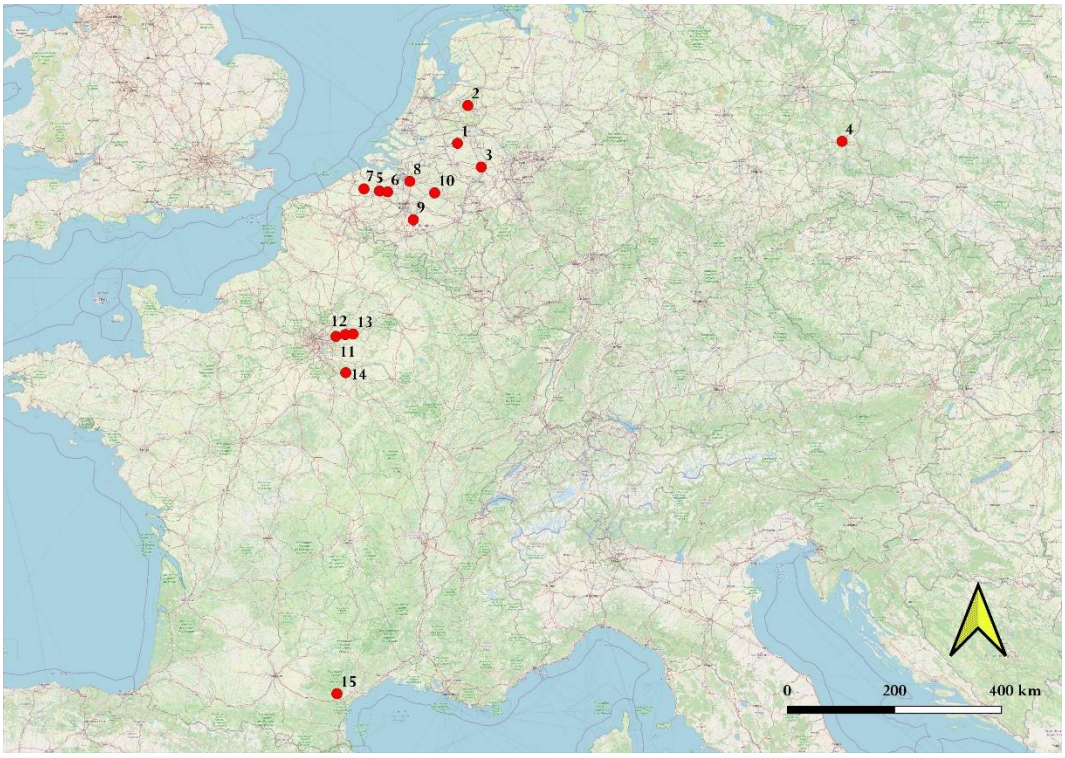

Figure 3.1: Map with the locations of all sites mentioned in the literature study: 1. Oss-Zevenbergen, 2. Uddeler Heegde, 3. Venlo-Zaarderheiken 4. Cottbus Alvensleben-Kaserne, 5. Destelbergen, 6. Donk, 7. Aalter-Oostergem, 8. Borsbeek, 9. Court-Saint-Étienne, 10. Tessenderloo-Engsbergen, 11. La Grande-Pièce-des-Hayettes, 12. Les Pétreaux, 13. La Rémise, 14. La Croix-de-la-Mission, 15. Le Moulin (made with OpenStreetMap).

3.1 The literature study

The literature study will consist of an investigation of detailed research done on Bronze Age/Early Iron Age urn cremations. The urn cremations come from sites located in Northwestern Europe; the Netherlands, Belgium, France and Germany (**tab. 3.1**). The author has mentioned earlier that only a few urn cremations in the Netherlands have been studied in detail (e.g. Fokkens and van Wijk 2009; Smits 2013; de Bondt 2015; Louwen and Fontijn 2019). In contrast, highly detailed research on the cremated

human remains in urns and the organisation of these remains were done for several archaeological sites in France and Germany (Großkopf 2004; Delattre *et al.* 2005). Unfortunately, studies have rarely been compared with each other, which is probably caused by the fact that most publications are not published in English. Consequently, it is difficult to see if observations are only applicable on a local scale, or if larger regional traditions are visible in terms of funerary practices during the Late Bronze Age and Early Iron Age in Northwestern continental Europe. Therefore, the author has selected sites that were distruted across Northwestern continental Europe, to be able to see if funerary practices were present at a local or regional scale.

The sites were selected on their chronology (at least Late Bronze Age or Early Iron Age burials), if their publication gave enough information to answer (the majority of) the research questions (Chapter 1.2), and if the cremated human remains were examined after approximately 1980 (as the Workshop of European Archaeologists 1980 introduced a standardised analysis).

For the literature study, several aspects of the urn cremations are of importance: the spatial organisation of human cremated remains, the completeness of the body, the addition or lack of pyre remains, and the addition of grave goods (and if so, what kind). Additionally, the research methods used for the studies are analysed as well. The results of the literature study are compared with the preliminary results of the case study in Chapter 6, whereby general trends and differences will be examined. The methodologies will be compared as well, in order to define what works and what does not.

Table 3.1

Country	**Site/research area**
the Netherlands	Uddeler Heegde
	Oss-Zevenbergen
Belgium	Scheldt Basin[2]
France	La Rémise
	La Grande-Pièce-des-Hayettes
	Les Pétreaux
	La Croix-de-la-Mission
	Mailhac
Germany	Cottbus Alvensleben-Kaserne

Table 3.1: Overview of all the sites analysed in this thesis (made by author).

[2] In fig. 3.1 only 5 sites were mentioned to improve the readability of the map. However, the study of the entire Scheldt Basin in de Mulder (2011) was used in this thesis, which comprises more than 5 sites.

3.2 The case study

The urn cremation from Venlo-Zaarderheiken was placed under laboratory conditions at the Faculty of Archaeology (University of Leiden), to allow careful excavation (**fig. 3.2a-f**). The urn is excavated layer by layer, whereby each layer is approximately between 1 and 3 centimetres deep (**appendix 4**). Every layer is photographed, and all photographs are documented on photo-lists (**appendix 5**). All finds are collected per layer (for the findslist: **appendix 6**), whereby cremated human remains are collected

Figure 3.2: a. The excavation of the 'block' containing the urn cremation in the field, b. the 'block' wrapped in plastic foil before it was lifted, c. the crate used to transport the urn cremation to the Faculty of Archaeology in Leiden, d. the crate with the urn cremation wrapped in foil, e. the wheelbarrow containing the crate with the urn cremation, f. the laboratory conditions at the Faculty of Archaeology under which the urn cremation was excavated (photographs made by author).

under one findnumber, but bagged separately per type of bone. For example, all cremated human remains from layer 2 were collected as v56, but cranial fragments, long bone fragments, etc. all received separate findbags. When a layer is finished, the cremated human remains are determined by osteoarchaeological specialist Dr. Rachel Schats from the Faculty of Archaeology (University of Leiden). As drawing layers on scale is often very time consuming, it was decided that interpretations and determinations would be indicated on printed photographs.

Over the last couple of years, technological advances such as virtual reality and digital 3D-modelling have advanced fast, and these technologies have proved to be very useful in archaeology. Therefore, it was decided to create a 3D-model of every significant layer, using the photogrammetry program Agisoft Metashape (**fig. 3.3**). Since working with 3D-models is not (yet) part of the curriculum of the archaeology bachelor at Leiden University, the methods used for the 3D-models will mainly consist of trail-and-error; the author has not created 3D-models prior to this research. However, these results will not be discussed in this thesis, as the inclusion of 3D-modelling would make this thesis too big.

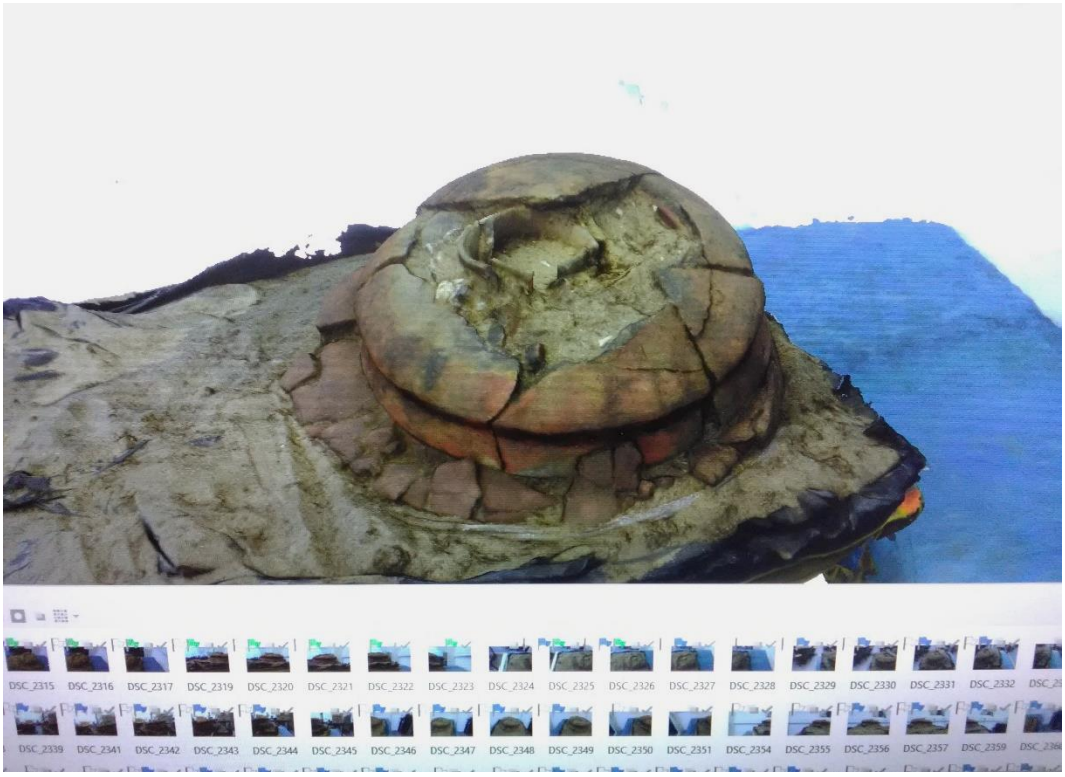

Figure 3.3: A digital 3D-model created with the software-program Agisoft Metashape (photograph by author).

4. Literature study

4.1 Late Bronze Age and Early Iron Age funerary practices in the Netherlands

Despite the presence of regional differences in funerary practices, urnfields are known from all over the Netherlands (Fokkens and Fontijn 2013, 557). They were often created in the vicinity of older Bronze Age barrows, and remained in use until the end of the Early Iron Age (Fokkens and Fontijn 2013, 557; 561). The practice of cremation – which was already dominant from the Middle Bronze Age onwards in the Southern Netherlands – becomes exclusive in this area from the Late Bronze Age onwards (Fontijn and Fokkens 2008, 359). After cremation, the human remains were deposited in (usually ceramic) urns, and placed in a pit which was often covered with a small barrow (Fokkens and Fontijn 2013, 558; 561). Although these practices persist with the transition from the Late Bronze Age to the Iron Age, a large shift in funerary practices is visible (Fontijn and Fokkens 2008, 362). Where in Late Bronze Age funerary practices seem egalitarian, Early Iron Age funerary practices reveal a hierarchisation with the construction of massive barrows (for example the chieftain's barrow of Oss) and the presence of lavish grave goods (Fontijn and Fokkens 2008, 362).

4.2 Urn cremations from the Netherlands

4.2.1 UDDELER HEEGDE

4.2.1.1 Site introduction and find context

The cremation burial of the Uddeler Heegde (S8.1) was found in 2013 during the first field campaign of the Before and Beyond Barrows-project hosted by Leiden University (de Bondt 2015, 25). The aim of this project was to investigate multiple barrows in the Veluwe area (Gelderland, the Netherlands), which were rediscovered with the use of LiDAR-imagery (AHN2: *Algemeen Hoogtebestand Nederland*) (de Bondt 2015, 25).
A smaller area was selected for the research project, with a total of four mounds (H1-H4) (**fig. 4.1**). Close to mound 2 (H2), remains of a small urnfield were discovered based on the discovery of four ring ditches, an oval ring ditch and remains of a long-mound (Verpoorte *et al.* 2020, 79). The cremation burial was discovered in trench 8, and was one of two cremation burials to be found at this site which probably belonged to a small urnfield (de Bondt 2015, 26). Both cremation burials were located in the centre of a ring ditch, and a charcoal concentration was found in a third (Verpoorte *et al.* 2020, 79). The cremation under scrutiny was interred in a small round pit, with several ceramic sherds laying on top (de Bondt 2015, 41).

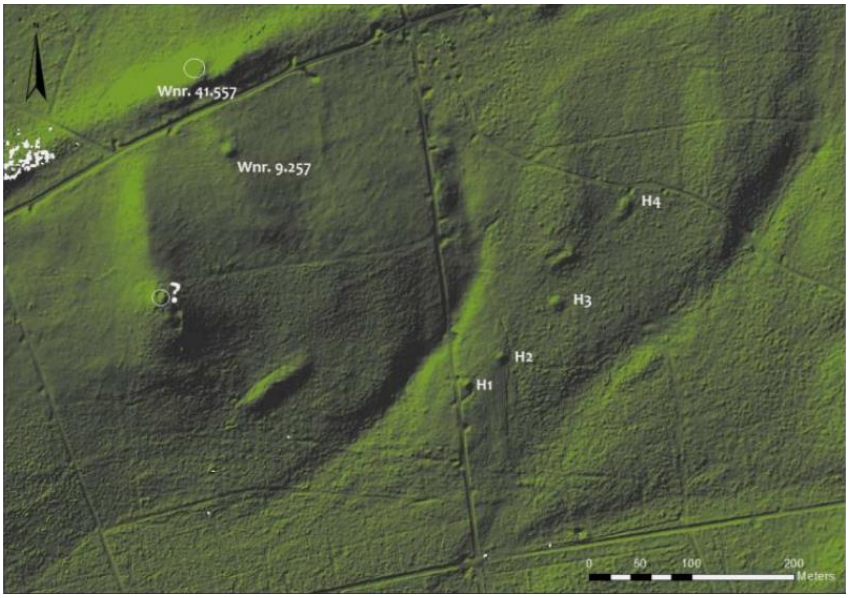

Figure 4.1: Map of research area the Uddeler Heegde, with mounds 1 to 4 (H1-4) (after de Bondt 2015, fig. 5).

After its discovery, the cremation burial was excavated in detail. The grave was studied to see whether specific bones were selected and if they were arranged a certain way, in order to gather more information about the funerary practices at play (de Bondt 2015, 26). The cremated remains yielded a ^{14}C-date of 916-836 cal. BC (95.4% probability), which places it in the Late Bronze Age (Verpoorte *et al.* 2020, 79). For the cremation, high temperatures were reached based on the colour of the remains, their hardness, fractures and warping (de Bondt 2015, 60).

4.2.1.2 Methodology

Excavation initially started in the field (**fig. 4.2**), but about halfway through the excavation of the burial it was decided to blocklift the grave as it could not be finished in time in the field (de Bondt 2015, 42). The burial was excavated in layers of 1 to 5 centimetres, to analyse the layers as detailed as possible (de Bondt 2015, 29). In total 13 layers were made (6 in the field and 7 in the laboratory), and every layer was documented with drawings (de Bondt 2015, 30). The finds all received a different find number or where collected in groups, which were subsequently weighed, measured and analysed (de Bondt 2015, 30).

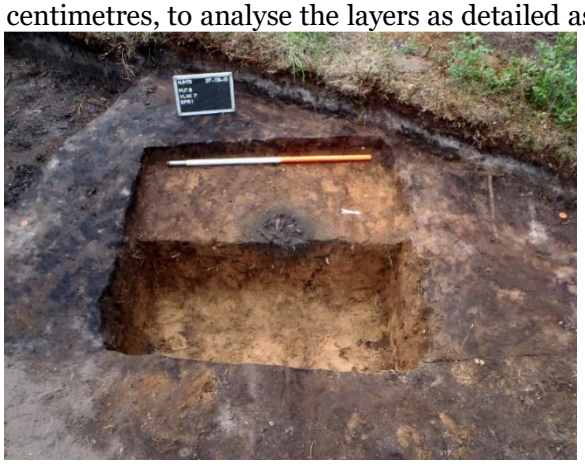

Figure 4.2: Photograph of the cremation grave (S8.1) in the field (Verpoorte et al. 2020, fig 9a).

Overall, this methodology has yielded very detailed results, although they

could be considered a bit too detailed at some points. Especially the documentation (i.e. drawing) of every layer and the separate collection of nearly all cremated remains yielded very detailed records, but this also required a lot of documentation time. In the author's opinion, all cremated remains could be documented as a bulk sample per layer, with a specification of identified bone fragments for each layer. This probably would have improved the time it took to excavate the cremation grave, whereby the most important information would still have been documented.

4.2.1.3 Positioning of the cremated human remains

In this cremation burial, a differentiation between the different body parts can be discerned. The majority of the fragments of the cranium and torso are located in the lower layers (6-13), while the first layers (1-5) mainly consist of fragments from the extremities (**fig. 4.3**). Therefore, a structuration of the different body parts is visible in this burial.

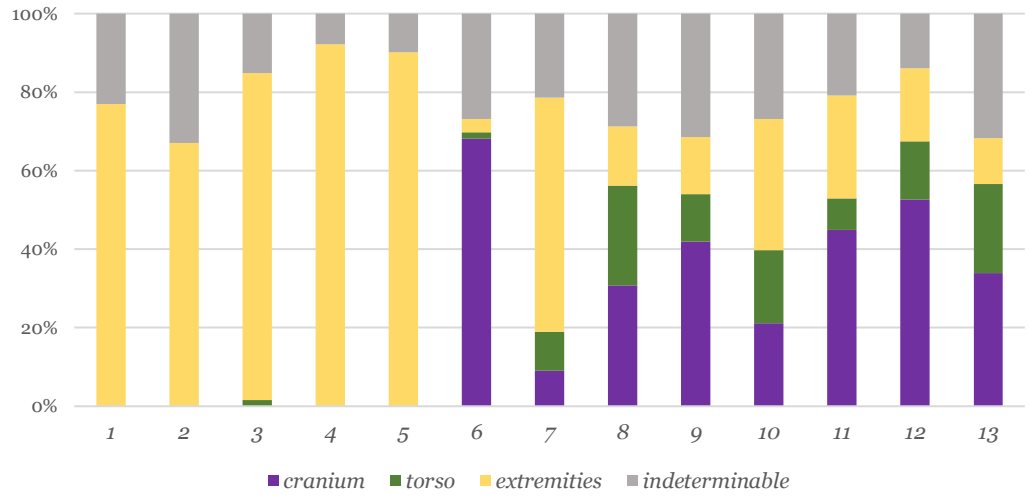

Figure 4.3: Bar chart indicating the percental distribution of the cremated human remains per skeletal category per layer in cremation grave S8.1 (after de Bondt 2015).

Additionally, towards the bottom of the burial, the bone fragments seem to become larger, while the upper layers mainly yielded small fragments (de Bondt 2015, 69). This indicates that the cremated human remains were not transported and that the position in which the remains were placed in the urn is undisturbed. De Bondt (2015, table 19) also looked at the clustering of different body parts, but this yielded no clear pattern (**tab. 4.1**)

Table 4.1

Layer	Human remains (fragments)	Grave goods	Pyre remains	Notes
layer 1		ceramic sherds	charcoal	bad preservation
layer2	diaphyseal extremities	ceramic sherds	charcoal	bad preservation
layer 3	rib, diaphyseal extremities		little charcoal	
layer 4	diaphyseal and epiphyseal extremities	ceramic sherds		
layer 5	diaphyseal extremities, ulna, radius	piece of bronze, lot of ceramic sherds		
layer 6	diaphyseal extremities, ribs, vertebra, tarsal, carpal			
layer 7	tibia, dental roots, cranium, vertebra, pelvic bone			cranium in south, torso in north
layer 8	cranium, occipital bone, ribs, pelvic bone, fragment of left scapula, dental roots, lot of small skeletal elements			torso and cranium l in north
layer 9	neurocranium, viscerocranium, left orbit, diaphyseal extremities, vertebrae, pelvic bone, ribs, clavicle fragment, ulna/radius fragment			cranium in south, torso in north
layer 10	diaphyseal extremities, dental roots, cranium, vertebrae, pelvic bone, sacrum, femur			torso in west, cranium in south
layer 11	neurocranium, mandible, vertebrae, ribs, pelvic bone, dental roots			torso in south-east
layer 12	neurocranium, viscerocranium diaphyseal extremities, humerus, tibia, right orbit, ribs, pelvic bone, clavicle fragment, small skeletal elements		charcoal	torso in west
layer 13	neurocranium, right orbit, fibula, femur, arm bones, sacrum, pelvic bone, vertebrae, ribs, clavicle and scapula (glenoid cavity)			cranium in south

Table 4.1: Overview of the finds per layer in cremation burial S8.1, note: to improve readability bones have been indicated as if complete, but no complete bones have been found (after de Bondt 2015, table 19).

4.2.1.4 Completeness of bodies

The MNI in this burial is 2, of which one individual was male and the other probably female (determinations by Dr. Barbara Veselkea: in de Bondt 2015, 62; 65). Both individuals were adults, of which one perhaps an old adult based on the vertebral

lipping (de Bondt 2015, 66). The reason these two individuals were buried together is uncertain (de Bondt 2015, 71). The total weight of the cremated human remains in this burial was 890.1g (de Bondt 2015, 61), which would be a little light even for one adult (usually between 1227g to 3001g: McKinley 1993, 285). It could be that a part of the cremated human remains was lost due to the bad preservation of the first layers, but as ceramic sherds were still present in the first few layers, this does not seem likely. Furthermore, quite a large number of dental roots were found in the burial as well (**tab. 4.1**). Therefore, it is concluded that specific bone fragments were not collected from the pyre, which indicates the incompleteness of the bodies was intentional (de Bondt 2015, 62).

4.2.1.5 Grave goods and the container used for the remains

This cremation grave from the Uddeler Heegde has yielded little grave goods; several sherds of pottery were found in the upper layers, and a piece of bronze was located among the cremated human remains in layer 5 (**tab. 4.1**). Animal remains were absent in this burial (de Bondt 2015, 67).The bronze fragment had one edge with little saw-like teeth, which led to the possibility that the fragment came from a horse grooming tool (de Bondt 2015, 68). It is not uncommon to find small bronze fragments in burials of this period, and especially in the Early Iron Age metal items related to horse gear are found often as grave goods (de Bondt 2015, 68).

The ceramic sherds probably belonged to either the same vessel or two different vessels that carried a similar decoration (de Bondt 2015, 68). Some sherds showed traces of fire, which raised the possibility that the sherds accompanied the corpse on the pyre during cremation (de Bondt 2015, 75). It is not likely that the sherds belonged to an urn wherein the cremated human remains were deposited, since there was no complete vessel found with a size large enough to contain all cremated human remains (de Bondt 2015, 74). Additionally, as mentioned earlier, the sherds were placed on top of the remains, thus the possibility that the remains were buried in a ceramic urn was discarded (de Bondt 2015, 74). Nevertheless, deposition in organic containers has been observed frequently for Late Bronze Age burials (see Chapter 4.4.1 and 4.6.1), and this hypothesis is supported by the fact that the remains were found in a rounded feature (de Bondt 2015, 73). Thus, the use of an organic container for this cremation grave from the Uddeler Heegde seems plausible.

Since the grave goods were exclusively present in the upper layers of the burial and the majority of the cremated remains in the lower layers, it seems a distinction was made between the grave goods and cremated human remains (de Bondt 2015, 75).

4.2.1.6 Pyre remains

Charcoal remains have been found throughout the burial, which were mainly located in the upper layers (**tab. 4.1**) (de Bondt 2015, 75). Therefore, it was concluded that some pyre remains were present in this grave, and although large amounts of charcoal were not present, collection was not as careful that charcoal was (nearly) absent.

4.2.1.7 Conclusion

To summarise, the different body parts were structures inside the urn (extremities throughout the burial, while cranium and torso mainly at the bottom). Since the burial does not seem to be disturbed in such a way that the cremated human remains could have moved, they were probably consciously placed in this way inside the urn. Likewise, the incompleteness of the bodies seems intentional as well. Very small skeletal elements (i.e. dental roots) were collected from the pyre, while other larger fragments were not. Therefore, specific cremated human remains were collected from the pyre in the past.

Furthermore, the little grave goods that were present (the ceramic sherds and the bronze fragment) were deposited on top of the cremated remains (de Bondt 2015, 68; 74), as well as the majority of the charcoal found in this burial (de Bondt 2015, 75). Thus, a certain distinction was made between the cremated remains, grave goods and pyre remains.

Lastly, the methods used to examine this cremation burial were very time-consuming, which did not reveal more results in comparison with less thorough methods. Different methods would thus be more appropriate for this kind of research.

4.2.2 OSS-ZEVENBERGEN

4.2.2.1 Site introduction and find context

At the site of Oss-Zevenbergen (**fig. 4.4**), the urn cremation from the central find assemblage in mound 7 was examined by Liesbeth Smits (2013). The aim was to verify whether evidence for a collection and deposition method was present (Smits 2013, 257). The urn cremation was found in trench 106 of mound 7 (NE-quadrant), and it is highly probable that it formed the primary grave of this mound (Fontijn *et al.* 2013c, 141). The find context indicated that the urn came from a small pit, which was probably dug into the prehistoric surface, before the grave was covered by the sods of the burial mound (van der Vaart *et al.* 2013, 126). ^{14}C-dates place this central find assemblage in the Early Iron Age (800-400 cal. BC) (Fontijn *et al.* 2013b, 116).

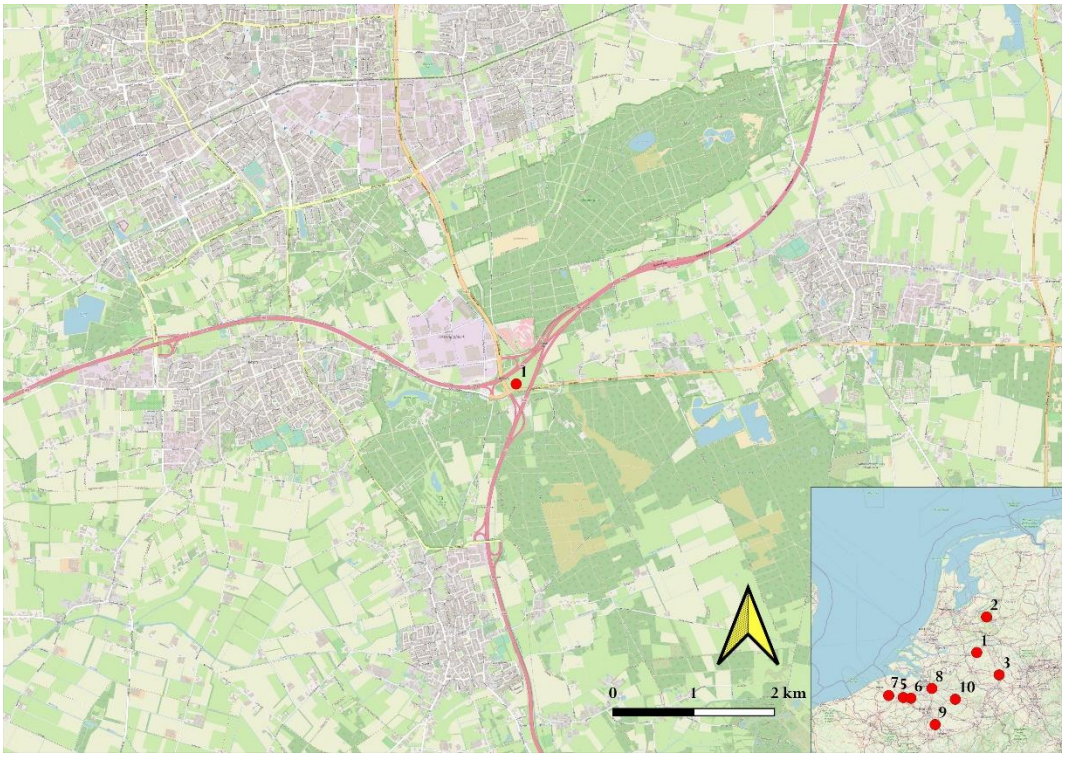

Figure 4.4: Map with the location of Oss-Zevenbergen (1) (made with OpenStreetMap).

4.2.2.2 Methodology

To examine the contents of the urn cremation, Smits separated the contents in seven layers (**fig. 4.5**) and sieved them with a 1 mm mesh (Smits 2013, 257–58). This method was used because it is the most effective way to collect bone fragments that are most suitable (> 10 mm) for the determination of the age (rough estimation) of the individual, as well as the biological sex, and the MNI (*Minimum Number of Individuals*) (Smits 2013, 258–59).

Figure 4.5: The Schräghals-urn found in the central find assemblage of mound 7 at Oss-Zevenbergen, with the distribution of excavated layers (Smits 2013, fig. 12.1).

Sieving the contents of an urn is very time-efficient, but a downside is that no record is left after this process which specifies the position of the cremated human remains (in contrast to de Bondt 2105). However, the contents of the urn were divided in several layers, which makes it more or less possible to look at some kind of distribution of the contents inside the urn. Therefore, this method is not considered to be the best method, but in terms of efficiency within a short time limit it is rather effective.

4.2.2.3 Positioning of the cremated human remains

The cremated human remains inside the *Schräghals*-urn (V151) from mound 7 were only found in layers 3 to 6 (**fig. 4.6**). Based on the results published by Smits (2013, 258: table 12.4), layers 3 to 5 all contained fragments of the cranium, torso, and lower limbs (extremities). For layer 4 only fragments of the upper limbs (extremities) could be determined, and for layer 6 only a fragment of the lower limbs. According to Smits (2013, 260), there was no discernible arrangement in the position of the bone fragments, but a difference between the location of different body parts is visible. This

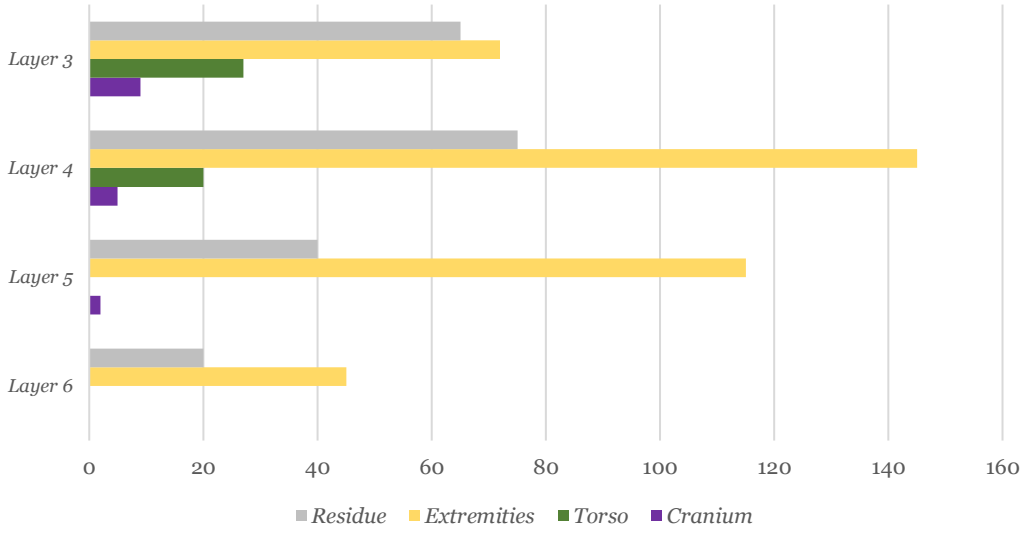

Figure 4.6: Distribution of skeletal categories per layer in grams (after Smits 2013).

could be a biased result as cranial fragments are usually easier to recognise due to their particular shape (Delattre *et al.* 2005, 149), but a structuration of different body parts can be observed.

4.2.2.4 Completeness of body parts

Various research has been done on the weight of human remains after cremation, usually the weight of the remains of adult individuals (dependent on sex, age and health) is between 1227g and 3001g (based on a survey of various osteologiscal sources in Louwen, *forthcoming*). According to Smits (2013, 260), the cremated remains from mound 7 weighed 640g. Therefore, based on the weight of the human remains it can be concluded that the body is incomplete.

There are many reasons for the incompleteness of the cremated human remains. Rebay-Salisbury (2010, 65) argues that open-air cremation graves commonly yield lower weights of cremated human remains than in modern laboratories. These differences in weight could be caused by the recovery of the remains by archaeologists in the field, or by treatment after excavation (e.g. washing of the remains) (Rebay-Salisbury 2010, 65). However, in the case of the cremation burial in mound 7 at Oss-Zevenbergen, badgers dug through the burial mound and disturbed the grave (van der Vaart *et al.* 2013, 127). Several sherds and cremated human remains were found outside the urn, which indicates it is possible that more remains were displaced. Additionally, several fragments of human remains were found in the funeral pyre that was located underneath mound 7 (van der Vaart *et al.* 2013, 119). This indicates that not all remains were collected after cremation. Although it could not be established whether the fragments of the funeral pyre belonged to the urn cremation, they did have the same burning temperature (van der Vaart *et al.* 2013, 128). Furthermore, no other graves from the Early Iron Age were found in this burial, therefore it is highly unlikely that the remains from the pyre and the urn did not belong to the same individual. Subsequently, Smits (2013, 260) reports that it is remarkable that little cranial fragments are present, which validates that only a part of the body of the deceased is visible in the urn. The lack of cranial fragments is rather extraordinary, because the majority of these fragments is usually rather large and therefore easy to collect. One possibility for this deficiency could be the explosion of the skull during cremation, due to the boiling of cerebrospinal fluids (de Mulder 2011, 212). Overall, it is clear that not all cremated human remains were interred in the urn, although the exact reason or combination of reasons is more difficult to pinpoint. Based on the presence of cremated

human remains amongst the pyre remains, it is assumed that the absence of certain remains was at least partially intentional.

There is no indication that multiple individuals have been deposited in this urn, thus the MNI is one. Additionally, several skeletal traits indicated that the sex of the individual was probably male, and between 23-40 years old at the time of death (Smits 2013, 260).

4.2.2.5 Additions to the grave

There were no animal bones recovered from the urn (Smits 2013, 260), although two small burned fragments (approximately 10 by 5 mm with a maximal thickness of 2 mm) of decorated (probably animal) bone were found amongst one of the charcoal concentrations (V176: **fig. 4.7**). The decorated bone is considered to belong to a larger artefact, which left no discernible traces (van der Vaart *et al.* 2013, 127). Furthermore, several bronze items were found in association with the urn cremation as well, such as hundreds of bronze studs, small bronze fragments (the original purposes were undeterminable), two complete rings and six ring fragments (van der Vaart *et al.* 2013, 129: table 5.3). Based on their position, the bronze studs were probably fixed together with an organic material, which has perished over time. It could be possible that the bronze items were part of decorated leather from a wagon or yoke, based on their similarity to finds done in southern Germany (Fontijn *et al.* 2013a, 296).

Some bronze finds showed signs of burning (e.g. some bronze studs, ring fragments)

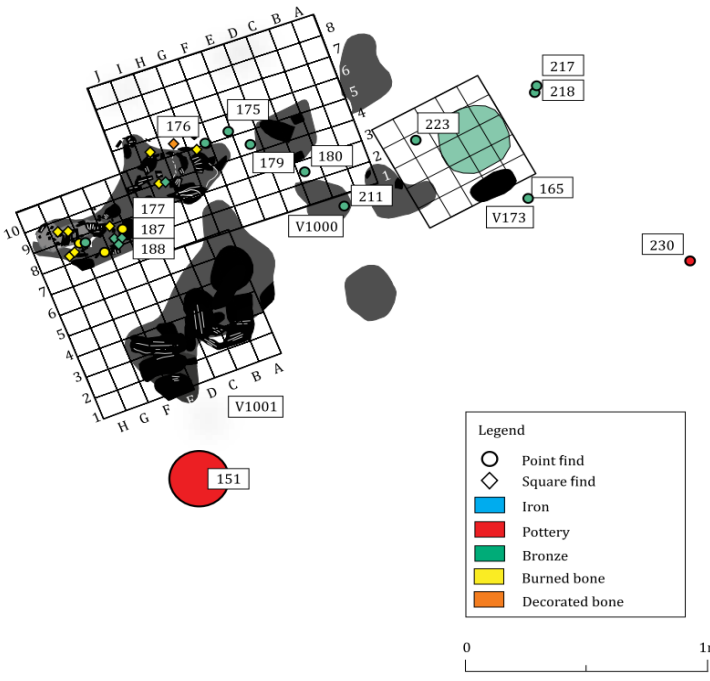

Figure 4.7: Schematic overview of the central find assemblage of mound 7 at Oss-Zevenbergen with the urn cremation in red (151) (van der Vaart* et al. *2013, fig. 5.2)

(van der Vaart *et al.* 2013, 130), which could imply they accompanied the corpse on the pyre when it was burned. Interestingly, they were not deposited in direct relation with the urn (e.g. inside the urn or in the urn pit), but left on the burned-out pyre. Thus, it seems it was important to place grave goods on the pyre with the deceased during cremation, but it was not important to place these grave goods in the grave with the urn.

4.2.2.6 The pyre remains

As mentioned above, remains of a funeral pyre were found underneath mound 7, but not inside the urn. The charcoal concentration was situated on the prehistoric surface, and comprised about 2 by 5 metres. On top of the pyre remains, the burial mound was constructed (van der Vaart *et al.* 2013, 119). Since the pyre remains and urn cremation seem associated in the find context, it is assumed that the pyre was used to burn the cremated remains from the urn, especially because the burning degree of both contexts is the same (van der Vaart *et al.* 2013, 128).

4.2.2.7 Conclusion

In conclusion, a certain structuration of the cremated human remains per body part (i.e. cranium, torso and extremities) is visible inside the urn cremation from mound 7 at Oss-Zevenbergen (**fig. 4.6**). Subsequently, some of the cremated human remains could be lost due to disturbances, but due to the presence of cremated human remains in the charcoal concentration underneath the burial mound, it is concluded that the incompleteness of the body intentional. Furthermore, the lack of grave goods and pyre remains inside the urn or in the urn pit indicates that the addition of grave goods was found important on the pyre during cremation, but not in the grave.

4.3 Late Bronze Age and Early Iron Age funerary practices in Belgium

Urnfields have been researched in Belgium from the 19th century onwards, unfortunately the emphasis of these studies was on the classification and analysis of material culture, and not on the cremated human remains found in these urnfields (de Mulder 2011, 2; 9). From the 1950's onwards the quality of research increased greatly, but it was only from the 1980's that modern research started (Fokkens and Fontijn 2013, 550; de Mulder 2011, 9). For this thesis Western-Belgium is emphasised, which carries close resemblances with the Southern-Netherlands (Fokkens and Fontijn 2013, 553). Eastern-Belgian sites have more resemblance to the RSFO-culture (see Chapter 4.6) (Fokkens and Fontijn 2013, 557).

4.4 Urn cremations from Belgium

4.4.1 THE SCHELDT BASIN

4.4.1.1 Introduction of sites

The Scheldt Basin in located in the west of Belgium and Northern France (**fig. 4.8**). Guy de Mulder discusses the funerary rites of 31 sites, based on the availability of sufficient documentation (de Mulder 2011, 207). Altogether 729 cremation graves were

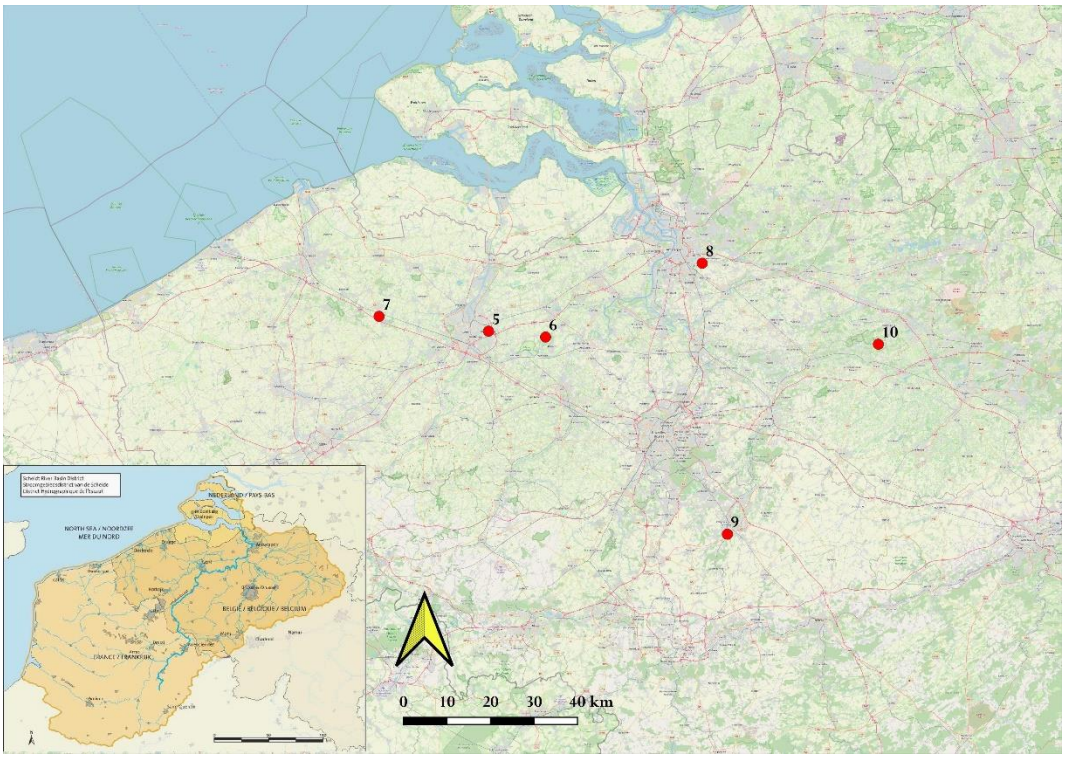

Figure 4.8: Map of the sites mentioned in this chapter located in the Scheldt Basin: (5) Destelbergen, (6) Donk, (7) Aalter-Oostergem, (8) Borsbeek, (9) Court-Saint-Étienne, and (10) Tessenderloo-Engsbergen, together with a map of the Scheldt Basin (lower left corner) (made with www.researchgate.net; OpenStreetMap).

found at these sites, with the cemetery of Destelbergen and Donk as the largest sites with over a hundred burials (de Mulder 2011, 207). Most of the other cemeteries have a couple dozens of burials, with some exceptions were only one urn was found (de Mulder 2011, 207). In some cases, information relating to funerary practices was well documented, which means a reconstruction of these practices is possible (de Mulder 2011, 208). However, not all burials were well-preserved; erosion, construction work and agricultural activities ensured the preservation of only a limited amount of burials, especially if burials were placed in shallow pits (de Mulder 2011, 224).

In de Scheldt Basin various types of cremation burials were established, which depend on the burial location (i.e. at the location of cremation or somewhere else), the presence of pyre remains and if a container for the cremated remains was present (de Mulder 2011, 214–15). For this thesis only burial types A-D are of relevance, as these comprise categories where containers for the cremated human remains are (assumed to have been) present (**fig. 4.9**) (de Mulder 2011, 216–18).

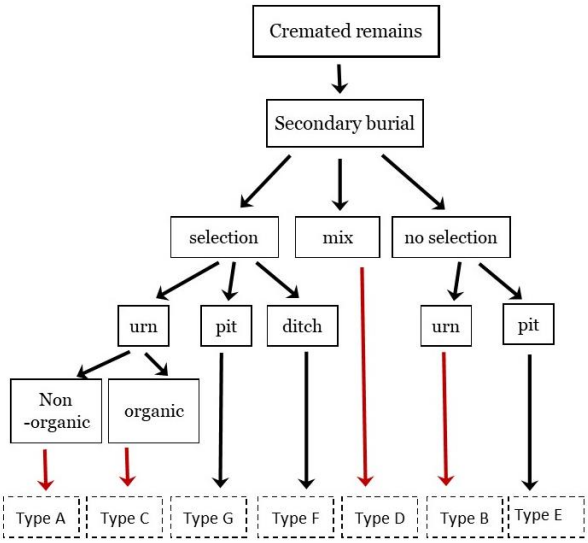

Figure 4.9: Schematic overview of the different burial types in the Scheldt Basin, with type A-D that are of relevance to this thesis (red arrows) (after de Mulder 2011, fig. 8.4).

It seems most burials in the Scheldt Basin were flat graves, which means no funerary monuments were present on the graves (de Mulder 2011, 239). Still, this interpretation is mostly based on the lack of ring ditches, although barrows without ring ditches are known as well (de Mulder 2011, 239). Thus, it could be that the dominance of flat graves only appears to be present due to the disappearance of other types of monumental structures above ground (de Mulder 2011, 239).

4.4.1.2 Methodologies

The methodologies to study the burials at a selection of sites in the Scheldt Basin is highly diverse, which is mainly caused by the different time-periods these sites were excavated (de Mulder 2011, 12). Especially the documentation of graves that were retrieved in the 19th century got lost over time or stored in such a way that it was difficult to establish the original context (de Mulder 2011, 311). From the 1950's onwards cremated human remains were analysed more often (de Mulder 2011, 309), although interpretations remain ambiguous in many cases (further explained below). Nowadays excavations of graves are more precise; an example of meticulous excavation is Wijnegem, whereby grids and small quadrants were used to excavate the graves found at this site, followed by an examination of the human remains per layer (de Mulder 2011, 223). Additionally, human remains are examined according to WEA-norms (Workshop of European Archaeologists 1980) for the determinations of age at death and biological sex (de Mulder 2011, 310). Thus, the methods used for the study of burials in the Scheldt Basin is highly variable, especially in the quality of the studies (de Mulder 2011, 309).

An overview will be given of the different burial types of the Scheldt Basin mentioned by de Mulder (2011) that are similar in structure to the other burials mentioned in this thesis (burial types A-D), in order to be able to draw some conclusions concerning funerary practices in the Scheldt Basin. Since this typology gives some indication of the addition and structuring of the cremated human remains and pyre remains, it is important to discuss. Furthermore, the types of grave goods are shortly discussed, although their position inside burials is not mentioned in detail.

4.4.1.3 Burial types A-D

Burial type A consists of a simple urn cremation, wherein a selection of the cremated human remains were deposited without pyre remains (de Mulder 2011, 216). Occasionally, cremated human remains were found on top of the urn or in the burial pit; according to de Mulder (2011, 216) this is related to the size of the urn (i.e. small-sized urns could not contain all the remains).

Burial type B is very similar to type A, the difference lies in the addition of pyre remains to the burial (de Mulder 2011, 216). In type B burials pyre remains are added both in the urn as the burial pit, and it appears no selection of the cremated human remains was present (de Mulder 2011, 216; fig. 8.4). Since it was not always clear if burials were a type A or type B burial, a hybrid category (type A-B) was added for the analysis of the burials present at the sites under scrutiny (**fig. 4.10**) (de Mulder 2011, 222).

Apart from the deposition of the cremated human remains in organic containers, type C burials are entirely the same as type A (de Mulder 2011, 217). Furthermore, a selection of the cremated human remains is collected from the pyre, and pyre remains are thus not present (de Mulder 2011, 217; fig. 8.4).

Lastly, type D burials are also referred to as type Destelbergen, since this type of burials was first discovered at this site (de Mulder 2011, 217). They are the same as type C burials, but with the addition of pyre remains on top of the cremated human remains (de Mulder 2011, 217).

Burial types A to B are also referred to as simple urn cremations, and are the most common burial types in the Scheldt Basin (de Mulder 2011, 222). However, the observation of this dominance could be biased, since it is easier to recognise ceramic urns in situ (de Mulder 2011, 222).

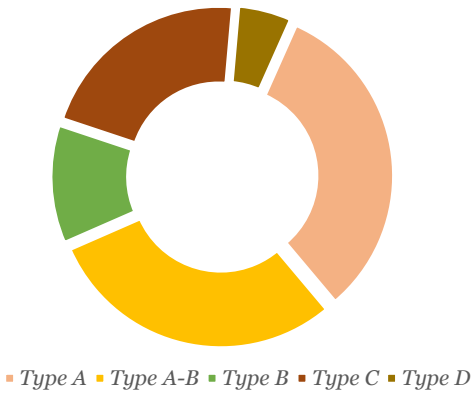

Figure 4.10: Distribution of grave types in the Scheldt Basin whereby containers were (assumed have been) present (after de Mulder 2011, 216-22).

4.4.1.4 Analysis of the cremated human remains

Of the 119 sites documented in the Scheldt Basin, only 19 sites could be studied for the cremated human remains (de Mulder 2011, 311–12; table 9.3, 9.4). Of these sites eight were studied with modern techniques (after 1980), while 11 were studied with old techniques (**tab. 4.2**) (de Mulder 2011, 311–12). This has resulted in the physical anthropological analysis of 296 cremation burials (of 379) according to old techniques, and 158 (of 170) with modern techniques (de Mulder 2011, 311–12).

Overall, little conclusions can be drawn on the analyses of the cremated human remains, since determinations of age and biological sex were not always correct for the older studies, or because all the remains of a site were stored together (de Mulder 2011, 312). The interpretations of the sex were often based on grave good assemblies (i.e. if weaponry was present, the individual was male) and the presence of delicate bones

Table 4.2

1950-1980	After 1980
Aalter	Aire-sur-la-Lys
Borsbeek	Dendermonde
Court-Saint-Étienne	Kontich
Destelbergen	Kruishoutem
Havré	Temse-Veldmolenwijk
Herk-de-Stad	Velzeke-Paddestraat
Meerhout-Zittaart	Velzeke-Provinciebaan
Ranst-Ranstveld	Wijnegem-Blikstraat
Serskamp	
Temse-Velle	
Wilrijk-De Dekenstraat	

Table 4.2: Overview of the sites where cremated human remains were analysed. 1950-1980 is before WEA-norms, and after 1980 is with WEA-norms (after de Mulder 2011, fig. 9.3, 9.4).

were thought to belong to children for example (de Mulder 2011, 317; 321). Therefore, the author has decided not to mention the results of those studies in this thesis.
For the burials analysed with modern techniques, the adult (20-60 years at death) burials dominated (de Mulder 2011, table 9.8), and a fairly even distribution between male and female individuals was revealed (de Mulder 2011, table 9.6).
Furthermore, the weight of the cremated human remains varies tremendously due to disturbances in the burials or by the collection from the pyre in the past (de Mulder 2011, 313). Thus, the weights are not really informative to investigate the completeness of the bodies, as it cannot be said what has caused these deficiencies. De Mulder (2011, 315) argues that the socio-cultural norm was to collect only a part of the cremated human remains from the pyre, since intact burials also have a low amount of weight. Based on the other data mentioned in this thesis, this is a plausible conclusion.
What makes it even more difficult to study the completeness of the cremated human remains, are the double burials. These were found occasionally, but overall their number is limited (de Mulder 2011, 318). In these double burials the remains of adults and children were often combined, or multiple urns with multiple adult individuals were placed in the same burial pit (**fig. 4.11**) (de Mulder 2011, 318). The weight of the cremated human remains per grave is even more ambiguous, as these fluctuate even more compared to single burials.

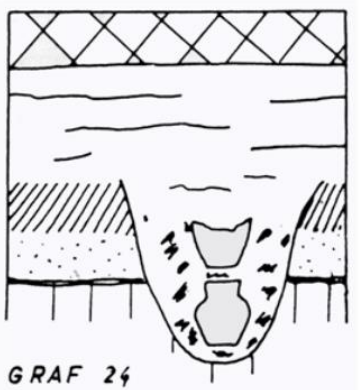

Figure 4.11: Double grave (grave 24) at Aalter-Oostergem (de Mulder 2011, fig. 9.5).

4.4.1.5 Additions to the graves

Unlike the cremated human remains, the grave goods were relatively well documented. In total seven categories of grave goods were established by de Mulder (2011, 275; fig. 8.38): animal remains, flint, iron objects, bronze objects and ceramics. Gold and glass objects were found as well; a grave at Borsbeek contained golden hair-rings and a small golden platelet (de Mulder 2011, 292), and at Court-Saint-Etienne a blue glass bead was found (de Mulder 2011, 298).

The ceramic category is the best represented with 200 objects, and because in some cases their position in the grave was mentioned, these will be discussed more thoroughly. A total of 22 graves contained animal remains, of which the majority was burned (de Mulder 2011, 295). Based on the traces of high temperature burning, it was concluded that animal remains were mostly added to the graves as food offerings (de Mulder 2011, 294). Another type of presence of animal remains was in the form of worked bone, such as two bone pins and one small engraved bone stick (de Mulder 2011, 294; 297). Unfortunately, their position inside the burials was not mentioned, although it is clear that the addition of animal remains to graves was an intentional action.

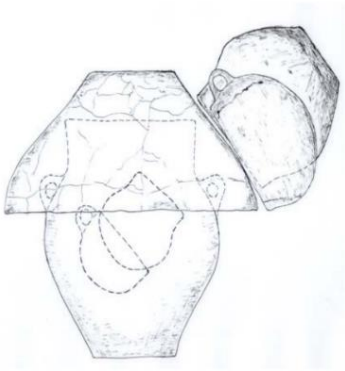

Figure 4.12: Reconstruction of grave 1 at Borsbeek-Vogelzang, with multiple vessels inside and outside the urn as well as a vessel to cover the urn (de Mulder 2011, fig. 8.16).

The ceramics category consists of accessory vessels, like cups and bowls, but also clay spindle-whorls and ceramic jewellery that seems to be an imitation of metal jewellery (de Mulder 2011, 275; 299). Some vessels have traces of the impact of secondary burning, which indicates they accompanied the corpse on the pyre, perhaps filled with food offerings (de Mulder 2011, 277). There is a lot of variability in the deposition of these ceramics; inside the urn, in the urn pit, or only some sherds (**fig. 4.12**) (de Mulder 2011, 277).

Furthermore, ceramic vessels or sherds were used in some cases to cover the urns containing the cremated human remains (de Mulder 2011, 278). Slabs of schist were sometimes used as cover as well, and the use of perishable materials to cover the urns was mentioned too although evidence for this practice is difficult to find archaeologically (de Mulder 2011, 278–79).

Bronze was found often in burials as well; in some cases objects were deposited in the

burials unaltered, but some were fragmented due to high temperatures (de Mulder 2011, 280). Amongst these items were jewellery, accessories for clothing (e.g. pins, buttons, beads, etc.), and tools related to personal hygiene (i.e. razors, tweezers) (de Mulder 2011, 282–83; 288). Iron was found in a few cases as well, although it was too corroded to recognise its original shape (de Mulder 2011, 289). The position of metal objects in relation to the burials was not mentioned, thus these cannot be discussed further.

4.4.1.6 Pyre remains

Figure 4.13: A type B grave found at Tessenderlo-Engsbergen, containing a mix of cremated human remains and charcoal from the pyre (de Mulder 2011, fig. 8.6).

As mentioned above (see Chapter 4.4.1.3), a clear distinction between the type of grave and deposition of pyre remains in the graves can be observed in the Scheldt Basin. In some cases cremated human remains were carefully collected from the pyre (type A and C), while in other cases the human remains and charcoal were deposited as a mix in the burial (**fig. 4.13**), or on top of the remains (de Mulder 2011, 216–17). Still, the question why some burials contained charcoal and why this was absent in others could not be answered, but that specific choices were made concerning the presence of pyre remains is evident.

4.4.1.7 Conclusion

The majority of the cremated human remains found in the Scheldt Basin were never studied, which was partially caused by a lack of interest in human remains at earlier stages in history (de Mulder 2011, 311). Still, based on de Mulder's typology (**fig. 4.9**) it was possible to draw some conclusions about the position of cremated human remains and pyre remains inside burial pits. While in type A and C pyre remains were absent, type B burials contained a mix of cremated human remains and pyre remains, and in type D burials these pyre remains were placed on top of the remains. Clearly choices were made about the deposit of these materials in the grave.

Although the types of grave goods were well documented, little was mentioned regarding their position inside graves. Traces of high firing temperatures indicated some of the grave goods (i.e. bronze objects, ceramic vessels and animal remains) were

placed on the pyre with the corpse during cremation, although unburned grave goods were found as well (de Mulder 2011, 294–95; 277; 280). Only for the ceramics the position inside graves was mentioned; they were placed inside urns on top of the remains, as well as in the urn pit. It is possible some of these ceramics accompanied the corpse on the pyre, and contained food offerings.

To conclude, there is not a lot of data concerning the detailed analysis of cremation burials. Still, the typology made by de Mulder (**fig. 4.9**) can give a basic understanding of the burials present in the Scheldt Basin, although more research is needed to make this understanding more detailed.

4.5 Late Bronze Age and Early Iron Age funerary practices in France

During the Late Bronze Age, France can be divided in three large cultural regions: the Atlantic region in the west, the *Rhin-Suisse-France orientale* culture (Rhine-Switzerland-eastern France) also referred to as RSFO in the centre and east, and in the south the Languedoc and Rhône Valley form a cultural region with close links to the RSFO culture and the Italian Peninsula (Mordant 2013, 574–75). The French sites under scrutiny are located in the two last regions.

The practice of cremation was marginally present in the Middle Bronze Age in some areas, but it becomes widespread in France during the Late Bronze Age (Mordant 2013, 582). In the central-east and south urnfields develop, with either small funerary monuments (barrows, enclosures, etc.) or flat graves (Mordant 2013, 582). In the east, grave goods – if present – mainly consist of ceramic vessels, and metal objects are no longer deposited. With the transition to the Early Iron Age, eastern France sees the revival of massive barrows and lavish grave goods (e.g. situlae, swords, bronze and ceramic vessels, etc.), while in the south urnfield cemeteries with modest funerary monuments remain dominant from the 9th to the 6th century BC (Mordant 2013, 582).

4.6 Urn cremations from France

4.6.1 LA RÉMISE, LA GRANDE-PIÈCE-DES-HAYETTES, LES PÉTREAUX AND LA CROIX-DE-LA-MISSION

4.6.1.1 Introduction of sites

Delattre *et al.* (2005) compared the funerary practices of four sites in France, which are located near Paris (**fig. 4.14**). The sites of La Rémise (Méry-sur-Marne), La Grande-Pièce-des-Hayettes (Vignely) and Les Pétreaux (Changis-sur-Marne) are all located in the Valley of the Marne, while La-Croix-de-la-Mission (Marolles-sur-Seine) is located a bit more to the south (Delattre *et al.* 2005, 144).

At the sites located in the Valley of the Marne, approximately 30 to 70 graves were discovered, which are described by Delattre *et al.* (2005, 144) as simple graves whereby little grave goods were found (probably partly caused by bad preservation). Only at La Grande-Pièce-des-Hayettes the remains of a ring ditch were discovered. Consequently, it is difficult to establish chronologies at these sites, as little material was left that could indicate a typo-chronology or yield an absolute dating (Delattre *et al.* 2005, 152).

Only at Les Pétreaux and La Croix-de-la-Mission funerary structures (e.g. burial mounds, ring ditches, etc.) were still observable, but at the other sites agricultural activities had disturbed most of their terrain (Delattre *et al.* 2005, 151-52). Especially the site La-Croix-de-la-Mission has yielded highly detailed results, both in terms of

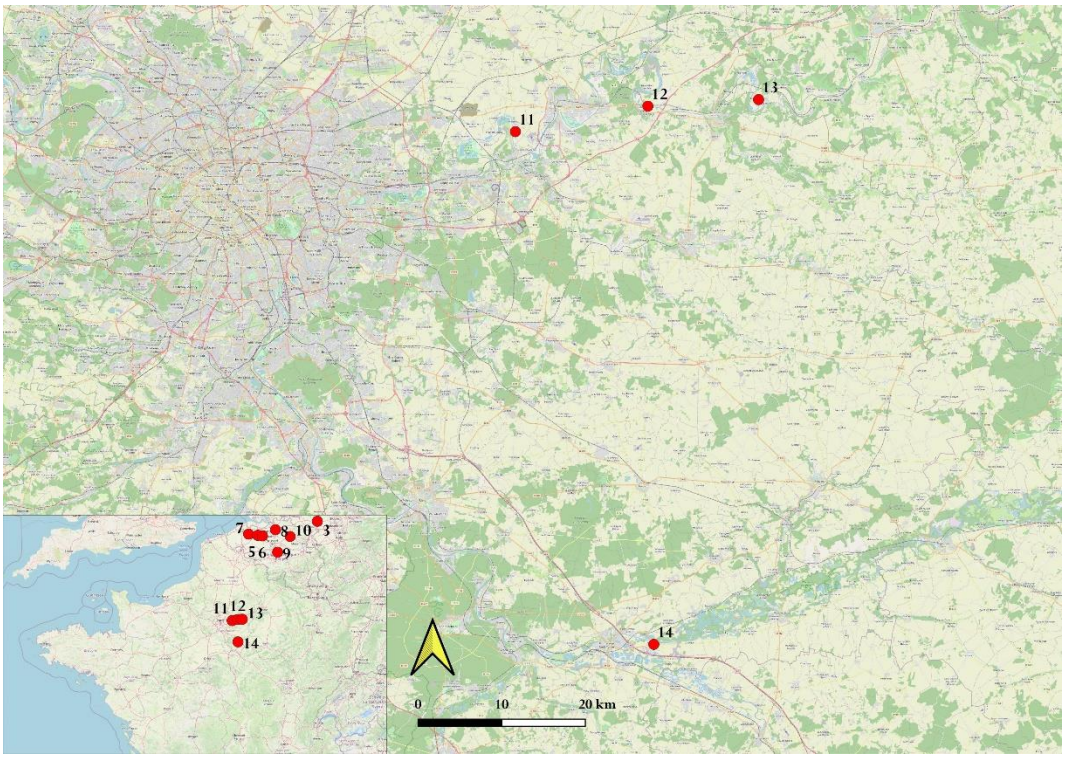

Figure 4.14: Map with the locations of (11) La Grande-Pièce-des-Hayettes, (12) Les Pétreaux, (13) La Rémise, and (14) La Croix-de-la-Mission (made with OpenStreetMap).

funerary monuments as the nature of the burials (Peake *et al.* 1999). Therefore, this site will be emphasised in this analysis. ^{14}C-datings[3] indicated that the site was founded at the beginning of the Bronze Age (*Bronze ancien*; 2035-1695 cal. BC) and was abandoned during the Late Bronze Age (*Bronze final*; 1210-919 cal. BC) (Peake *et al.* 1999, 601). In total, 9 inhumations were found at La-Croix-de-la-Mission, together with 34 cremations (Peake *et al.* 1999, 583). All datable cremations could be placed in the Late Bronze Age (*Bronze final I-IIIa*) (Delattre *et al.* 2005, 144), and their analysis yielded a mixture of funerary practices which will be further examined below. In a lot of cases, a (rough) age at death estimation could be given for the individuals in the cremation graves, but the biological sex could not be determined (Peake *et al.* 1999, table 3).

4.6.1.2 Methodology

The methodology used to excavate the sites of La Rémise, La Grande-Pièce-des-Hayettes and Les Pétreaux is not specified other than with careful excavation (Delattre *et al.* 2005, 148). However, at La Croix-de-la-Mission excavation was extensively

[3] The original ^{14}C-dates given by Peake *et al.* (1999) have been recalibrated with OxCal 4.3 IntCal 13.

detailed concerning the cremation burials. Especially if cremated human remains were buried in ceramic urns, a detailed examination of the arrangement of the bones could be made, as well as their ordering, and the grave goods accompanying the remains (Peake *et al.* 1999, 597). Unfortunately, not all cremated human remains were deposited in ceramic urns; based on the compact and circular shape of some deposits, it is assumed that organic containers (made from leather, wood, textile or basketry) were used as well (Peake *et al.* 1999, 597). The remains without preserved containers were sieved, and eventual pyre remains were collected with flotation (Peake *et al.* 1999, 597). Altogether, the methodology used at La Croix-de-la-Mission can be considered as highly effective and sufficient to study the funerary practices of Late Bronze Age societies, which is supported by the results the study revealed.

4.6.1.3 Position of cremated human remains

In terms of the positioning of the cremated remains, especially cranial fragments seem to receive a certain treatment. At the 4 sites under scrutiny, some burials indicated that cranial fragments were used as a kind of cover, since they were positioned on top of the rest of the cremated remains with their outside (exocranial side) up (**fig. 4.15a**) (Delattre *et al.* 2005, 148-49). Additionally, larger cranial fragments were also found at the bottom of a container, or placed vertically against the wall of a container on top of the cremated remains (Delattre *et al.* 2005, 149). It is not likely that such positions were caused by natural processes, therefore it is assumed that these practices were intentional.

Besides the practices executed on cranial fragments, other parts of the body were prone to manipulations as well. In structure 1723 at Les Pétreaux several diaphyseal extremities of the lower limbs were placed parallel to each other, and at La Rémise a similar practice was observed in structure 21 where two humeri were placed inverted to each other (**fig. 4.15b**) (Delattre *et al.* 2005, 150). Thus, a certain arrangement of the cremated human remains is visible at several burials of these four sites, although this practice is not consistently present in every burial.

At La-Croix-de-la-Mission, the cremated remains in ceramic urns were always located at the bottom of the containers, and never exceeded a height of 10 cm (Peake *et al.* 1999, 597). In most cremation burials at this site, no specific positioning of the remains was observed (Peake *et al.* 1999, 601). An exception to this observation is structure 36, where the majority of the cranial fragments was deposited on top of the other remains (**fig. 4.15a**) (Peake *et al.* 1999, 600). In structure 101, four vessels containing cremated human remains were found (Peake *et al.* 1999, 599-600). It is uncertain whether one

or multiple individuals were interred in this grave, as the total weight of the remains is 45g and some fragments pointed to an individual of 1 year old (Peake *et al.* 1999, 599-600). It could be possible that this burial is a *pars pro toto* interment, but as the remains give little indication of the MNI and the weight of infant remains is obviously lower than those of adults, it is very difficult to draw any conclusions about this burial and the practices at play. Interestingly, a lot of the double burials identified at La-Croix-de-la-Mission contained the remains of adults with non-adults (i.e. infants, children and adolescents) (Peake *et al.* 1999, table 3). This practice was also noticed at other sites in France like at Peyraube (Gard) in the south (Peake *et al.* 1999, 600), but also in Belgium in the Scheldt Basin (see Chapter 4.4.1).

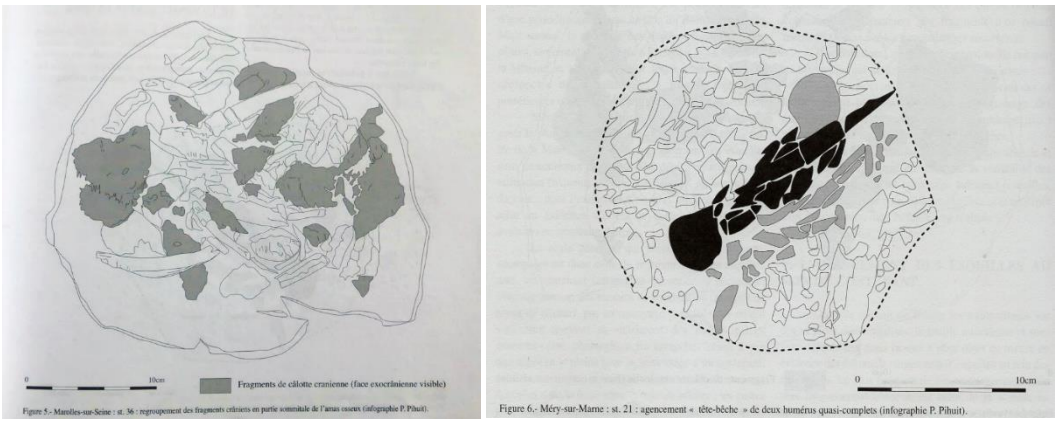

Figure 4.15: a. Overview of structure 36 at La Croix-de-la-Mission with the cranial fragments (exocranial side up) in dark grey, b. overview of structure 21 at La Rémise with the two inverted humeri in black and grey (Delattre et al. 2005, fig. 5; fig. 6).

4.6.1.4 Completeness of the bodies

There does not seem to be a specific absence of body parts at the four sites, except for two cases at Les Pétreaux (structure 2704) and La-Croix-de-la-Mission (structure 52) where cranial fragments were completely absent (Delattre *et al.* 2005, 149). Considering the practice of manipulating the position of cranial fragments mentioned above (see Chapter 4.6.1.3), it is possible that cranial fragments received a different purpose than other cremated human remains causing them to be absent or in a certain position inside the burial.

Furthermore, especially larger fragments were placed inside urn cremations (like the os coxae), but this is probably more related to the fact that it is easier to collect larger fragments from a pyre (Delattre *et al.* 2005, 149). Due to the presence of double graves (*sépultures doubles*) of adults with non-adults at La-Croix-de-la-Mission and Les Pétreaux, it is difficult to establish the completeness of the bodies (Delattre *et al.* 2005, 145).

As already mentioned above, *pars pro toto* burials (*collectes symboliques*) have not been observed, although in structure 52 at La-Croix-de-la-Mission mainly parts of the extremities were found, while other parts of the body were nearly entirely absent (Delattre *et al.* 2005, 145-47). At Les Pétreaux (structure 2704) a handful of cremated remains was found covered by a stone slab (Delattre *et al.* 2005, 145-47), therefore it could be possible that *pars pro toto* burials were present in this region, but only very marginally.

For La-Croix-de-la-Mission, the remains of several cremation graves were weighted, and the representation of the different body parts (i.e. cranium, torso and extremities) has been calculated in percentages of the entire weight (**fig. 4.16**) (Peake *et al.* 1999, fig 17). Overall, the vertebras and ribs were often found in large numbers, in contrast to the os coxae and the sacrum which were rarely found (despite some extraordinary large fragments) (Peake *et al.* 1999, 599). Additionally, smaller bones such as phalanges and teeth were little recovered as well, with the exception of structure 52 and 80 (Peake *et al.* 1999, 599). Thus, it seems mainly larger fragments were collected from the pyre after cremation, instead of an exhaustive collection of remains (Peake *et al.* 1999, 149).

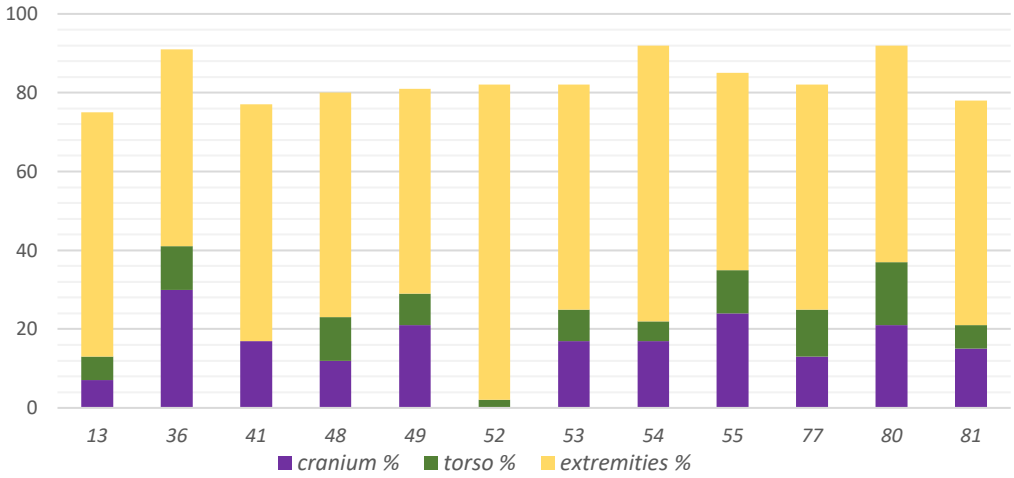

Figure 4.16: Percental distribution of skeletal categories for a selection of the cremation graves (x-axis) at La Croix-de-la-Mission (made by author).

4.6.1.5 Additions to the graves

Due to the site conditions at La-Croix-de-la-Mission, grave goods were best preserved at this site (Peake *et al.* 1999, 144). Still, grave goods are scarce, since only 7 of the 32 urn cremations contained grave goods (**appendix 7**) (Peake *et al.* 1999, table 3). If remains were placed in organic containers, no grave goods could be discerned (Peake

et al. 1999, table 3). It could be possible that these were made of organic materials like the containers, but they left no archaeological traces. The grave goods that were discovered mainly consisted of metal jewellery or were made of bone or flint, and were placed on top of the cremated human remains (Delattre *et al.* 2005, 150; Peake *et al.* 1999, table 3). Some had indications of high firing temperatures, which implies they were on the pyre with the corpse during cremation (Delattre *et al.* 2005, 150).

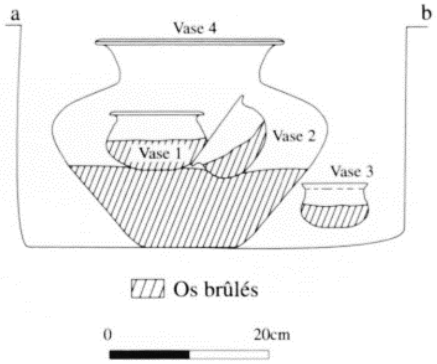

Figure 4.17: Schematic overview of structure 101 at La Croix-de-la-Mission, which contains an urn (vase 4) and 3 additional vessels (vase 1-3) all filled with cremated remains and placed both inside as outside the urn (Peake et al. 1999, fig. 11).

At La-Croix-de-la-Mission burials with multiple smaller vessels were found as well (Delattre *et al.* 2005, 147-48). This practice was not observed at the three other sites (Delattre *et al.* 2005, 148). These smaller vessels were often placed on the cremated human remains, or in the pit outside the urn (Peake *et al.* 1999, 594). Some vessels have traces from intense firing conditions (similar temperatures as in cremations), which implies these vessels were on the pyre with the corpse during cremation (Delattre *et al.* 2005, 147). It is hypothesised that they could have contained offerings, but sometimes they are also filled with cremated remains (**fig. 4.17**) (Delattre *et al.* 2005, 147).

In structure 53 a fragment of a burned bronze bracelet was uncovered between the cremated human remains, together with the remains of a metapodial (distal end) of a young ovine and a fragment of a freshwater mussel (Peake *et al.* 1999, 593-94). Thus, animal remains and bronze objects were placed amongst the cremated human remains in rare cases.

4.6.1.6 Pyre remains and other treatments of cremated human remains

Pyre remains have not been found at any of the sites under consideration, neither as additions inside urns or as separate features elsewhere on the sites (Delattre *et al.* 2005, 145). Thus, a meticulous collection of the cremated human remains was present, and pyre remains were not collected and deposited separately.

The predominant practice at these four sites is the insertion of cremated human remains inside ceramic or organic containers (Delattre *et al.* 2005, 148). Interestingly, organic containers were probably more common at these sites than ceramic containers (Delattre *et al.* 2005, 147), which is visible with the distribution of grave types at La-

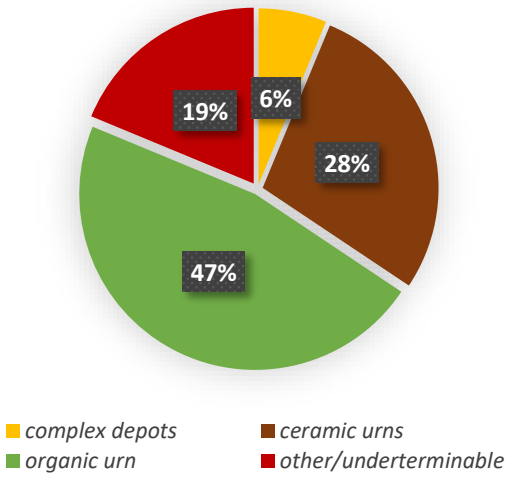

Figure 4.18: Distribution of the types of cremation burials at La Croix-de-la-Mission (made by author).

Croix-de-la-Mission for example (**fig. 4.18**). Additionally, the urns at this site were often found covered by ceramic sherds, plates, bowls, stone slabs, etc. (Delattre *et al.* 2005, 147). Thus, a practice of covering urn cremations is also visible (at least at La-Croix-de-la-Mission).

Other treatments of the remains are also visible, such as the washing of the remains (indicated by a clean white colour). At all sites a correlation was visible between the degree of cremation and further treatment (washing) of the remains after cremation: well-cremated remains were washed or cleaned before they were deposited in an urn, while badly cremated human did not receive any further treatment (Delattre *et al.* 2005, 148). Reasons for these differences in treatment are obscure, but it is clear that the remains of some individuals received a different treatment than others before they were deposited in the ground.

4.6.1.7 Conclusion

In terms of the methodology used to study the cremation graves at the sites of La Rémise, La Grande-Pièce-des-Hayettes, Les Pétreaux and La Croix-de-la-Mission yielded results that were very useful for this research. Despite the fact that only the methodology used at La Croix-de-la-Mission was shortly described, all studies revealed detailed information on the burial practices at play for the cremation burials at these sites. Therefore, the methodologies are considered as excellent.

Specific positions of the cremated human remains were visible at these sites, especially regarding the cranial fragments and long-bone fragments (Delattre *et al.* 2005, 148-50). In most cases the majority of the cremated human remains was present inside the burials, but in a few cases only a small amount of cremated human remains was deposited or were fragments of the cranium missing (e.g. structure 52 at La Croix-de-la-Mission and structure 2704 at Les Pétreaux; Delattre *et al.* 2005, 145-47). Thus, funerary practices seem to focus mainly on the cranium.

The additions to the graves are rare, and seem to be entirely absent from burials with organic containers. However, in the burials where grave goods were present, it was

observed that the cremated human remains were always placed at the bottom of the urn, and any additional goods were usually placed on top, or in some cases in the burial pit (Delattre *et al.* 2005, 150). Additionally, some of these goods had traces of firing temperatures similar to those reached in cremations, which indicates some grave goods accompanied the deceased on the pyre (Delattre *et al.* 2005, 150).

In conclusion, specific funerary practices can be discerned at these sites, both in the treatment of the cremated human remains, as in the placement of additions inside the graves.

4.6.2 LE MOULIN

4.6.2.1 Site introduction and find context

The village of Mailhac (Aude) is located in the South-west of France, about 20 kilometres north of Narbonne (**fig. 4.19**) (Janin *et al.* 1998, 11). A large occupation site of about 6 hectares was discovered near this village, together with a large cemetery called 'Le Moulin' in 1950 (Janin 2005, 193; Janin *et al.* 1998, 11). From the 1950's onwards, the site was excavated during numerous campaigns, and over the course of 25 years about 370 graves were excavated at the cemetery (Janin *et al.* 1998, 12). The graves date to between 900-675 BC (Janin *et al.* 1998, 344), which is the Late Bronze Age (*Bronze final IIIB*) and Early Iron Age in this region (Janin 2005, 193). Despite this high number of burials, estimations indicated the original number of burials probably was between 800-1000 (Janin *et al.* 1998, 12). A number of burials was damaged by agricultural activities (Janin *et al.* 1998, 12), so it seems likely that this has prevented the preservation of a part of the site.

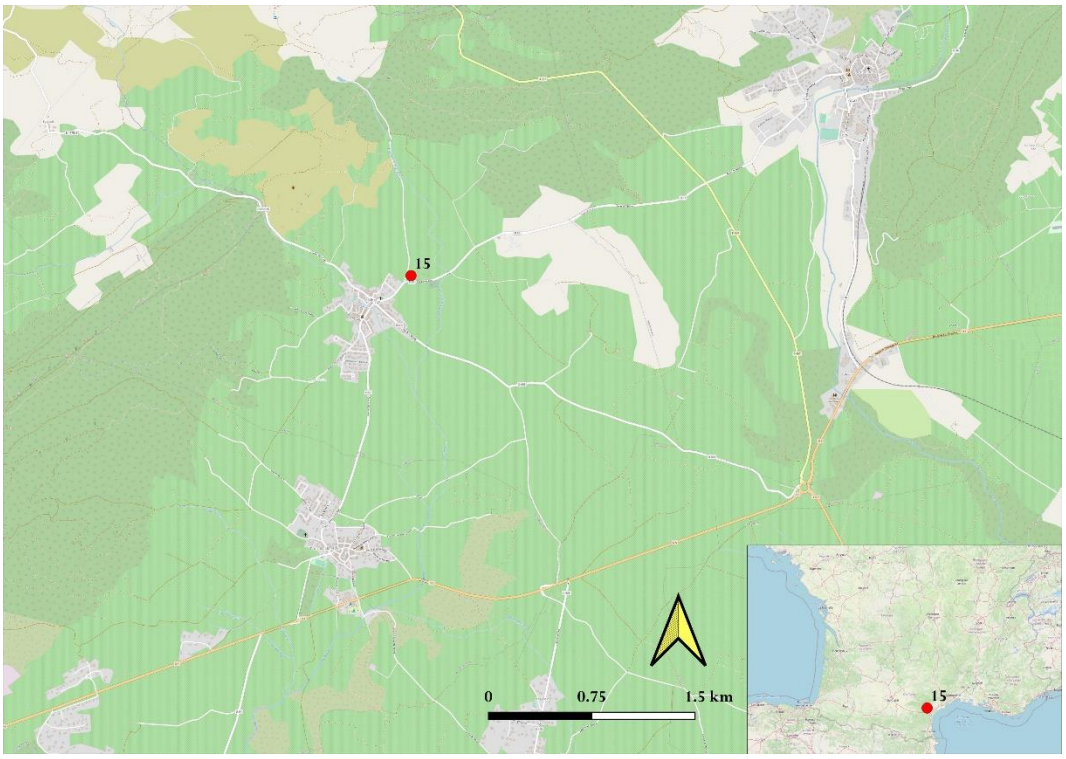

Figure 4.19: Location of the site of (15) Le Moulin (Aude, France) (made with OpenStreetMap).

4.6.2.2 Methodologies

For the physical anthropological study it was not the ambition of the researchers to do an exhaustive analysis, thus only the intact and sub-intact graves of the excavations

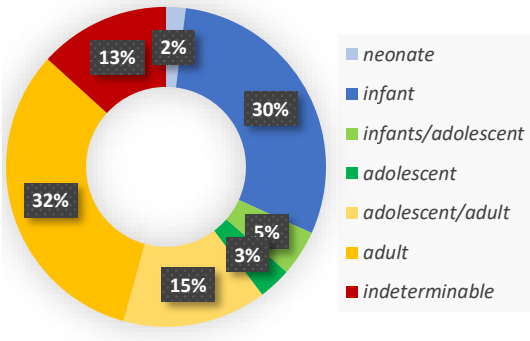

Figure 4.20: Distribution of the different age groups of the deceased in the burials at Le Moulin (made by author).

until 1974 were studied for the monograph of Janin *et al.* (1998, 320). In total, this dataset comprised 131 burials, of which 112 were single burials and 20 double burials (Janin *et al.* 1998, 320). Of these 151 individuals, 3 were neonates, 45 infants, 7 infants/adolescents, 5 adolescents, 22 adolescents/adults, 49 adults and 20 individuals were indeterminable (**fig. 4.20**) (Janin *et al.* 1998, 320). Interestingly, all double burials consist of an adult individual together with a non-adult (i.e. neonate, infant or adolescent), although for some individuals the age could not be determined (Janin *et al.* 1998, 320).

For the determination of the cremated human remains, a division was made between the remains of the cranium, the torso and the extremities. The undetermined fragments however, were ascribed to the category of the extremities, since fragments of the cranium and torso are easy to recognise:

> *In fact, the osseous fragments of the cranium, the jaw, the dental roots, the fragments of the ribs and the vertebrae are easily recognised, even if they concern miniscule remains. It is therefore perfectly acceptable to consider all the small undetermined bone fragments as being part of the extremities.*[4]
>
> - *Janin* et al. *1998, 325*

Furthermore, Janin *et al.* (1998, 325) mention that if these fragments do come from another part of the body, they weigh so little that they can be considered negligible. Still, the exact percentage or weight of this undetermined category is not given, which means one could wonder how influential the undetermined category was on the category of the extremities. Especially since the extremities have very high percentages, whereas the torso seems to be nearly absent in the majority of the burials (**fig. 4.21**).

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[4] *En effet, les fragments osseux du crâne, de la mandibule, les vestiges dentaires, les fragments de côtes et de vertèbres sont facilement reconnaissables, même lorsqu'il s'agit de restes minuscules. Il est ainsi parfaitement acceptable de considérer tous les petits fragments osseux indéterminés comme faisant partie des membres* (Translation made by author).

Thus, the manner in which the cremated human remains were categorised for this study is not considered to be effective, but rather seems to complicate matters more. Unfortunately, the exact methods for the excavation and examination of the cremated human remains were not mentioned by Janin *et al.* (1998), therefore these cannot be discussed further.

4.6.2.3 Position of cremated human remains

In Janin *et al.* (1998) the position of the remains inside the urns or burial pits was not mentioned, thus this aspect cannot be analysed for this site. However, the grave goods, animal remains and completeness of the cremated human remains were exceptionally well examined, therefore these aspects will be emphasised for this site.

4.6.2.4 Completeness of the bodies

The representation of the different body parts (i.e. cranium, torso and extremities) were thoroughly studied by Janin *et al.* (1998), and an overview of the distribution can be seen in **fig. 4.21**. The average weight of the cremated human remains of all burials is 328.9g, with a median of 232g, a minimum of 2.3g and a maximum of 1148.2 (Janin *et al.* 1998, 321). These calculations are however influenced by the inclusion of the remains of immature individuals and double burials, thus they are not very meaningful (Janin *et al.* 1998, 321).

In theory, the percental distribution of the weight per body part of a mature individual (unburned circumstances) is 20% for the cranium, 25% for the torso and 55% for the

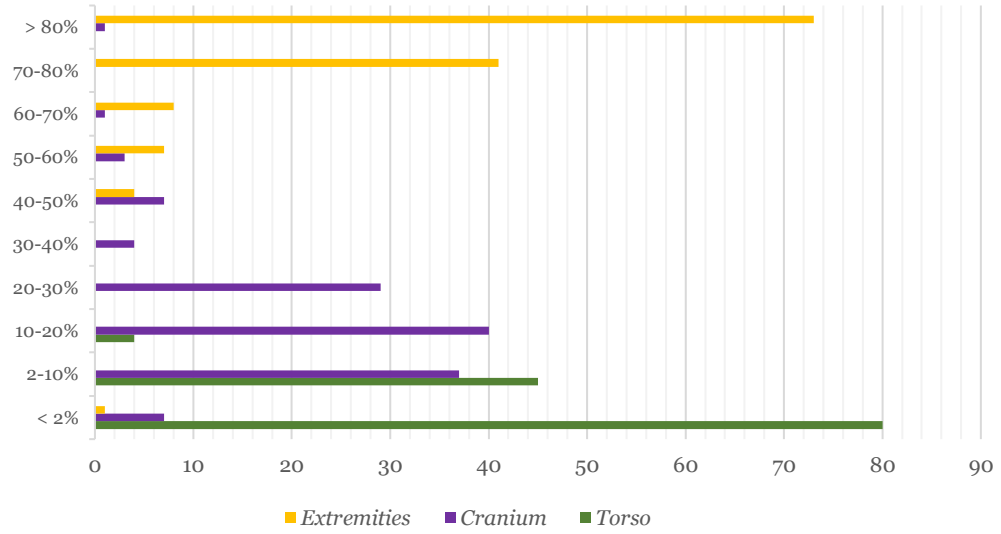

Figure 4.21: Percental distribution of the different body parts in the burials at Le Moulin (after Janin et al. 1998, fig. 419-21).

extremities (Janin *et al.* 1998, 322; 325; 326). At Le Moulin however, this distribution is not present, as the torso is heavily underrepresented, whereas the extremities are heavily overrepresented (**fig. 4.21**). In reality, the average percentage for the cranium was 18% at these graves (Janin *et al.* 1998, 322), while only 2.8% for the torso (Janin *et al.* 1998, 325) in contrast to 79.6% for the extremities (Janin *et al.* 1998, 326). Due to the presence of several burials where only a few fragments were deposited (further explained below), these percentages are somewhat influenced by anomalies, however the low percentages concerning the torso remain striking. Fragments of the torso are usually easy to recognise (Janin *et al.* 1998, 325), thus it seems that the absence of this part of the body was intentional.

In some burials a large deficiency or excess was observed in the representation of the different bodily regions (i.e. cranium, torso and limbs). In grave 116 only cranial fragments were found, and the total weight of the remains was 2.3g (Janin *et al.* 1998, 324). In grave 131 and 222 a complete absence of remains from the torso was noted, while in grave 123 only remains of the extremities were found although this last grave too had a total weight of only 2.3g (Janin *et al.* 1998, 324). Since the deposition of only a small amount of remains or only remains of certain parts of the body was observed in quite a number of burials, this practice does seem to be intentional instead of a mere anomaly. It is difficult to establish whether these burials are actual *pars pro toto* internments, but it does seem likely. Additionally, the practice was observed at different sites in France (Peyrou, Pincevent, Souillac and Camp d'Alba) (Janin *et al.* 1998, 325), thus this practice seems to be a wide-spread phenomenon. At Le Moulin, no correlation could be found between this practice and the different phases of the cemetery, nor between individuals of a different age, or cremation degree (Janin *et al.* 1998, 325). Therefore, it is clear that the collection of the remains from the pyre was not systematically the same for every individual, but why certain individuals received a certain treatment remains unclear (Janin *et al.* 1998, 325).

4.6.2.5 Additional contributions to the graves

At Le Moulin many burials contained grave goods, as can be seen in **fig. 4.22**. The location of these grave goods inside the burials is not clearly stated, as the inventory in Janin *et al.* (1998, 15–250) only seems to mention their position sporadically. Where such information was present, the author could not discern a clear pattern in the position of these grave goods. Still, the degree of disturbance by agricultural activities could also have an impact on their position, thus it is difficult to draw conclusions about this aspect.

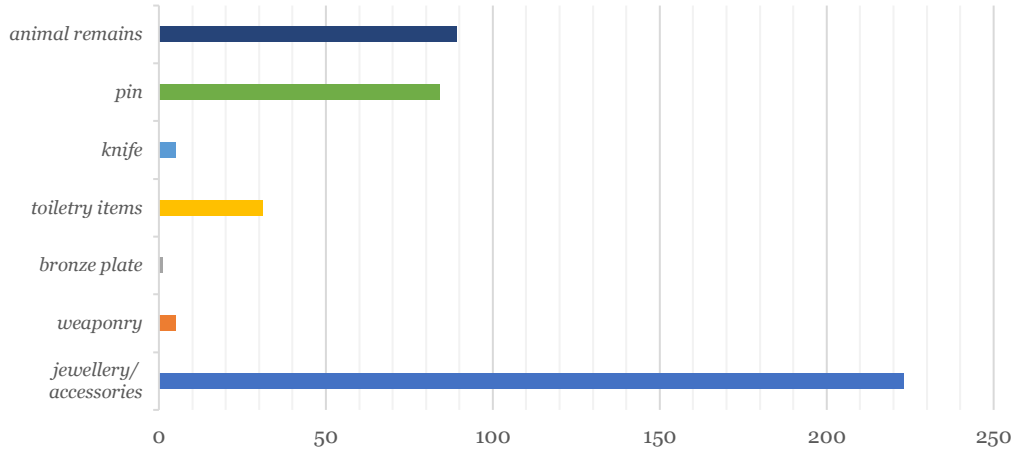

Figure 4.22: Number of grave goods found per category in the burials at Le Moulin (after Janin et al. 1998, fig. 436; Geddes 1998, 379).

In total over a thousand vessels were found at this site; the majority of the burials contain multiple vessels (**fig. 4.23**), and some of them are considered to have contained offerings (Janin *et al.* 1998, 15-250). Interestingly, the amount of vessels inside a grave seems to increase towards the Early Iron Age (Janin *et al.* 1998, 366). Among these vessels are open types, cups, bowls, closed vessels, urns, and beakers. Most of these have use-wear traces, which indicates they had a domestic purpose before they were deposited in a grave (Janin *et al.* 1998, 251-2).

As mentioned above, double burials were also found at Le Moulin. In most double burials the remains of both individuals were deposited in the same container, except in burial 74 and 201 where each individual received its own container (Janin *et al.* 1998, 320). In burial 74 the amount of cremated human remains was rather even (both approximately 800g), but in burial 201 only a few fragments of another individual were found, which raised the possibility of contamination from the pyre in this case (Janin *et al.* 1998, 320-21). One seemingly double burial was found in burial 185, where two urns with cremated human remains were discovered which probably all belonged to a single individual (Janin *et al.* 1998, 320). In 16 cases no container for the cremated human remains was found, perhaps because these were made of perishable materials (Janin *et al.* 1998, 321).

According to the inventory in Janin *et al.* (1998, 15–250), some vessels were placed inside urns, while others were placed in the pit with the urns. Also, some were used to cover the urns, although stone slabs were used to cover them as well (Janin *et al.* 1998, 15–250).

Bronze and some iron objects were found in abundance: in total 726 metal finds were excavated (Janin *et al.* 1998, 282). A lot of them show indications of high fire

Figure 4.23: Tombe 303 at Le Moulin with multiple vessels inside the burial pit (Janin et al. 1998, fig. 341).

temperatures (i.e. melting and/or deformation by fire), thus these fragments are thought to have accompanied the corpses on the pyre (Janin *et al.* 1998, 282). The metal finds concerned bracelets, rings, buttons, beads, spirals, pendants, torques, necklaces, fibulae, pins, buttons, belt buckles, tweezers, razors, iron knives, sowing items and weaponry (Janin *et al.* 1998, 282; 293; 298; 300). Although most bracelets are fragmented, they form the largest category and they are also most affected by fire (Janin *et al.* 1998, 282).

Besides these metal objects flint items were found as well, jewellery of lignite, and some worked bone items although these were often burned which made them difficult to distinguish from the cremated human remains (Janin *et al.* 1998, 301). Lastly, shells seem to have been used as jewellery as well, and some of them had traces of red ochre (Janin *et al.* 1998, 301). In sum, these items can be considered as personal items that needed to accompany the dead in their grave, or it could have been a funerary custom to bury the cremated human remains with (a combination of) these items even if they were not actual possessions of the deceased. Additionally, children received considerably fewer grave goods than adults (Janin *et al.* 1998, 358), thus a difference in funerary practices can be observed between adults and immature individuals.

Since 89 burials contained animal remains (while at other sites these are rarely encountered), these will receive some more attention. Altogether the remains of 92

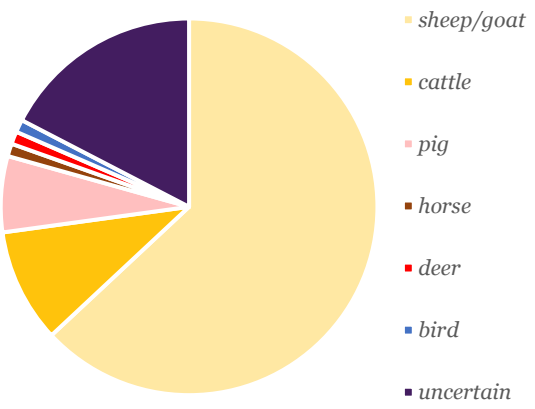

Figure 4.24: Percental distribution of the animal categories identified in the burials at Le Moulin (after Geddes 1998, 379).

animals were discovered, of which 76 were identified with certainty (**fig. 4.24**) (Geddes 1998, 379). These animal remains correspond to the domesticated animals used in Southern France during the Bronze Age, as well as wild species present in this region in the past (Geddes 1998, 381).

It is unclear whether more remains were located at the site in the past, since acidic soils only allowed the preservation of remains that were carbonised (i.e. cremated) or affected by copper oxide (CuO) (Geddes 1998, 379). The majority of the bones belonged to sheep/goats (especially the humerus) (Geddes 1998, 379; 381), and interestingly these were mostly found inside the urn either on top of the cremated human remains or among them (Janin *et al.* 1998, 15–250). David Geddes (1998, 379) interpreted the majority of the animal remains as meat offerings, although the evidence for this conclusion is ambiguous; based on the types of bone (e.g. lamb's shoulders) it was assumed these remains were used as meat offerings, but other evidence was not mentioned by Geddes (Geddes 1998, 382). Some of the animal remains are burned, such as burial 214 which contained the burned remains of a nearly complete hind leg of a deer (Janin *et al.* 1998, 176), indicating that they accompanied the corpse on the pyre or received a similar cremation treatment. Other burials contained remains that could not be considered "edible", like burial 220 which contained a horse tooth (Janin *et al.* 1998, 181). Thus, the addition of these remains in the burials at Le Moulin can be interpreted as important, although their exact purpose is not always clear.

4.6.2.6 Pyre remains and other treatments

Until the excavation at Le Moulin in 1993, no pyres were discovered in the South of France (Janin *et al.* 1998, 340). During this excavation, two features containing small charcoal fragments and cremated human remains were found. Still, these pyre remains were interpreted as exceptions, and the most accepted theory was that the pyres were generally located outside the cemeteries (Janin *et al.* 1998, 340).

In approximately 40% of the burials, Janin *et al.* (1998, 15–250) mentions the presence

of charcoal either inside the pit or in association with the burial. However, it was not always clarified if this charcoal came from the pyre or somewhere else (Janin *et al.* 1998, 15–250). In 9 burials, charcoal was deposited on the slab that covered the burial pit (**fig. 4.25**) (Janin *et al.* 1998, 15–250). The reason for such a deposition was not further investigated, still the occasional presence of cremated bones (for example in *tombe* 142; Janin *et al.* 1998, 122) points to the possibility that at least in some cases this deposition contained pyre remains.

In terms of other treatments of the cremated human remains at Le Moulin, three burials (*tombe* 13, 43 and 96) contained washed remains (Janin *et al.* 1998, 23; 42; 83), thus the washing of remains was practiced, albeit marginally.

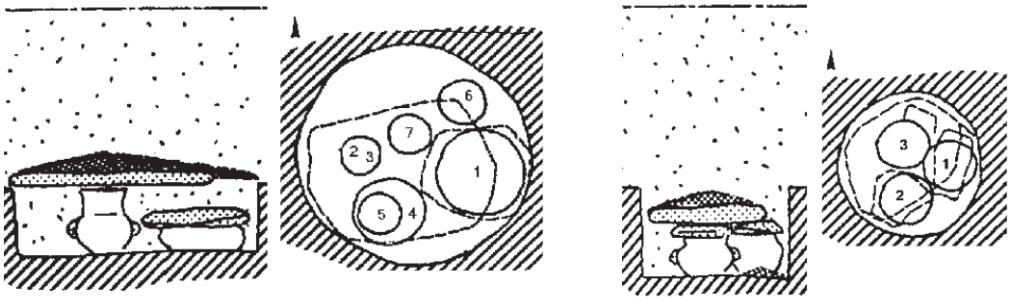

Figure 4.25: Schematic drawings of tombe 142 and tombe 144 at Le Moulin, with charcoal deposited on the slabs covering the burial pits (Janin et al. 1998, fig. 185; 187).

4.6.2.7 Conclusion

The exact methods used to excavate the burials at the site of Le Moulin were not mentioned by Janin *et al.* (1998), thus these cannot be evaluated. However, a physical anthropological analysis was executed on the cremated human remains of 131 (intact and sub-intact) burials, which revealed that the remains of the buried individuals were not complete (Janin *et al.* 1998, 324-25). In most cases remains of the torso were missing (**fig. 4.21**), although this could be influenced by the addition of unidentified remains to the category of the extremities. Still, in some cases only several grams of cremated human remains were deposited inside a burial (e.g. burial 116: Janin *et al.* 1998, 324), thus the possibility of *pars pro toto* deposition is also present at this site. Nevertheless, a systematic collection of the human remains after cremation does not seem to have been present for the majority of the burials (Janin *et al.* 1998, 325). In three cases the remains were washed (Janin *et al.* 1998, 23; 42; 83), consequently this practice was marginally present on this site. Any observations on the position of the remains inside the burials were not mentioned, therefore these cannot be studied for this site.

The position of grave goods inside burials was mentioned in the inventory (Janin *et al.* 1998, 15–250), although not in a very systematic manner. Based on this inventory no specific locations or positions of the grave goods could be observed. Many burials contained multiple vessels, which were interpreted by Janin *et al.* (1998, 15–250) as having contained perishable offerings. The majority of the animal remains were interpreted in a similar way (Geddes 1998, 379), although not all remains were of edible parts of animals (for example the horse tooth in burial 220: Janin *et al.* 1998, 181). Other items seemed to consist of personal items, like jewellery, accessories, toiletry items and weaponry (**fig. 4.22**). Some of the grave goods had traces of fire, thus some of them probably accompanied the corpse on the pyre during cremation (Janin *et al.* 1998, 282). Lastly, in about 40% of the burials the presence of charcoal was noted (Janin *et al.* 1998, 15–250). This could indicate that pyre remains were sometimes included in burials, although it is unclear whether the cremated remains and charcoal formed a mix or if they were separated from each other.

In conclusion, Le Moulin is a large site that has yielded a lot of information on Late Bronze Age and Early Iron Age funerary practices in the south of France, albeit not all research questions (such as the position of cremated human remains inside the grave) could be answered.

4.7 Late Bronze Age and Early Iron Age funerary practices in Germany

Like France, Germany could be divided in three cultural zones during the Late Bronze Age: Central and Southern Germany, Eastern Germany and Northern Germany (Jockenhövel 2013). Northern Germany is the most different from the others, as it is more closely linked to the Nordic Bronze Age in Scandiavia (Jockenhövel 2013, 735). Of relevance in this thesis is Eastern Germany, where the site of Cottbus Alvensleben-Kaserne is located (**fig. 4.26**). In Eastern Germany the Lusatian (Lausitz) culture was dominant from the Middle Bornze Age onwards (Jockenhövel 2013, 734), and although this culture was distinguished from other cultures in the vicinity, it closely resembles the cultures to the west (*pers. comm.* Prof. Dr. D.R. Fontijn to the author). The funerary practices of this culture were marked by simple graves located in large urnfields, with thousands of graves that have an egalitarian outlook (Jockenhövel 2013, 734).

4.8 Urn cremations from Germany

4.8.1 COTTBUS ALVENSLEBEN-KASERNE

4.8.2.1 Site introduction and find context

The site Cottbus Alvensleben-Kaserne (Brandenburg) lies in the east of Germany (**fig. 4.26**) and dates to the Late Bronze Age and Early Iron Age (11th to 8th century BC) (Großkopf 2004, 137). The site consisted of a Lusatian urnfield (related to the Urnfield

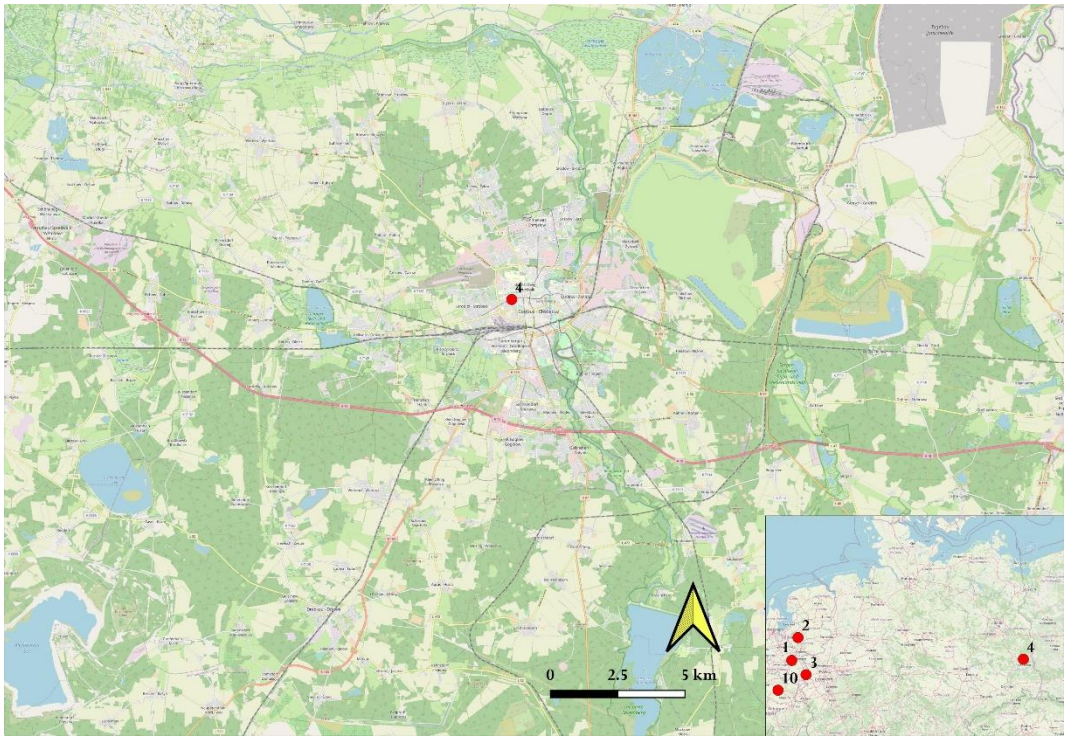

Figure 4.26: The location of the archaeological site Cottbus Alvensleben-Kaserne (Brandenburg) (made with OpenStreetMap).

culture: van den Broeke 2005, 479), and was first discovered in 1885 (Großkopf 2004, 137). In 1885 several burials were found, which were lifted. A second excavation campaign was held in 1907, and 23 more urns were lifted from the site. Unfortunately, only excavation reports survived over time, thus the accounts of this urnfield are incomplete (Großkopf 2004, 137). The last excavations were held in 1997-1998, as construction work at the site would damage the archaeology *in situ* (Großkopf and Gramsch 2007, 73). The excavations revealed 97 cremation graves containing 103 individuals (Großkopf 2004, 139).

Most individuals were buried in simple pit graves with one urn, although rectangular chambered tombs with multiple urns and individuals were found as well (Großkopf and Gramsch 2007, 74). Of the 97 cremation graves, 31 were found disturbed at the site (Großkopf 2004, 157). Of the 103 individuals, 9 were neonates, 29 were children, 4 adolescents, 29 adults and 32 old adults[5] (**fig. 4.27**) (Großkopf 2004, 139). In approximately 45.6% of the cases the biological sex could be determined as well: 9 female individuals were discovered, 8 probably female, and 9 possibly female, 12 were male, 3 probably male and 6 possibly male (**fig. 4.28**) (Großkopf 2004, 139–40). In total six double burials were uncovered, of which 3 consisted of adult females with neonates, 2 of two children and 1 of an old adult male with an adult that was (probably) female (Großkopf 2004, table 10).

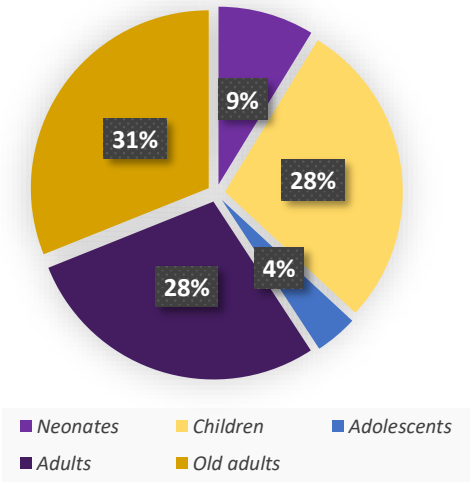

Figure 4.27: Percental distribution of the different age groups of the 103 individuals found at Cottbus Alvensleben-Kaserne (after Großkopf 2004, fig. 46).

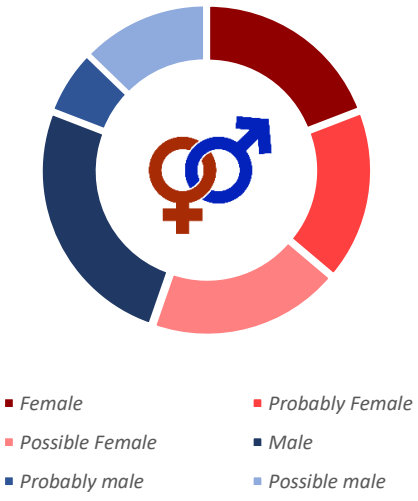

Figure 4.28: Distribution of the determined biological sexes of 47 individuals found at Cottbus Alvensleben-Kaserne (after Großkopf 2004, 139-40).

[5] Originally Großkopf (2004, fig. 46) used more age groups, however to improve readability these were combined.

4.8.2.2 Methodologies

The methodologies employed by the investigators of Cottbus Alvensleben-Kaserne were described very thoroughly in the publications (Gramsch 2013; Großkopf and Gramsch 2007). In the field, the urns were block-lifted, after which they were analysed layer by layer to reconstruct the funerary practices at play as well as physical anthropological characteristics (Gramsch 2013, 467). The contents of the urns were excavated in 10 to 16 layers, and were documented with photographs, drawings and textually (Gramsch 2013, 467; Großkopf and Gramsch 2007, 75). Subsequently the remains were collected per layer (**fig. 4.29**), to enable a thorough physical anthropological analysis (Großkopf and Gramsch 2007, 75). Every layer was then examined to investigate the stratification of the body parts, the representation of the body parts and degree of burning of the remains (based on carbon residues) were executed (Gramsch 2013, 468). The aim of the research was to create a reconstruction of the funerary practices and if these were different between men and women and different age groups (Gramsch 2013, 467).

The research undertaken on the cremated human remains at Cottbus yielded very detailed results, which indicates these methods were highly effective. Unfortunately, the duration of this research was not mentioned, although one can expect that such detailed analysis takes a lot of time. Still, if enough time is available, these methodologies are highly recommended.

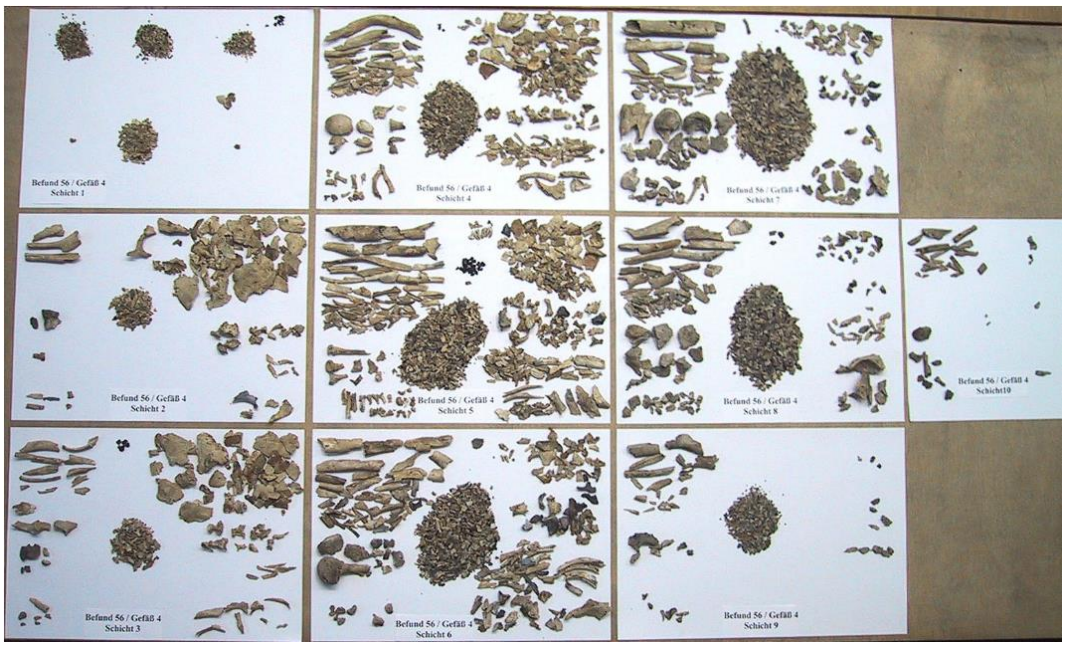

Figure 4.29: The collection of the cremated human remains of all 10 layers in burial 56(4) (Großkopf 2004, fig. 51).

4.8.2.3 Position of cremated human remains

The urn cremations at Cottbus yielded spectacular results in terms of the positioning and completeness of the cremated human remains. Inside the urns, the anatomical order of the human body was followed meticulously followed, with the feet bones at the bottom and the skull at the top (Gramsch 2013, 468). Especially the collection of the small hand and foot bones is remarkable, as these are usually not recovered in urn cremations (Gramsch 2013, 468). Other ways of positioning are the separation of the cranial and post-cranial bone fragments, the side-by-side placement of pairs of bones, and the joint heads facing opposite directions, and the alignment of vertebrae (**fig. 4.30-31**) (Gramsch 2013, 468; Großkopf and Gramsch 2007, 78). Großkopf and Gramsch (2007, 78) interpret such a careful collection as a desire to reconstruct the human body after its destruction by fire, and describe this practice as anthromorphisation (*Anthromorphisierung* in German).

Figure 4.30 (above): Photographs demonstrating the parallel position of some of the remains in burial 56(4) (left) and burial 92(1) (right) (Großkopf 2004, fig. 49).

Figure 4.31 (left): Photograph demonstrating the alignment of vertebrae in burial 151 (right arrow) (Großkopf 2004, fig. 50).

Gramsch (2013, 470) mentions the resemblance of the anatomical position of the cremated human remains at Cottbus with cremation graves found at Early Iron Age Lusatian urnfields. The Early Iron Age urns often had iron needles corroded on the outside of the urns, and this corrosion often contained remains of textiles (Gramsch 2013, 470). Based on these observations, it seems these urns were dressed like humans (Gramsch 2013, 470). Both the anatomical position of the cremated human remains and the dressed urns are considered to create an anthropomorphic shape: "The body was not destroyed, [...] only broken down in order to be rebuilt" (Gramsch 2013, 470). Gramsch regards this anthropomorphism as a practice wherein differences in sex and age are discarded; instead an idealised ancestral form is created (Gramsch 2013, 470). Thus, the meticulous reconstruction of the bodies indicates that specific ideas regarding the treatment of the dead were present at the site of Cottbus Alvensleben-Kaserne.

4.8.2.4 Completeness of the bodies

As mentioned earlier, the representation of the body parts is remarkable as well. Despite the fact that only 66 burials were undisturbed, the average weight for 18 undisturbed female graves was 1088g and for 13 undisturbed male graves was 1352g (Großkopf 2004, 157), which means most burials contain more or less complete bodies. Such heavy weights are probably caused by the collection of even the smallest bone elements from the pyre (Gramsch 2013, 469). According to Gramsch (2013, 469) this indicates a "strongly canonical way" of collecting the cremated human remains. In most cases the remains of one individual were found inside an urn, although double burials were recovered as well (Gramsch 2013, 468). Interestingly, no differences in treatment could be discerned between age groups (from neonates to old adults) nor between males and females (Gramsch 2013, 469).

4.8.2.5 Grave goods and animal remains

The majority of the urn cremations were buried in simple pits, with the exception of some more elaborate burials whereby multiple urns were placed in wooden burial chambers with the addition of other ceramic vessels (Gramsch 2013, 467). Urns were usually covered with other vessels as well, such as bowls or cups (Gramsch 2013, 469). The retrieval of burned animal bones implies animal remains accompanied the deceased on the pyre during cremation (Gramsch 2013, 469). In total, ten graves contained burned animal remains of horse, cattle, pig, sheep/goat, and a carnivore (Großkopf 2004, 161; table 16). In some cases, these remains were interpreted as

possible meat offerings (Großkopf 2004, table 16), but most remains were not considered as such, probably based on the type of remains (i.e. teeth, mandibles, calvarium etc.). Overall, the amount of animal remains is very small, and were mostly found in burials of adult women (Großkopf 2004, table 16). The remains could be part of a certain funerary practice conducted mainly on adult women; however, this practice was only marginally present, thus it is difficult to draw conclusions if the practice occurs on a small scale.

Unfortunately, the addition of any other grave goods and their subsequent position inside the graves was not mentioned in any of the publications about Cottbus Alvensleben-Kaserne (Gramsch 2013; Großkopf 2004; Großkopf and Gramsch 2007), thus a further analysis of these elements cannot be given.

4.8.2.6 Pyre remains and other treatments

Due to the absence of charcoal inside the burials, the cremated human remains were probably carefully collected from the pyre (Gramsch 2013, 468). Additionally, very large bone fragments were retrieved, which indicates that the pyre was not extinguished with liquids after the fire had burned out (Gramsch 2013, 468). The thermal shock caused by sudden cooling would have resulted in more fragmentation, and large bone fragments would thus not endure (Gramsch 2013, 468). After cremation, the remains needed to cool before they could be collected; according to Großkopf and Gramsch (2007, 77) experiments revealed it takes about two days before this is possible.

Furthermore, the burning degree was very similar on all remains (Gramsch 2013, 468), and it is not evident that the remains were washed after cremation (Großkopf 2004, 151). The remains do not seem to have been transported over a long distance to the burial site (Großkopf 2004, 151); the smaller remains did not end up at the bottom of the urns, and fragments were still very large (Gramsch 2013, 468–69).

4.8.2.7 Conclusion

The site of Cottbus Alvensleben-Kaserne yielded incredible results in terms of the analysis of the cremated human remains, albeit this probably caused the neglection of other additions to the grave. Still, the methods used for the analysis of the remains were highly effective and detailed, but this probably made the methods time-costly as well.

Most burials were interred in simple pits; only a few graves consisted multiple burials (Gramsch 2013, 467). Frequently, the urns were covered by bowls or cups (Gramsch

2013, 469). Inside the urns, the cremated human remains were placed inside according to their anatomical order (i.e. feet at the bottom and skull at the top), whereby vertebrae were sometimes aligned and long bones placed parallel to each other or with joints inverted (Gramsch 2013, 468; Großkopf and Gramsch 2007, 78). These practices were interpreted as a practice of anthromorphisation of the cremated human remains (Großkopf and Gramsch 2007, 78), whereby the remains of the deceased were rebuilt as ancestors in an idealised form (Gramsch 2013, 470). Still, this hypothesis cannot be verified based on the archaeological evidence alone. Additionally, no *pars pro toto* interments were mentioned, and most of the bodies were more or less complete (with exception of the disturbed burials) (Großkopf 2004, 157).

As mentioned above, little was published about other additions to the grave. Animal remains had a marginal presence, and only in a few cases the remains could have been meat offerings (Großkopf 2004, 161; table 16). Still, all these remains were burned, which indicates they accompanied the corpse on the pyre (Gramsch 2013, 469). Due to the careful collection of the cremated human remains from the pyre, charcoal was almost never present (Gramsch 2013, 468). The large bone fragments found inside the urns imply the pyre was not extinguished with liquids (Gramsch 2013, 468), neither were they transported over long distances before burial (Großkopf 2004, 151). The homogeneous coloration of the remains suggests the corpse was stretched out on the pyre, probably with the limbs fastened with ropes or cloth (Gramsch 2013, 468). Lastly, the remains had no signs of being washed before burial (Großkopf 2004, 151).

In conclusion, the Late Bronze Age and Early Iron Age site Cottbus Alvensleben-Kaserne revealed some intricate funerary practices, which followed a systematic set of values.

5. Case study: the urn cremation from Venlo-Zaarderheiken

At first this research would consist of a case study whereby the urn cremation from Venlo-Zaarderheiken would be examined. Subsequently, the results of the case study would be compared with the results of other research on urn cremations found in the literature study. However, due to unforeseen circumstances a change of this research was necessary. Therefore, this thesis will only concern the preliminary results of the case study, and the comparison with other research results concerning urn cremations in Northwestern Europe will be emphasised.

5.1 Results per layer

Before the results per layer can be discussed in detail, it is important to give an overview where the layers were located. In **fig. 5.1** the layers are indicated with dashed lines; unfortunately a cavity on the right side of the accessory vessel has caused a difference in depth between the layers on the left and right side.

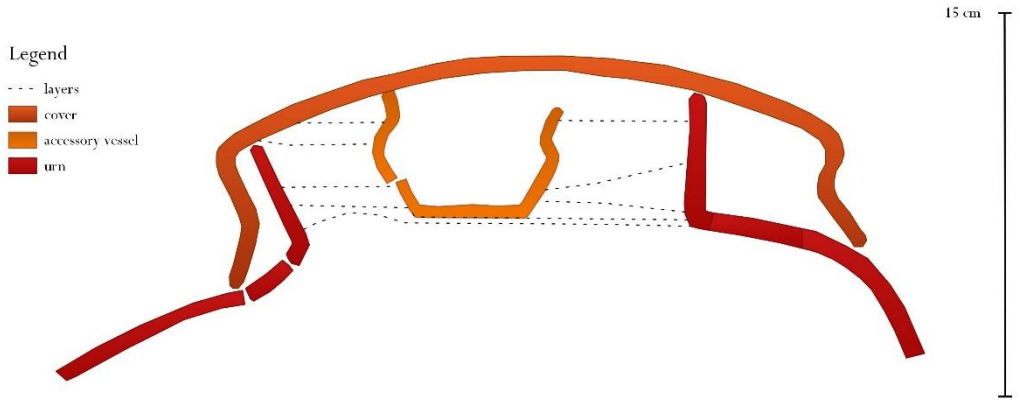

Figure 5.1: Cross-section of the urn cremation from Venlo-Zaarderheiken, indicating the position of the accessory vessel just underneath the cover pot, and the different layers created inside the urn (made by author).

5.1.1 Layer 1 and 2

The first two layers of urn (**fig. 5.2 and 5.3**) were mainly used to document the state in which the urn had reached the lab. Additionally, the vessel used as a 'cover' on the urn was quite fragmented (although complete), thus to be able to reconstruct the vessel it was important to document the location of the sherds (**appendix 8**).

Figure 5.2 (left): Layer 1 of the urn cremation from Venlo-Zaarderheiken, indicating the state of the urn after the removal of the plastic foil (photograph by author).

Figure 5.3 (right): Layer 2 of the urn cremation, revealing the outside of the urn after it was cleaned of soil (photograph by author).

For administrational reasons it was decided to call the layers '*laag*' from layer 2 onwards, to avoid overlap in the database.

On the right side of the urn some fragments of a long bone are protruding. At this point of excavation, it was difficult to determine which bone the fragments belonged to. At the top a disturbance was found, which seemed to be caused by a plough. This interpretation is supported by the state of the left side of the urn; this side is a lot more fragmented than the right side. During the lowering of layer 2 to 3 this disturbance was excavated, which revealed some flipped pottery sherds and a few cremated bone fragments (**fig. 5.4**). Dr. Rachel Schats determined this bone fragment as a human hip fragment (*os coxae*).

Figure 5.4: A cremated bone fragment (probably from the os coxae) (right; yellow arrow) located in the disturbance (left) (photographs by author).

On some of the sherds on the lower left side, traces of mice teeth are visible (**fig. 5.5**), which could mean that mice have disturbed some parts of the urn. The degree of disturbance will only become clear at deeper layers.

Figure 5.5: Ceramic sherds from the belly of the urn with traces of mice teeth (yellow arrows) (photograph by author).

5.1.2 Layer 3

Figure 5.6: Layer 3 of the urn cremation from Venlo-Zaarderheiken (photograph by author).

Layer 3 revealed the first cremated human remains inside the urn, and a small accessory vessel (*bijpotje*) placed in the centre just underneath the vessel used to cover the urn (**fig. 5.6**; **appendix 9**). The best finds of these small accessory vessels were done at the end of the 19th and beginning of 20th century (*pers. comm.* Prof. Dr. David Fontijn to author), which means this is an extraordinary find. The small pot seems to have a different filling than the rest of the soil in the urn, with micro charcoal fragments and a light grey colour. Unfortunately, the accessory vessel is broken, although it is complete.

The cremated human remains are located quite high in the urn, a possible reason for this could be that the urn was pressed in due to ploughing, making it seem the remains are 'higher' up in the urn (**fig. 5.7**). Although small bone fragments are abundant, very large bone fragments (more than 46 mm: Smits 2013, tab. 12.1) are present as well; especially on the right side. Overall, fragments of the *os coxae*, sacrum, cranium, and diaphyseal extremities (long bones) could be determined. The remains in this layer have a white homogeneous colour, which indicates they are well-cremated (Smits 2013, tab. 12.2). A greenish coloration on some bone fragments

could have been caused by contact with copper oxides (from bronze objects), but according to Louwen (*forthcoming*) the cause of this phenomenon is ambiguous. Charcoal fragments are nearly absent.

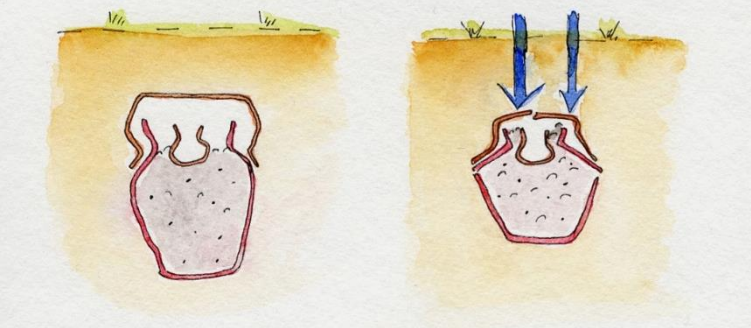

Figure 5.7: Schematic overview of how the urn could have been "pressed in" by the weight of a tractor that is used to plough the forest (figure by author).

5.1.3 Layer 4

Figure 5.8: Layer 4 of the urn cremation from Venlo-Zaarderheiken (photograph by author).

Form layer 4 onwards, large bone fragments become visible all over the surface (**fig. 5.8**). Still, the right side of the urn has a denser cluster of cremated remains than the left side. Furthermore, two patellae were revealed in this layer, which are rarely found according to Dr. Rachel Schats (*pers. comm.* to author). This could indicate that remains were meticulously collected from the pyre. Other remains that could be determined were cranial fragments and a highly fragmented long bone (**appendix 10**).

Although some parts of the rim of the small accessory vessel were broken, the bottom is intact.

5.1.4 Layer 5

The cremated human remains are becoming less and less fragmented, which indicates the bottom of the urn are probably in a better condition than the top (**fig. 5.9**). Especially a lot of cranial fragments are visible in this layer (**appendix 11**). An

Figure 5.9: Layer 5 of the urn cremation from Venlo-Zaarderheiken (photograph by author).

extraordinary fragment is the nearly intact proximal end of an *ulna* (**fig. 5.10**). Furthermore, a lot of rib fragments are visible on the left side of the urn (**fig. 5.10**), although they are quite fragmented. Two vertebrae were visible as well (**fig. 5.10**), of which one is probably thoracic. A small hand or foot bone (metacarpal or -tarsal) was revealed (**fig. 5.10**); the slight curve points more towards a feet bone, although this could be a result of the high fire temperatures during cremation. This is an indication that smaller skeletal elements, like the hand and foot bones, were collected as well.

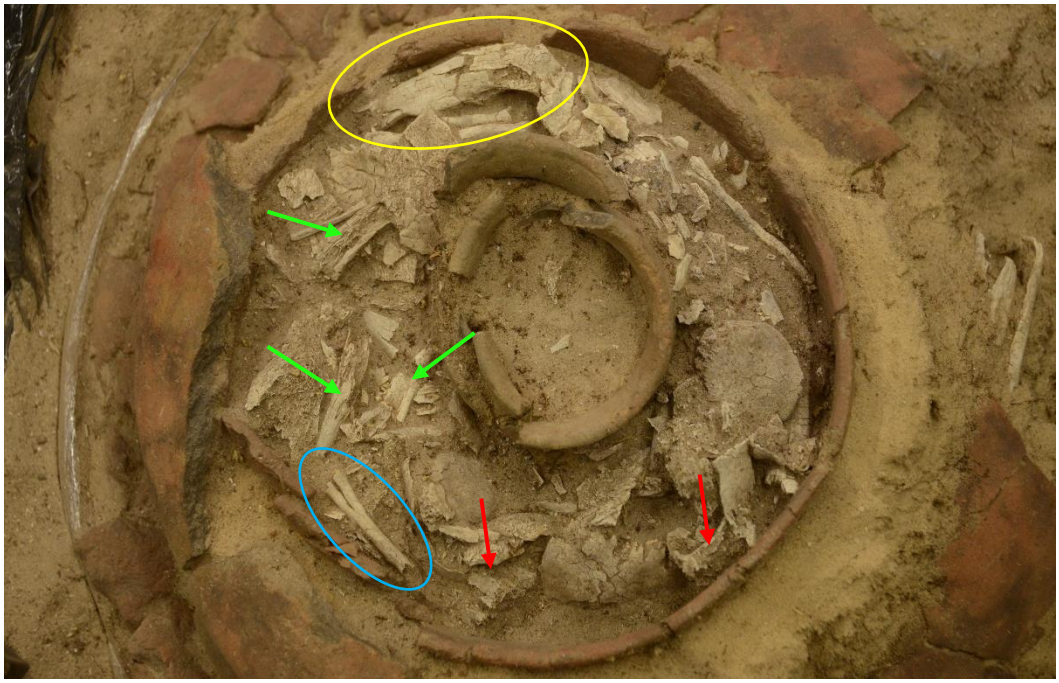

Figure 5.10: Overview of layer 5 in the urn cremation from Venlo-Zaarderheiken, with the* ulna *(yellow), rib fragments (green), metacarpal or -tarsal (blue) and two vertebrae (red) (photograph by author).

5.1.5 Layer 6

Figure 5.11: Layer 6 of the urn cremation from Venlo-Zaarderheiken (photograph by author).

The accessory vessel was removed, and as expected the bottom was intact. Inside the small pot two fragments of cremated human remains were found (**fig. 5.11**); they could not be further determined although they seemed to be long bone fragments (*pers. comm.* Dr. Rachel Schats to the author). Apart from the bone fragments nothing else was recovered from the small pot. It is possible it contained liquids in the past, but that has to be investigated with the samples taken from the filling.

The cremated human remains in the urn have become a mix of all body parts; fragments of the cranium, torso and extremities are visible (**appendix 12**). These body parts were all present from layer 5 onwards, but not as equally distributed as in layer 6. The remains also form a dense cluster, which makes it likely that the majority of the remains were collected from the pyre. The cremated human remains that could be determined were: diaphyseal extremities (long bone fragments), cranial fragments, another vertebra, a hand or foot bone, ribs and a fragment of a femur.

The rim of the urn is completely visible in this layer, it seems to consist of a conical shape that has a quite abrupt edge towards the body of the urn. Both the soil from the accessory vessel as the soil between the rim of the urn and the cover pot has been sampled, in order to investigate their nature.

5.2 Position and completeness of cremated human remains

As mentioned above, the urn from Venlo-Zaarderheiken is not yet completely excavated. This makes it difficult to draw conclusions about the position of the cremated human remains inside the urn, as well as the completeness of the cremated human remains. However, some expectations can be discussed, based on the observations done so far.

Firstly, a lot of cranial fragments are present in all the excavated layers so far, while fragments of the torso are present from layer 5 onwards (**tab. 5.1**; **appendices 8-12**). This could indicate that some structuration of body parts was present in the urn. The

extremities do not really seem to be clustered, which is more or less logical because extremities can be found both in the upper as lower body. Still, the two patellae in layer 4 indicate that the lower limbs were not necessarily placed at the bottom. Other forms of positioning (e.g. parallel placement of long bones) were not observed, but these could be present in lower layers. Thus, a tendency towards a structuration is visible so far, based on the large number of cranial fragments in the upper layers and the appearance of torso fragments in lower layers.

Table 5.1

Determined cremated human remains

Layer 1	-
Layer 2	os coxae
Layer 3	os coxae, sacrum, cranium, diaphyseal extremities
Layer 4	diaphyseal extremities, 2 patellae, cranium
Layer 5	cranium, proximal end of ulna, ribs, 2 vertebrae (1 thoracic), metacarpal/-tarsal
Layer 6	diaphyseal extremities, cranium, vertebra, hand/foot bone, ribs, femur

Table 5.1: The determined cremated human remains per layer from the urn cremation from Venlo-Zaarderheiken (made by author).

Secondly, it is even more difficult to analyse the completeness of the cremated human remains at this stage. Still, the presence of smaller skeletal elements such as a hand/feet bone and two patellae indicate that care was taken in the collection of the cremated human remains from the cremation pyre. Perhaps the good condition of the bones after cremation played a role in the collection of the remains. The cremated human remains have a very white colour, which implies they are well-burned (Smits 2013, table 12.2). Additionally, the size of the fragments reveals the remains were in a good condition after cremation. Based on these observations the conditions of the cremated human remains could have stimulated the meticulous collection of the remains after cremation. Furthermore, it is expected that the cremated human remains at the bottom of the urn are in an even better condition, since these are likely to be less disturbed.

5.3 Grave goods

The grave goods discovered at this point consist of a small accessory vessel and a bronze fragment (V39) that was already discovered in the field.

Figure 5.12 (left): The bronze fragment (V39) found in trench 6 at Venlo-Zaarderheiken in association with the urn cremation (photograph by author).
Figure 5.13 (right): Location of the bronze fragment in the field (yellow arrow) (photograph by Marion van Westen).

The bronze fragment has a kind of folded rim, other than that no particular shape can be recognised in the object (**fig. 5.12**) (van Waaijen 2019, 82). It seems the presence of bronze as a material was perhaps more important than the addition of a recognisable object. The fragment was found during the preparation of the blocklift, and seemed to "fall out" of the burial pit (**fig. 5.13**) (van Waaijen 2019, 82). Therefore, it is likely that the bronze fragment was placed outside the urn as a grave gift, instead of inside the urn like the accessory vessel. Still, it cannot be excluded that the burial pit was disturbed at some locations, which means the bronze fragment could have moved from its original location. During the preparation of the blocklift and the excavation of the rest of the trench no other bronze fragments were found, thus this was the only metal fragment added to the grave (at the moment).

As mentioned before, the accessory vessel was placed inside the urn, on top of the cremated remains and just underneath the vessel used to cover the urn (**fig. 5.14 a-f**). Since the remains were almost pushed against the small pot, it could be that it was embedded in the remains, although the pot could have been pressed into the remains as well (**fig. 5.7**). It was placed more or less in the centre of the urn (**fig. 5.14e**) and contained a few cremated human remains. According to Dr. Rachel Schats (*pers. comm.* to the author) the remains did not seem like they belonged to a different individual, although it could not be prooved that they belonged to the cremated human remains inside the urn either.

Figure 5.14: a. The location of the accessory vessel just underneath the cover pot, b. position of the accessory vessel with the fragmented side, c. the more or less intact side of the accessory vessel, d. the accessory vessel just before removal, e. the position of the accessory vessel from above, f. the accessory vessel with its contents after removal from the urn (photographs made by author).

5.4 Pyre remains

Pyre remains have not been found inside the urn, as outside it during excavation in the field. Nonetheless, some charcoal fragments were found sporadically, but these seemed more accidental than intentional additions to the grave. In the burial pit a light grey filling together with micro fragments of charcoal raises the possibility that some of the ashes (which contained micro fragments of charcoal) were scattered in the burial pit (**fig. 5.15**) (*pers. comm*. Dr. Quentin Bourgeois to the author). Furthermore, it is

possible that pyre remains are located at the bottom of the urn, but this can only be verified once the urn is completely excavated.

Figure 5.15: the blocklift in situ in trench 6 at Venlo-Zaarderheiken, with micro fragments of charcoal in the filling of the burial pit (small black dots) (photograph by Marion van Westen).

5.5 Preliminary conclusion

In conclusion, no specific position of cremated human remains is visible, although a lot of cranial fragments are present in these top layers, while fragments of the torso are more frequent from layer 5. Therefore, an ordering of body parts could be present. Remains of the extremities are found in all layers, both of the upper as lower limbs (i.e. patellae and proximal end of ulna). Hence, a difference between the upper and lower limbs does not seem to be made.

Only a small portion of the cremated human remains have been excavated in the urn, which makes it very difficult to draw conclusions about the completeness of the body of the deceased. Still, small skeletal elements (i.e. metacarpal or -tarsal) and two patellae were present, it is likely the far majority of the cremated human remains were collected from the pyre.

Two grave goods were found: a bronze fragment in the burial pit and a small accessory vessel. Grave goods are thus placed both inside the urn on top of the cremated human remains, as outside it. No pyre remains were found inside the urn, and in the burial pit only micro fragments of charcoal were visible. Consequently, it is not likely that charcoal from the pyre was intentionally deposited in this grave.

Concisely, the observations done in the first six layers of the urn already indicate some tendencies. Of course, these can only be verified once the urn is completely excavated, but the results so far are very promising.

6. Discussion

6.1 Evaluation of methodologies: what works best?

In research on Late Bronze Age and Early Iron Age funerary practices, often the results are emphasised, while the methods that were used to acquire these results receive little attention. This is also visible in the studies of funerary practices during the Late Bronze Age and Early Iron Age in Northwestern Europe, since a large variety of methodologies were used to study funerary practices at the sites mentioned in this thesis (see Chapter 4 and 5). This variety was not only caused by the different regions the sites were located in, but also by the different time-periods in which burials were examined. However, it is important to evaluate which methods are effective to study funerary practices, and which are insufficient or too elaborate. If a well-structured method is used, research can be more effective and the right data can be acquired. Therefore, the methods used at the sites mentioned in Chapter 4 and the methods used for the case study in Chapter 5 will be evaluated.

First of all, it was not always specified if burials were examined in a laboratory, or in the field. In the laboratory conditions are more stable than in the field, as there are less factors that can influence the excavation (e.g. weather conditions, animals, looters, etc.). Perhaps the costs of a professional blocklift can form an obstacle to examine burials under laboratory conditions, but the block-lift at Venlo-Zaarderheiken already proves that some strong hands, plastic foil, a crate and a wheelbarrow can suffice to execute a blocklift. Thus, the first step for a proper analysis of burials is creating stable conditions, preferably in a laboratory.

Secondly, a lot of burials were sieved (e.g. Oss-Zevenbergen), or were probably sieved as no information was given regarding the arrangement of cremated human remains (e.g. Le Moulin, the Scheldt Basin). Although sieving is an efficient method if suitable fragments of bone for a physical anthropological analysis are pursued (Smits 2013, 258–59), it is important to document the position of the remains inside burials, and to examine burials layer by layer. Only if such a method is used, information can be gathered concerning the arrangement of cremated human remains and grave goods inside graves. Subsequently, it is important to decide in how many layers burials will be examined, although this depends on the amount of cremated human remains and the size of the urn (if present). The number of layers was only specified for three sites: the Uddeler Heegde (13 layers), Oss-Zevenbergen (7 layers) and Cottbus Alvensleben-Kaserne (10-16 layers). At the other sites it was either only insinuated that excavation was done in layers (i.e. La Rémise, La Grande-Pièce-des-Hayettes, Les Pétreaux and

La Croix-de-la-Mission), or unknown (the Scheldt Basin and le Moulin). For Oss-Zevenbergen, only 7 layers were used to excavate the urn cremation, of which only 4 layers contained cremated human remains (**fig. 4.6**). This resulted in a rudimentary overview of the distribution of different body parts, but more detail would have given a more thorough overview. Therefore, it is concluded that a minimum of 10 layers is needed to excavate cremation burials. Although more than 10 layers only make the results more detailed, it should be kept in mind that they also make the study more time-costly.

A third aspect that needs to be considered is the documentation. This comprises all documentation of the study: photographs, drawings, textual descriptions and collection of the cremated human remains and eventual grave goods. Of course, studies conducted today have access to a lot more resources than studies conducted in the 1980's and 1990's, such as digital cameras, and computer programs to make digital drawings (e.g. Adobe Photoshop, QGIS, etc.). Still, for the Uddeler Heegde (published in 2015: de Bondt 2015) drawings were all made by hand, while digital programs were readily available. For the case study of Venlo-Zaarderheiken however, it was decided to make photographs of every layer and make digital drawings with these photographs (**appendices 8-12**). The digital drawings yielded the same information as the drawings made by hand, but the digital drawings cost a lot less time than those done by hand. Therefore, it is important to consider the resources for documentation that are available when conducting such research. Additionally, drawings of cross-sections are absent in most studies (only for Oss-Zevenbergen a rough image was given: **fig. 4.5**), while these can be very informative about how objects were placed inside a burial, or even just where layers were located (**fig. 5.1**). Thus, the importance of documentation should not be underestimated when investigating funerary practices on a detailed scale.

In conclusion, the methods that work best to investigate funerary practices by excavation cremation burials, are:

- excavation in a **laboratory** instead of in the field,
- excavation should be done with a **minimum of 10 layers**,
- use **documentation** that is effective but not too time-costly (e.g. digital resources).

6.2 The positioning and completeness of the cremated human remains

Figure 6.1: The number of sites (10 in total) where archaeological evidence was found that cremated human remains (CHR) were positioned (yellow), and where a specific absence of remains (red) could be observed (made by author).

At the majority of the sites (70%) it was possible to establish that cremated human remains were positioned in a certain way (**fig. 6.1**). Such an arrangement was occasionally observed, and varies from only a few fragments to the majority of the cremated human remains, such as at Cottbus Alvensleben-Kaserne. In most cases only an arrangement of the different body parts (i.e. cranium, torso, and extremities) was revealed. Nonetheless, based on this research it becomes evident that once the corpse was cremated and the remains had cooled down, cremated human remains were not carelessly or randomly collected from the pyre. Furthermore, extra time and energy was invested to bury the cremated human remains at a different location than at the place of cremation. Contrastingly, in the Middle Iron Age the collection of cremated human remains from the pyre-debris would no longer be undertaken, as the place of cremation was entirely covered up with a small mound (Louwen, *forthcoming*). Thus, the act of collecting the cremated human remains from the pyre-debris implies that the location of final interment was considered important in the Late Bronze Age and Early Iron Age.

It is possible that a thorough knowledge of the human body was present, in which the cremated fragments could be recognised as belonging to certain body parts. Subsequently, this could have been the reason cremated human remains were positioned according to the different body parts or even in an anatomically correct arrangement. However, a very practical scenario is possible as well: if the collection of the cremated human remains starts at a certain side of what is left of the pyre, an arrangement according to the body parts can be created without specifically knowing which bone belongs where (**fig. 6.2**).

The body part that receives the most manipulations is the cranium; either fragments were completely lacking, were only present in small amount, or were placed in a

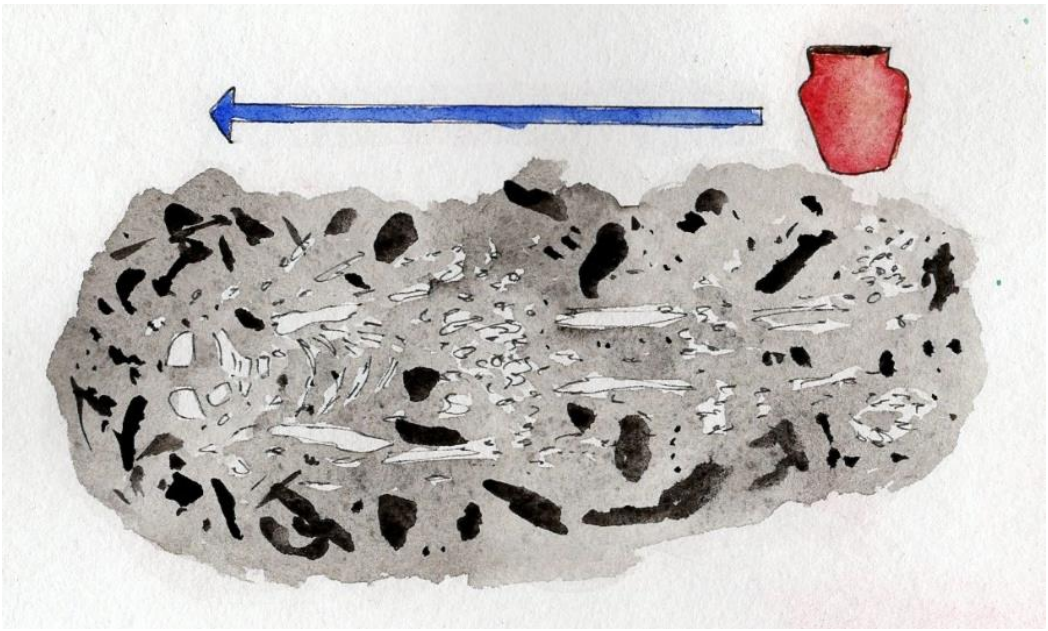

Figure 6.2: A schematic overview of the pyre after the cremation of a corpse, whereby cremated remains are collected and placed in the urn. The blue arrow indicates the direction in which remains could have been collected in such a way that the extremities are located on the bottom of the urn and fragments of the cranium at the top (made by author).

specific way in a burial (e.g. as a cover on top of the cremated human remains, placed against the rim of an urn, or on the bottom of the burial) (**tab. 6.1**). Although it cannot be ruled out that a lack or absence of cranial fragments was caused by disturbances (**tab. 6.1**), a general preference to manipulate the position of cranial fragments seems evident. Additionally, cranial fragments are easy to recognise (Delattre *et al.* 2005, 149); it is not likely that it would have been difficult to collect these remains from the place of cremation, therefore the decision not to include (all) cranial fragments was likely intentional. It has been suggested that cranial fragments were used for other (ritual) purposes (Delattre *et al.* 2005, 149). The head was often the subject of other treatments, as for example in Iron Age headhunting practices (Armit 2010, 90), and Brück and Fontijn (2013, 208) mention the find of a cranial fragment worn as a kind of necklace. Therefore, it is possible that similar practices with cranial fragments existed in the Late Bronze Age and Early Iron Age.

Besides cranial fragments, torso fragments were found little at Le Moulin (see Chapter 4.6.2) (Janin *et al.* 1998, 325). It could be that these fragments were intentionally absent from the burials, but as the undetermined bone fragments were automatically ascribed to the extremities' category (Janin *et al.* 1998, 325), it is uncertain if this observation is reliable.

Table 6.1

	Structure-ation body parts	*Position cranium mani-pulated*	*Position torso mani-pulated*	*Position long bones mani-pulated*	*Absence specific body parts*	*Small skeletal elements collected*	*Distur-bed*
OZB	x				little cranial fragments		x
UDH	x			x	2 individuals but only *ca*. 800g CHR	x	x?
VZH	x?						
CAK	x	x	x	x		x	
GPH		x					
PTX		x		x			
RM		x		x			
CM		x					
ML					little torso fragments		
SB							x

Table 6.1: A schematic overview of the different manners in which cremated human remains could be positioned and collectedin the graves at Oss-Zevenbergen (OZB), Uddeler Heegde (UDH), Venlo-Zaarderheiken (VZH), Cottbus Alvensleben-Kaserne (CAK), La Grande-Pièce-des-Hayettes (GPH), Les Pétreaux (PTX), La Rémise (RM), La Croix-de-la-Mission (CM), Le Moulin (ML) and the Scheldt Basin (SB). Blank boxes mean either not present or no data (made by author).

Concerning the completeness of the cremated human remains, at only 40% of the sites a specific absence of cremated human remains could be discerned (**tab. 6.1**). These observations were either based on the presence of large cremated bone fragments without small skeletal elements (i.e. dental roots, phalanges, etc.), or in the case of Oss-Zevenbergen: the pyre with cremated human remains was found underneath the burial mound, which indicates that some fragments were intentionally absent from the burial. The weight of the cremated human remains is often used as a proxy for the estimation of the completeness of a body (a complete cremated adult body is approximately between 1227 and 3001g: McKinley 1993, 285). However, Louwen (*forthcoming*) concluded after a thorough study of both data from modern crematoria as archaeological contexts that lighter total weights of cremated human remains can be caused by more factors than a deliberate selection from the pyre. Another important aspect concerning the total weight of cremated human remains, is the presence of double burials at several sites. In these cases, it becomes even more difficult to investigate the completeness of the bodies based on the weight of the cremated human

remains, as these weights are obviously heavier than the remains of a single individual. Additionally, the difficulty increases if double burials consist of adults with children, as children weigh less than adults. Therefore, caution should be taken when investigating the act of deliberate selection of cremated human remains from the pyre based on the total weight of cremated human remains; conclusions should be based on other data as well.

Overall, no consistent pattern regarding the completeness of bodies can be recognised. As Louwen (*forthcoming*) stated, there are simply too many factors that can influence the completeness of a body in a burial. Still, some indications of a specific collection of cremated human remains are present, such as smaller skeletal elements, or the absence of remains that are easy to recognise and/or collect. Thus, intentional behaviour concerning the selection of cremated human remains could be observed in this study.

6.3 Concerning the additions to the grave

Investigating the grave goods and other additions to the burials at the sites under scrutiny, proved to be quite difficult as the focus was often on the cremated human remains instead of the grave goods. However, some information could be gathered concerning this aspect of funerary practices during the Late Bronze Age and Early Iron Age (**tab. 6.2**).

Firstly, at 50% of the sites a practice of covering the burials was observed. This is indicated by the variety of materials used as cover: stone slabs, ceramic vessels, sherds, and perhaps even textile (see Chapter 5.3; Delattre *et al.* 2005; Gramsch 2013; Janin *et al.* 1998; de Mulder 2011). However, at the sites where this practice was not observed, the top of the burials was either disturbed or burials were badly preserved. Therefore, it is possible that this practice was present at all sites, but evidence for this practice has perished.

The reason behind the practice of covering burials remains obscure; perhaps it was found important to avoid contamination of the cremated human remains with soil, or perhaps the covers were used as a protection against people (accidentally) digging a burial pit at the same location. Based on the variety of materials used as cover, it seems that the actual practice of covering the cremated human remains was more important than the material with which the burials were covered. This indicates that the practice of covering the cremated human remains inside the burial was an important aspect of Late Bronze Age and Early Iron Age funerary practices.

Table 6.2

Sites	*Cover*	*Accessory vessels/ceramic sherds*		*Animal remains*			*Metal*		
		Inside	*outside*	*Among*	*On top*	*Outside*	*Among*	*On top*	*Outside*
OZB						x			x
UDH		x					x		
VZH	x	x							x
CAK	x		x	x?	x?	x?			
GPH									
PTX									
RM									
CM	x	x	x	x			x	x	
ML	x	x	x	x	x		x?	x?	x?
SB	x	x	x	x?	x?	x?	x?	x?	x?

Table 6.2: A schematic overview of the different categories of additions to the graves (cover, accessory vessels/ceramic sherds, animal remains, and metal) and their subsequent position in the graves at Oss-Zevenbergen (OZB), Uddeler Heegde (UDH), Venlo-Zaarderheiken (VZH), Cottbus Alvensleben-Kaserne (CAK), La Grande-Pièce-des-Hayettes (GPH), Les Pétreaux (PTX), La Rémise (RM), La Croix-de-la-Mission (CM), Le Moulin (ML) and the Scheldt Basin (SB). Blank boxes mean either not present or no data (made by author).

Regarding the other categories of grave goods (accessory vessels/ceramic sherds, animal remains, and metal), no clear pattern could be observed of where they are placed in a grave (**fig. 6.3**). Accessory vessels and/or ceramic sherds are placed almost equally as frequently inside as outside the urns, and as far as is known they were always placed on top of the cremated human remains if they were placed inside an urn. Furthermore, animal remains and metal objects were almost as often placed among the remains as on top or outside the urn. However, if the categories 'among' and 'on top' are added up, it becomes visible that animal remains and metal objects were placed more frequently inside than outside the urn. Still, the presence of grave goods and subsequently their position was not observed at all sites, nor were they present in every grave. The possibility was raised by Delattre *et al.* (2005, 150) that grave goods could have been made from perishable materials, which could explain why some graves do not seem to have contained any grave goods at all.

Similar to the practice of covering the cremated human remains, the addition of grave goods shows no consistency in the type of grave goods and their position in graves could be observed. Rather, it seems the presence in a grave of certain items was considered more important than where it was placed inside the grave, as well as the type of material. Additionally, at the majority of the sites grave goods had traces of burning by high-temperature fires. This indicates that grave goods were often placed

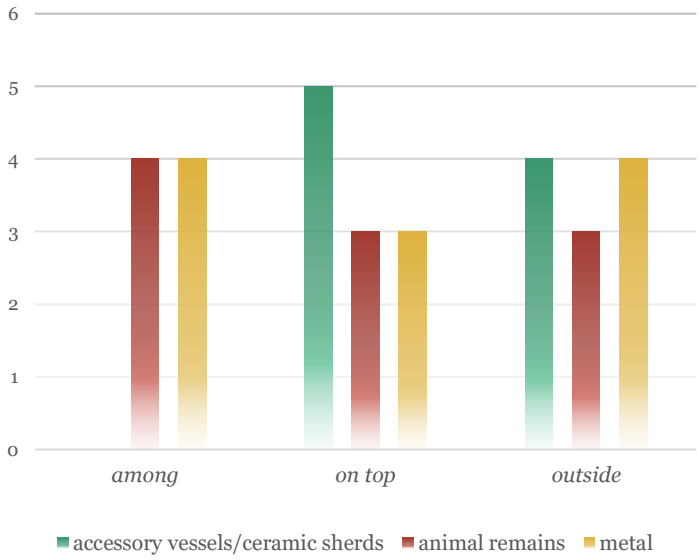

Figure 6.3: A chart showing the different categories of additions to the graves (cover, accessory vessels/ceramic sherds, animal remains, and metal) and their subsequent position in the grave (made by author).

on the pyre with the deceased, after which they were placed with the cremated human remains in the grave. Still, this sequence of events was not observed at all sites; at Oss-Zevenbergen the pyre remains contained many fragments of burned grave goods, while none were recovered from the actual grave itself. This raises the possibility that perhaps more cases similar to those of Oss-Zevenbergen exist, but unfortunately pyre remains are rarely recovered, especially in such a direct association as the urn cremation grave from mound 7 at Oss-Zevenbergen. Thus, the absence of grave goods in Late Bronze Age and Early Iron Age burials can be caused by multiple factors, instead of the common views that grave goods are related to the age or biological sex of individuals, or their social/economical/political status. Subsequently, the addition and position of these grave goods is highly variable, and no clear practices can be discerned regarding this aspect of Late Bronze Age and Early Iron Age funerary practices in Northwestern Europe.

6.4 Presence of pyre remains

At most sites, pyre remains were nearly absent from graves and the locations of pyres were rarely found (**tab. 6.3**). Only at Oss-Zevenbergen the remains of the pyre were found (see Chapter 4.2.2). At Le Moulin charcoal was occasionally found on top of stone slabs that were used to cover the cremated human remains (Janin *et al.* 1998, 15–250), and the presence of cremated human remains amongst the charcoal indicates the charcoal came from the pyre on which the deceased was cremated. In the cremation burial from the Uddeler Heegde charcoal was found in all layers, therefore it was decided to mark the presence of charcoal at this site as 'mixed' with the cremated human remains. For the Scheldt Basin the different burial types as discussed in

Chapter 4.4.1.3 caused the presence of charcoal in every way as mentioned in **tab. 6.3**: charcoal was found both mixed in with the cremated human remains, as clustered (i.e. on top of the cremated human remains or at the bottom of an urn/burial) or outside the cluster of cremated human remains by spreading charcoal in the burial pit. However, for 70% of the sites it was evident that charcoal was not included in the graves in any way.

Table 6.3

	Addition pyre remains (charcoal)			
	(nearly) absent	*mixed*	*clustered*	*Outside*
OZB				x
UDH		x		
VZH	x			
CAK	x			
GPH	x			
PTX	x			
RM	x			
CM	x			
ML			x	
SB	x	x	x	x

Table 6.3: A schematic overview of the different manners in which charcoal can be deposited in the graves at Oss-Zevenbergen (OZB), Uddeler Heegde (UDH), Venlo-Zaarderheiken (VZH), Cottbus Alvensleben-Kaserne (CAK), La Grande-Pièce-des-Hayettes (GPH), Les Pétreaux (PTX), La Rémise (RM), La Croix-de-la-Mission (CM), Le Moulin (ML) and the Scheldt Basin (SB). Blank boxes mean either not present or no data (made by author).

The presence of charcoal in Late Bronze Age and Early Iron Age burials can be used as a proxy for the carefulness with which the cremated human remains were collected from the pyre. If little care was taken, one would expect to find quite some charcoal, such as in the burial from the Uddeler Heegde. However, at the majority of the sites charcoal was not or barely present in the burials, which means the cremated human remains were collected from the pyre with a lot of care. For the sites were charcoal was found as a cluster, it was apparently found important to incorporate the charcoal from the pyre in the burial. Still, cremated human remains and charcoal were not deposited as a mix (except at the Uddeler Heegde), which indicates both groups were collected separately. It has been suggested that notions on 'idealised ancestral forms' existed (Gramsch 2013, 470), whereby cremation was necessary to transfrom the body into an idealised state. The subsequent choice of including or excluding pyre remains to a grave could have been influenced by such notions, depending on the importance ascribed to the pyre remains for the ancestral form.

6.5 Other treatments

Besides the positioning and specific absence of the cremated human remains, the position of additions to the grave and presence of pyre remains, other treatments were observed in some occasions too.

Firstly, at the sites near Paris (see Chapter 4.6.1), Venlo-Zaarderheiken and Le Moulin it was observed that in some burials the cremated human remains appeared washed. This treatment was recognised by the clean white colour of the remains, as unwashed remains have a darker colour, such as the remains from Cottbus Alvensleben-Kaserne in **fig. 4.29**. The washing of the cremated human remains after collection from the pyre is another indication that care was taken with the cremated human remains, and that they were not inconsiderately deposited in an urn or burial pit. Additionally, when comparing this practice to the practice of covering the remains before filling the burial pit with soil, it seems a preference for 'clean' bones could have existed in some regions. Still, the washing of remains should be investigated on a larger scale before drawing such conclusions.

Secondly, at Cottbus Alvensleben-Kaserne and the Uddeler Heegde small skeletal elements were found in the upper layers, together with quite large bone fragments. According to de Bondt (2015) and Großkopf (2004) this indicates that the cremated human remains were not transported over long distances, but were deposited quite close to the place of cremation.

7. Conclusion

7.1 Aim of research

In the first chapter of this thesis, it was explained that there was a lack of information on certain steps in the funerary process of Late Bronze Age and Early Iron Age urn cremations. Expecially in terms of the position of cremated human remains inside urn cremations and the completeness of these remains, but also regarding the position of grave goods and the addition of pyre remains. Moreover, urn cremations are found across Northwestern continental Europe, but rarely examined in detail (see Fokkens and van Wijk 2009; Smits 2013; de Bondt 2015; Louwen and Fontijn 2019; Delattre *et al.* 2005; Großkopf 2004; Janin *et al.* 1998; de Mulder 2011). Therefore, this research focuses on the question: "What choices were made concerning funerary practices in Northwestern continental Europe during the Late Bronze Age and Early Iron Age?". In addition to this broad research question, several sub-questions were designed to investigate more specific aspects of the funerary practices:

- Is a positioning of the cremated human remains visible inside urns?
- Is there a more or less complete body present or are specific parts of the body missing, and does this seem intentional or unintentional?
- Did the deceased receive additional contributions (e.g. grave goods like bronze objects, accessory vessels, etc.), and if so, what is their location inside the burial?
- Do burials contain charcoal fragments from the funeral pyre, and if so, where are they located (i.e. as a mix with the cremated human remains, on top of the remains, or at the bottom of urns, etc.)?
- Is the methodology used to study these funerary practices sufficient or is a different approach needed?

An answer on the research question and sub-questions is given below (see Chapter 7.3).

7.2 Evaluation of methodology

Within the scope of this thesis, the methodologies as explained in Chapter 3 worked well to answer the research question. The literature study yielded interesting results, which have contributed to a refinement of the knowledge regarding funerary practices during the Late Bronze Age and Early Iron Age in Northwestern continental Europe.
For the case study, the methodology works very well. In theory, the methodology is very similar to the methods used in other publications, with the exception of the use of more digital resources. Instead of drawing every layer by hand, photographs are used

to create digital drawings, which saves a lot of time for the documentation. Although the urn cremation for the case study is only partially excavated at the moment, the author would not change the methodology after reading other methodologies used to investigate urn cremations.

7.3 Answering the research question: what choices were made concerning funerary practices in Northwestern continental Europe during the Late Bronze Age and Early Iron Age?

At the majority of the sites discussed in this thesis, a positioning of the cremated human remains was visible. This either manifested through the intentional positioning of some of the remains (i.e. cranial fragments placed against the wall of the urn, or the parallel placement of long bones), in the structuration of the different body parts throughout the urn cremation (i.e. cranial fragments at the top and long bones at the bottom), or both. Although it is possible that people in the past knew which bones belonged to which part of the body (and thus being able to create a structured deposition of the cremated human remains according to the different body parts), a certain direction in which cremated human remains were collected could have been part of the funerary practices as well (**fig. 6.2)**. Concerning the specific position of certain bone fragments, especially cranial fragments were subject to such manipulations. In many cultures the head holds a special value, and often plays a role in symbolic activities (e.g. Armit 2010; Brück and Fontijn 2013). Thus, a highly intentional positioning of the cremated human remains was visible inside the urns, and formed an important aspect of the funerary practices.

Besides the positioning of the cremated human remains, Oss-Zevenbergen, the Uddeler Heegde, and Le Moulin revealed a specific absence of certain cremated human remains (**tab. 6.1**). However, it should be mentioned that the graves the first two sites were (probably) disturbed, which makes it not entirely certain whether cremated human remains were intentionally absent. Still, the act of collection itself is also of importance, since time and energy was invested in the collection of cremated human remains from the pyre-debris to deposit them at a different location. This implies the location of the final deposition was probably of importance as well. Moreover, the meticulous collection of small skeletal elements, such as dental roots and finger bones, indicates in some cases even more time and energy was invested in the collection of cremated human remains from the pyre-debris. In conclusion, a practice of collection with a specific selection of certain cremated human remains was observed at the majority of the sites, while 'complete' bodies were not really observed.

Investigating additional contributions proved difficult, since their position in graves was not consistently documented. Nonetheless, if their position was documented, no consistency in their position or material could be discerned, which raised the possibility that perhaps the presence of certain materials in a grave was considered more important than their position in the grave. Still, in many graves no additions were present at all. This absence could be explained by the usev of perishable materials for grave goods (Delattre *et al.* 2005, 150), but it is also possible grave goods accompanied the dead during cremation on the pyre and were left with the pyre-debris afterwards. This possibility is supported by the find of burned bronze fragments among the pyre remains at Oss-Zevenbergen (van der Vaart *et al.* 2013). Additionally, grave goods that were deposited with the cremated human remains, often had traces of secondary firing, which reinforces the idea that grave goods were placed on the pyre with the deceased. Overall, no consistent practices in the addition of grave goods could be discerned, although their presence on the pyre indicates they had a role in the funerary practices to some extent.

Furthermore, a practice of covering the cremated human remains with pottery, stone slabs and/or perhaps textiles after deposition in the ground was observed at a majority of the sites. At the sites where this practice was not observed, circumstances had prevented the preservation of evidence for this practice. Nonetheless, it is evident that it was considered important to cover the cremated human remains before the burial pit was filled. It is possible that it was desired to keep the bones 'clean' from soil, and such cleanliness is supported by the observation that at several sites the cremated human remains seemed to be washed before deposition. On the other hand, the remains could also have been covered to protect them from being damaged if someone (accidentally) tried to dig a grave at the same location. Thus, the covering of cremated human remains was part of the funerary practices at a majority of the sites, either to prevent contamination with soil, or to protect them against digging activities.

In most cases, charcoal fragments from the funeral pyre were not added to the graves. This indicates firstly that cremated human remains were carefully collected from the pyre, since careless collection would have resulted in the addition of charcoal. Secondly, the pyre remains were probably not considered to be of such importance that they were added to the grave. Still, in a few cases (i.e. the Uddeler Heegde and in the Scheldt Basin), charcoal was found in cremation graves, or – in the case of Oss-Zevenbergen – in association with the urn cremation. The notion of 'idealised ancestral forms' (Gramsch 2013) could have played a role for the decision to omit pyre remains

from cremation graves, but it is difficult to assess whether such notions were present in the past.

Lastly, the methods used to study these funerary practices were sufficient enough to draw conclusions about the funerary practices present at the sites under scrutiny. Still, the author would stress that a more frequent use of digital resources (i.e. digital photocameras, digital drawing software, etc.) is needed to make research more efficient. In addition, the proposition is made to excavate urn cremations with a minimum of 10 layers, to achieve results that are detailed enough to investigate the positioning of cremated human remains, as well as their completeness, the position of grave goods inside graves and the addition of pyre remains, without spending too much time on the excavation of these urn cremations.

In conclusion, a variety of choices were made concerning funerary practices in Northwestern continental Europe during the Late Bronze Age and Early Iron Age. These choices were mainly made in the second intermezzo of the funerary process (**fig. 7.1**), but also relate to stage 2 and 3 of the scheme proposed by Louwen (*forthcoming*). These additional steps undertaken as part of the funerary practices indicate that generally a lot more time and effort was invested in cremation graves than previously thought. As mentioned in the beginning of this thesis, prehistoric funerary practices are often a lot more complex than thought, such as the funerary practices during the Late Bronze Age and Early Iron Age. Although for this research the majority of the literature was published when digital resources were not as readily available as they are today, this only makes one wonder what can be achieved if similar research is done with the resources we have now.

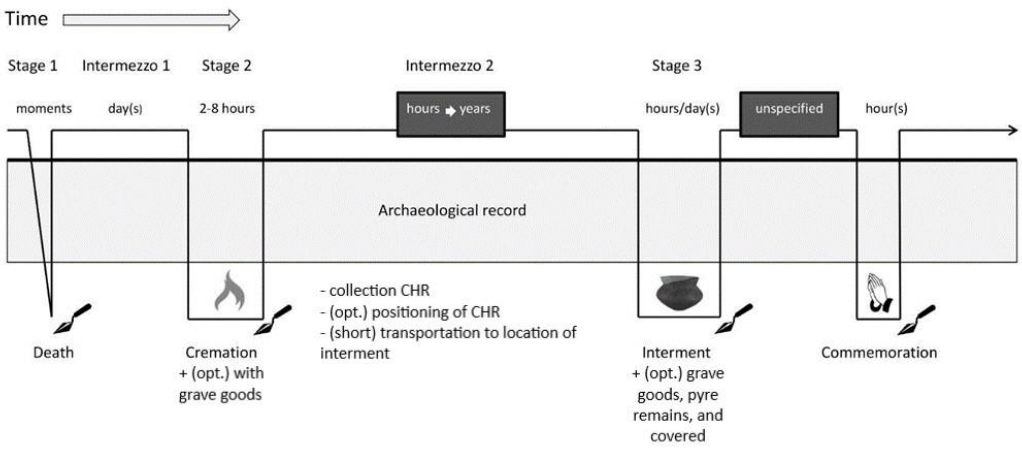

Figure 7.1: A schematic overview of the different stages and intermezzos present in funerary practices, their duration, and their traceability in the archaeological record, with addition of (optional) steps undertaken according to the results of this thesis (after Louwen, forthcoming).

Abstract

Research on urn cremations from the Late Bronze Age and Early Iron Age (*c.* 1350-500 BC) found in Northwestern continental Europe has been scarce over the last decades. Especially in terms of what urn cremations contain, and if these contents are positioned in a certain way. This has resulted in the notion that Late Bronze Age and Early Iron Age burials are simple graves, with simple funerary practices. However, this research reveals a variety of choices was made throughout the funerary process, which makes these funerary practices increasingly more complex than assumed. To study these past funerary practices, this research examined the choices made in terms of what Late Bronze Age/Early Iron Age urn cremations contain, and the position of these contents. This was achieved through a literature study of sites in the Netherlands, Belgium, France and Germany, and by conducting a case study on a Late Bronze Age/Early Iron Age urn cremation from Venlo-Zaarderheiken (Limburg, the Netherlands). The latter allowed the examination of the contents and their position inside this urn cremation in detail. As a result, a variety of choices and actions concerning the contents and their position inside these urn cremations became visible through this dataset. This indicated funerary practices were more elaborate than thought; cremated human remains were carefully collected from the pyre remains, after which they were occasionally positioned inside the urn. Pyre remains were generally not added, in contrast to grave goods which often accompanied the dead on the pyre during cremation as well. Before the final deposition, the cremated human remains were covered with ceramics or stone slabs to prevent contamination with soil or to protect them from (accidental) digging activities. Thus, this research yielded a lot of new information on Late Bronze Age and Early Iron Age funerary practices in Northwestern continental Europe, which proves these practices were more elaborate than initially thought.

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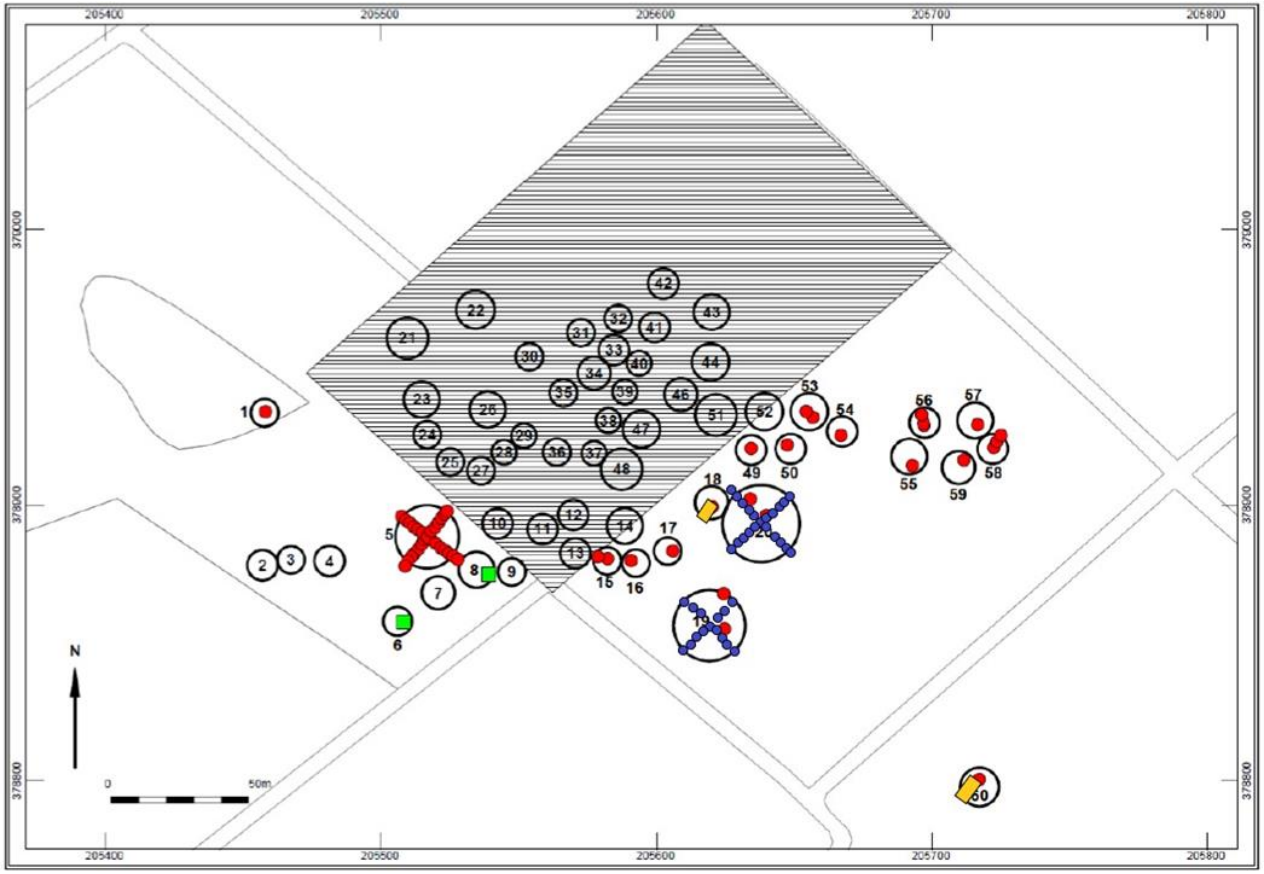
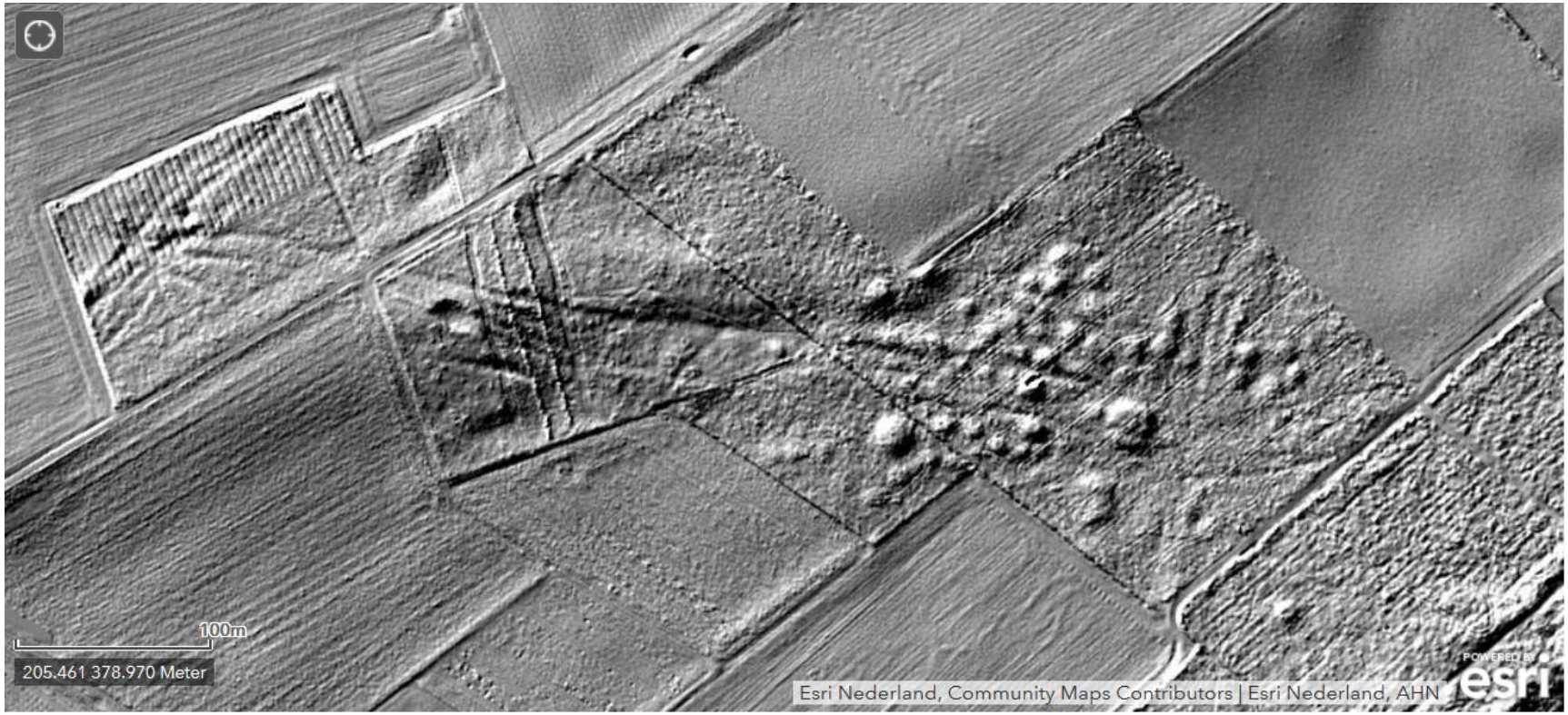


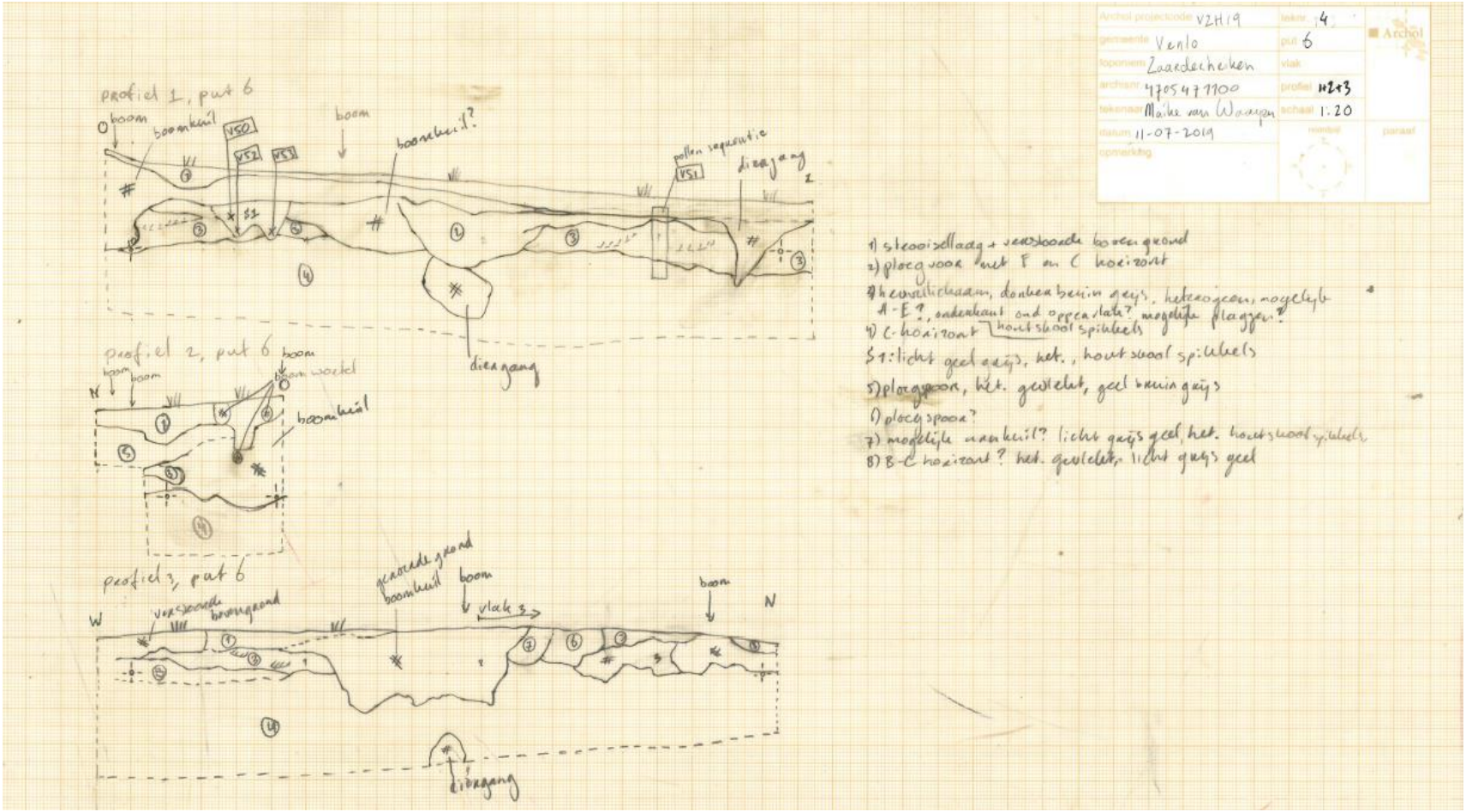
Appendix 1: Plan of the objects discovered at Venlo-Zaarderheiken, with placed corings (red and blue), and trenches (green and yellow) (van Waaijen 2019, appendix 2).

Appendix 2



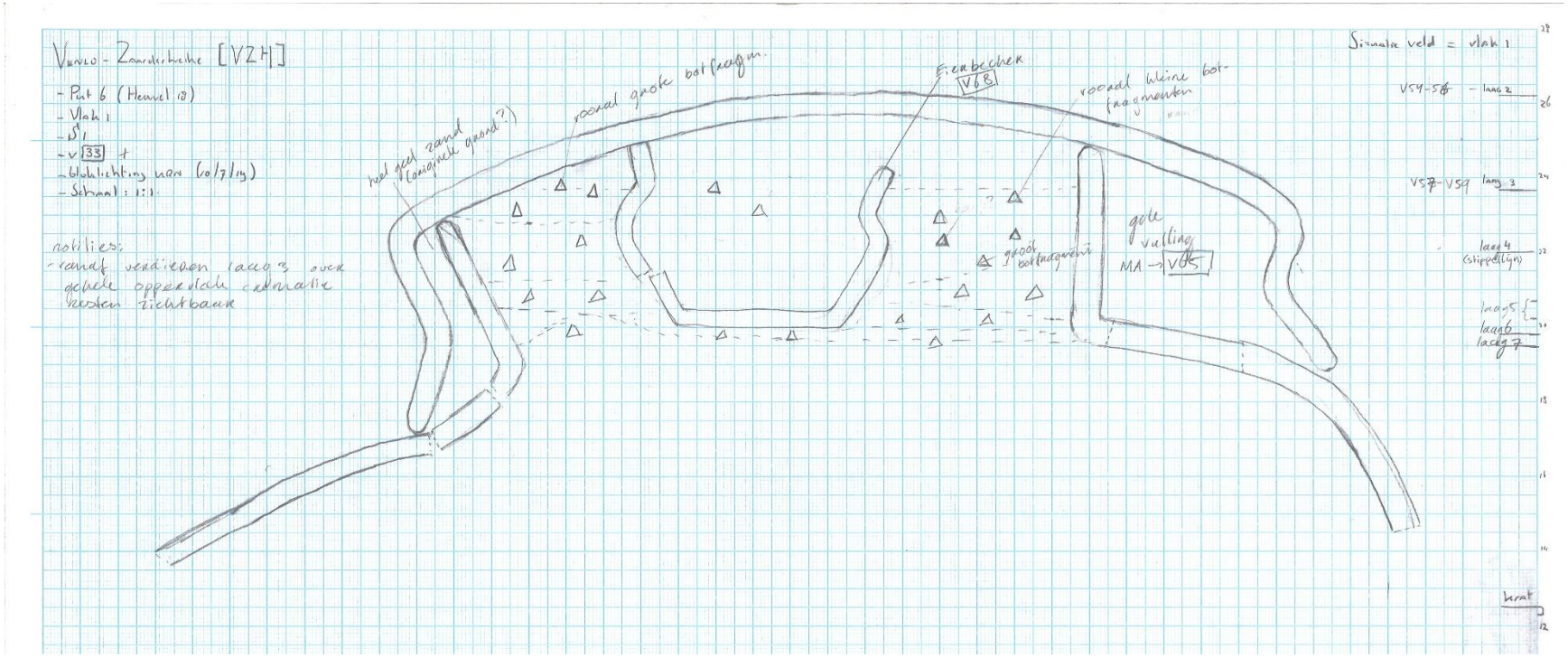
Appendix 2: Elevation map showing the top surface (*maaiveld*) of the site Venlo-Zaarderheiken (AHN3: www.ahn.nl).

Appendix 3



Appendix 3: Drawings of profiles 1-3 in trench 6 at Venlo-Zaarderheiken, whereby the urn cremation was found against profile 1 (S1) (drawn by author).

Appendix 4



Appendix 4: Drawing of a cross-section of the urn cremation from Venlo-Zaarderheiken (made by author).

Appendix 5

Notitie: - niet-genoemde fotonummers vervijderd
- foto's DSC1806 t/m DSC2004 voor 3D-model

Vindplaats: VZH
Omnr: 4705471100

Archol BV

Fotolijst

Blad: 1/

Foto id	Type	Fotogr.	Richting	Datum	Put	laag Vlak	Spoor	Profnr	Vnr	Opmerkingen
DSC1628	det	M+W		06/02/20	6	1	1		33	met plastic
DSC1633	obj	"		"	"	"	"		"	met plastic
DSC1639	obj	"		"	"	"	"		"	zonder plastic
DSC1649	over	"		"	"	"	"		"	
DSC1667	over	"		07/02/20	"	"	"		"	
DSC1674	obj	"		10/02/20	"	"	"		"	
DSC1675	det	"		"	"	"	"		"	verstoring
DSC1676	det	"		"	"	"	"		"	rand Schuddehals
DSC1680	det	"		"	"	"	"		"	"
DSC1685	det	"		"	"	"	"		"	
DSC1686	det	"		"	"	"	"		"	
DSC1689	det	"		"	"	"	"		"	licht gele vulling
DSC1692	det	"		"	"	"	"		"	licht donkere vulling
DSC1695	det	"		"	"	"	"		"	
DSC1696	det	"		"	"	"	"		"	
DSC1700	det	"		"	"	"	"		"	boom wortel
DSC1701	det	"		"	"	"	"		"	"
DSC1703	obj	"		10/02/20	6	2	"		33	
DSC1704	obj	"		"	"	"	"		"	
DSC1705	over	"		"	"	"	"		"	
DSC1708	det	"		"	"	"	"		36	detail bak
DSC1710	det	"		"	"	"	"		33	"
DSC1711	det	"		"	"	"	"		"	boom wortel
DSC1713	det	"		"	"	"	"		"	
DSC1714	det	"		"	"	"	"		35+36	CR + MHK verstoring
DSC1716	det	"		"	"	"	"		33	
DSC1719	det	"		"	"	"	"		"	holte = verstoring
DSC1720	det	"		"	"	"	"		"	verstoring
DSC1723	det	"		"	"	"	"		"	
DSC1724	det	"		"	"	"	"		"	
DSC1726	det	"		"	"	"	"		"	
DSC1727	det	"		"	"	"	"		"	
DSC1729	det	"		"	"	"	"		"	
DSC1732	det	"		"	"	"	"		"	mixen landen (sporen)
DSC1735	det	"		"	"	"	"		"	verstoring
DSC1736	det	"		"	"	"	"		"	"
DSC1738	det	"		"	"	"	"		"	boom wortel
DSC1739	over	"		"	"	"	"		"	
DSC1743	det	"		"	"	"	"		"	verstoring
DSC1780	obj	"		"	"	"	"		"	verdiepingl laag 2
DSC1781	over	"		"	"	"	"		"	
DSC1786	obj	"		11/02/20	"	"	"		"	
DSC1790	det	"		"	"	"	"		"	
DSC1793	det	"		"	"	"	"		"	
DSC1799	det	"		"	"	"	"		"	
DSC1805	det	"		"	"	"	"		"	mixen landen (sporen)
DSC2006	obj	"		17/02/20	"	"	"		"	

Gehanteerde codes:

Foto id = bestandsnummer
Type = coupe (coup), vlak (vlak), profiel (prof), detail (det), object (obj), overzicht (over), personen (pers) of divers (div)
Fotograaf = initialen; **Richting** = N,Z,ZW,ZZO etc.
Profnr = alleen bij profielfoto's; **Vnr** = alleen bij object/detailfoto's

paraaf veldwerkleider (MA):

Archol

Fotolijst
Laatst afgedrukt op 21/02/2020

Appendix 5: Photolists (1-5) used for the excavation of the urn cremation from Venlo-Zaarderheiken (written by author).

notitie: - niet-genoemde fotonummers verwijderd
- DSC2312 t/m DSC2442 voor 3D-model

Vindplaats: VZH
Omnr: 470547 1100

Fotolijst

Archol BV

Blad: 2/

Foto id	Type	Fotogr.	Richting	Datum	Put	Vlak (laag)	Spoor	Profnr	Vnr	Opmerkingen
DSC2009	overk	MdW		17/02/20	6	2	1		33	
DSC2011	det	"		"	"	"	"		56	verstoring met CR
DSC2012	det	"		"	"	"	"		33	"
DSC2016	det	"		"	"	"	"		"	"
DSC2021	overk	"		"	"	"	"		"	"
DSC2025	det	"		"	"	"	"		"	"
DSC2027	det								56	CR verstoring
DSC2033	det								33	verstoring
DSC2043	det								56	CR verstoring
DSC2047	det								56	CR
DSC2050	det								56	CR
DSC2053	det								33	
DSC2056	det								"	
DSC2062	det								"	
DSC2064	det								56	CR fragment
DSC2065	overk								33	
DSC2066	overk			"					"	
DSC2080	det			18/02/20					56	CR fragment
DSC2086	det								"	"
DSC2088	det								33	rand bijpotje zichtbaar
DSC2089	det								"	"
DSC2090	det								"	"
DSC2092	det								"	"
DSC2093	overk								"	
DSC2095	overk								"	verdieping laag 2
DSC2097	det								"	
DSC2101	det								"	situatie bijpotje
DSC2103	det								"	CR fragmenten
DSC2104	det								"	
DSC2106	det								"	
DSC2107	det								"	
DSC2108	det								"	
DSC2109	overk								"	
DSC2110	overk								"	
DSC2113	det								"	
DSC2114	det								"	
DSC2119	overk								"	
DSC2120	det				4	4	4		"	4W van Schaalhals
DSC2121	obj.			18/02/20	6	3	1		33	
DSC2122	obj.			"					"	
DSC2123	overk			"					"	
DSC2124	overk			"					"	
DSC2443	det			20/02/20					"	
DSC2444	det								"	
DSC2445	det								"	
DSC2446	det								"	
DSC2447	det								"	

Gehanteerde codes:

Foto id = bestandsnummer

Type = coupe (coup), vlak (vlak), profiel (prof), detail (det), object (obj), overzicht (over), personen (pers) of divers (div)

Fotograaf = initialen; **Richting** = N,Z,ZW,ZZO etc.

Profnr = alleen bij profielfoto's; **Vnr** = alleen bij object/detailfoto's

paraaf veldwerkleider (MA):

Archol

Fotolijst
Laatst afgedrukt op 21/02/2020

Notitie: niet-gevonden fotonummers verwijderd

Vindplaats: V241
Omnr: 4705471100

Fotolijst

Archol BV

Blad: 3/

laag 3

Foto id	Type	Fotogr.	Richting	Datum	Put	Vlak	Spoor	Profnr	Vnr	Opmerkingen
DSC2448	det	M.W		20/02/20	6	3	1		33	
DSC2451	det			"	"	"	"		"	boom w oatel
DSC2452	det			"	"	"	"		"	"
DSC2453	det			"	"	"	"		"	
DSC2458	det			"	"	"	"		"	
DSC2461	over			"	"	"	"		"	
DSC2462	over			"	"	"	"		"	
DSC2463	det			"	"	"	"		"	
DSC2465	det			"						
DSC2467	det			"						
DSC2468	det			"						
DSC2469	det			"						
DSC2471	obj			21/02/20						
DSC2472	obj			"						
DSC2476	over			"						
DSC2478	det			"						
DSC2479	det			24/02/20						
DSC2480	det			"						
DSC2481	det			"						
DSC2489	det			25/02/20						
DSC2492	det			"						
DSC2495	det			"						
DSC2496	obj			25/02/20	6	4	1		33	
DSC2497	obj			"						
DSC2498	over			"						
DSC2499	over			"						
DSC2500	det			"						
DSC2501	det			27/02/20						
DSC2502	det									
DSC2503	det									
DSC2504	det									
DSC2505	det									
DSC2509	over									
DSC2510	det									geel zand
DSC2512	det									"
DSC2514	det									CR fragmenten
DSC2516	det					4			4	CR fragmenten
DSC2518	obj			27/02/20	6	5	1		33	
DSC2519	obj									
DSC2520	over									
DSC2521	over									
DSC2522	det									
DSC2524	det									
DSC2525	det									
DSC2526	det									
DSC2527	det									
DSC2530	det									

Gehanteerde codes:

Foto id = bestandsnummer

Type = coupe (coup), vlak (vlak), profiel (prof), detail (det), object (obj), overzicht (over), personen (pers) of divers (div)

Fotograaf = initialen; **Richting** = N,Z,ZW,ZZO etc.

Profnr = alleen bij profielfoto's; **Vnr** = alleen bij object/detailfoto's

paraaf veldwerkleider (MA):

Archol

Fotolijst
Laatst afgedrukt op 21/02/2020

Archol BV

Vindplaats: VZH
Omnr: 47054711100

Fotolijst

Blad: 4/

Foto id	Type	Fotogr.	Richting	Datum	Put	Vlak	Spoor	Profnr	Vnr	Opmerkingen
DSC2531	det	M+W		27/02/20	6	5	1		33	
DSC2532	det			"		"			"	
DSC2533	det			"		"			"	
DSC2534	det			"		"			"	
DSC2536	det			"		"			"	
DSC2537	det			"		"			"	
DSC2770	det			06/02/20		"			"	
DSC2771	det			"		"			"	
DSC2772	det			"		"			"	
DSC2773	det			"		"			"	
DSC2774	det			"		"			"	
DSC2776	over			"		"			"	
DSC2777	over			"		"			"	
DSC2778	det			09/02/20		"			68	
DSC2779	det			"		"			"	
DSC2780	det			"		"			"	
DSC2781	det			"		"			"	
DSC2782	det			"		"			"	
DSC2783	det			"		"			"	
DSC2786	det			"		"			"	
DSC2787	det			"		"			"	
DSC2788	det			"		"			"	
DSC2791	det			"		"			"	
DSC2794	det			"		"			"	
DSC2795	det			"		"			"	
DSC2800	det			"		"			65	Locatie monster
DSC2801	obj.			"		6			33	
DSC2805	obj.			"		"			"	
DSC2806	det			"		"			"	
DSC2807	over			"		"			"	
DSC2808	over			"		"			"	
DSC2809	det			"		"			"	
DSC2810	det			"		"			"	
DSC2811	det			"		"			"	
DSC2814	det			"		"			"	
DSC2815	det			"		"			"	
DSC2818	det			"		"			"	
DSC2819	det			"		"			"	
DSC2820	det			"		"			"	
DSC2821	det			"		"			"	
DSC2822	det			"		"			"	rand URN
DSC2823	det			"		"			"	"
DSC2824	det			"		"			"	"
DSC2825	det			"		"			"	"
DSC2829	det			"		"			"	"
DSC2911	obj.			12/03/20		7			33	
DSC2923	over			"		"			"	

Gehanteerde codes:

Foto id = bestandsnummer

Type = coupe (coup), vlak (vlak), profiel (prof), detail (det), object (obj), overzicht (over), personen (pers) of divers (div)

Fotograaf = initialen; **Richting** = N,Z,ZW,ZZO etc.

Profnr = alleen bij profielfoto's; **Vnr** = alleen bij object/detailfoto's

paraaf veldwerkleider (MA):

■ Archol

Fotolijst
Laatst afgedrukt op 21/02/2020

Vindplaats: VZH
Omnr: 4705471100

Fotolijst

Archol BV

Blad: 5/

Foto id	Type	Fotogr.	Richting	Datum	Put	Vlak	Spoor	Profnr	Vnr	Opmerkingen
DSC2925	ob.	MvKw		12/02/20	6	7 laag	1		33	
DSC2929	det			"		"			"	
DSC2930	det			"		"			"	
DSC2931	det			"		"			"	
DSC2932	det			"		"			"	
DSC2933	det			"		"			"	
DSC2937	det			"		"			"	
DSC2938	det			"		"			"	
DSC2939	det			"		"			"	
DSC2940	det			"		"			"	
DSC2945	det			"		"			"	
DSC2948	det			"		"			"	
DSC2952	det			"		"			"	
DSC2953	det			"		"			"	
DSC2954	det			"		"			"	
DSC2955	over			"		"			"	
DSC2956	over			"		"			"	
DSC2957	over			"		"			"	
DSC2958	over			"		"			"	

Gehanteerde codes:

Foto id = bestandsnummer

Type = coupe (coup), vlak (vlak), profiel (prof), detail (det), object (obj), overzicht (over), personen (pers) of divers (div)

Fotograaf = initialen; **Richting** = N,Z,ZW,ZZO etc.

Profnr = alleen bij profielfoto's; **Vnr** = alleen bij object/detailfoto's

paraaf veldwerkleider (MA):

■ Archol

Fotolijst
Laatst afgedrukt op 21/02/2020

Appendix 6

Vindplaats: VZH

Omnr: 470547100

Vondstnummerlijst

Archol BV

Blad: 1/

vondstnr.	put	vlak (laag)	vak	spoor	vulling	segment	profiel	verzamel	categorie	datum	volume	opmerkingen
54	6	2		1					AW	24/02/20		
55	6	2		1					MHK	24/02/20		
56	6	2		1					CR	24/02/20		groot botfragment – mogelijk heup?
57	6	3		1					AW	24/02/20		
58	6	3		1					CR	24/02/20		meerdere grote botfragmenten
59	6	3		1					MHK	24/02/20		
60	6	4		1					AW	27/02/20		scherven "dekselpot" / Schrägehals
61	6	4		1					MHK	27/02/20		
62	6	4		1					CR	27/02/20		alleen kleine fragmenten
63	6	4		1					AW	27/02/20		scherven van urn
64	6	5		1					CR	06/03/20		
65	6	5		1					MA	09/03/20		afkomstig: tussen rand urn + "deksel"
66	6	5		1					MA	09/03/20		bovenste laag Eierbecher / bijpotje
67	6	5		1					MA	09/03/20		onderste laag Eierbecher / bijpotje
68	6	5		1					AW	09/03/20		Eierbecher / bijpotje
69	6	5		1					CR	09/03/20		uit Eierbecher / bijpotje
70	6	6		1					CR	12/03/20		

Verzamel: verzamelwijze. Bijv.: AANV, PROF, COUP, SCHA, SPIT, TROF, ZF2, ZF3, etc.

Categorie bij monster: algemeen (**MA**), hout (**MHT**), ecologisch (**ME**), zaden (**MZ**), zoölogisch (**MBOT**), pollen (**MP**), crematie (**CR**), C14 (**MC14**), dendro (**MD**), fosfaat (**MFF**), houtskool (**MHK**), schelp (**MSC**), slijpplaat (**MSP**), MIX

categorie: AW (APH,APN,APB,APY,ARO,ARI,AME,ANT) / MIX / MXX (MBR,MFE,MPB,MAG,MSL) / SXX (SVU,STE) / BOT / GL

PARAAF VELDWERKLEIDER:

Volume:in liters

Archol

Appendix 6: The findslist belonging to the urn cremation from Venlo-Zaarderheiken (written by author).

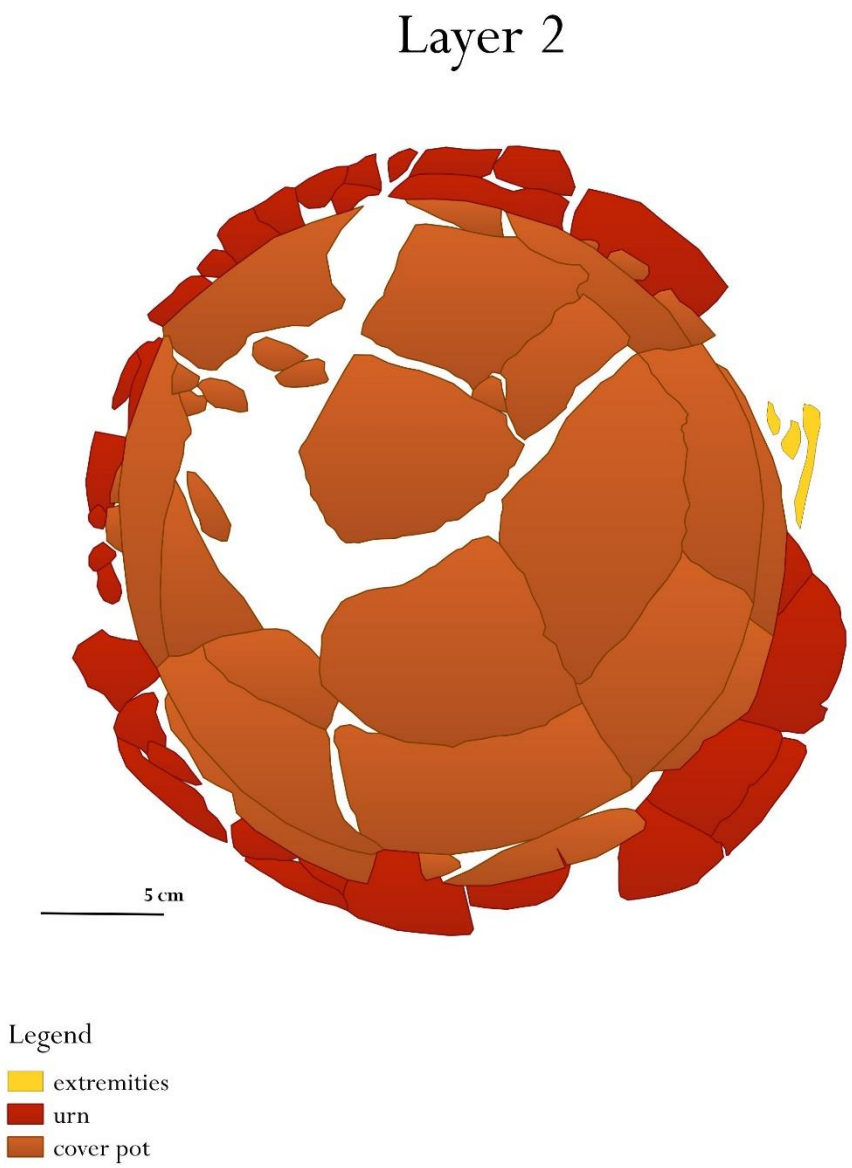
Appendix 7

Struct-ure	Type of Grave	Additions	Other Accessory Goods	MNI	Age	Weight (g)	Dating
13	2 beakers		two unburned pearls on a bronze plate in the urn, a perforated spindle(?) of bone, an unburned flint flake	1	adult	224	beginning of Late Bronze Age
35	Urn + accessory vessels	sherds of 2 containers		1	adult	41.5	
36	urn + accessory vessels	bowl, 2 small urns, cup	burned flint blade on cremated remains	1	adult (< 30)	483.5	middle Late Bronze Age
39	bad preservation	sherds of 2 containers		n.d.			
40	urn			1?		15	
41	urn (org.)			1	adult	130	
42	urn			n.d.			
43	urn			2	adult + child (< 10)	350	early Late Bronze Age
44	urn			n.d.			
45	org. container	covered by 3 chalk blocs		n.d.			
46	urn (org.)			1?		3	
47	urn			1?	adult	20	
48	urn	two bowls	unburned bracelet on cremated remains	2	adult + adolescent (< 18)	519	middle Late Bronze Age
49	urn (org.)	covered by a block of sandstone		1	adult (> 30)	142.5	
50	urn (org.)			n.d.			
51	urn (org.)			n.d.			

52	urn	bowl, 2 small urns	fragment of an unburned pin inside urn	1	adult	336.5	middle Late Bronze Age
53	urn	1 small urn, 2 beakers, 4 cups	fragment of burned bracelet inside urn, metapodial of young ovine, freshwater mussel	1	old adult	484	middle Late Bronze Age
54	urn (org.)			1	adult	132	
55	urn (org.)			1	adult	310.5	
56	urn (org.)			n.d.			
61	rectangular pit			1	adult	20	
67	urn (org.)			1	adult	139	
77	urn (org.)			1	adult	293.5	
80	1 beaker		unburned pin outside urn	2	adult + child (10)	1133	early Late Bronze Age
81	urn (org.)		2 fragments of worked sandstone, bone awl on cremated remains, arrowhead	1	adult	638	early Late Bronze Age
84	multiple containers, bad preservation	sherds of small dish, sherds of an urn, sherds of 3rd vessel		n.d.		20	early Late Bronze Age
93	urn (org.)			n.d.			
95	urn (org.)			n.d.			
101	urn	3 beakers		1	child (1)	45	early Late Bronze Age
102	urn (org.)			n.d.			
103	urn (org.)			n.d.			

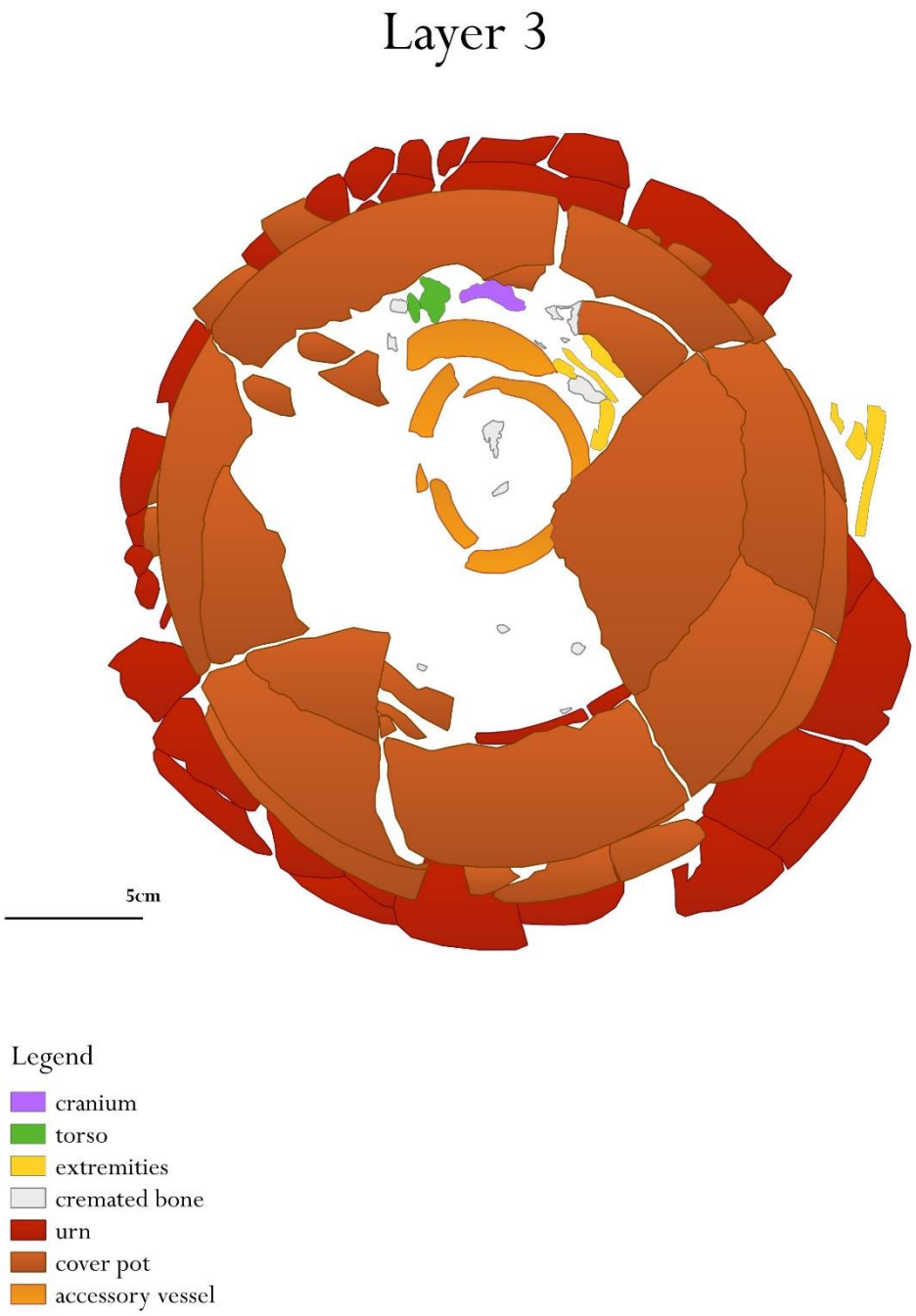
Appendix 7: Table containing a description of the cremation burials found at La-Croix-de-la-Mission with the type of burial, additional ceramics, other grave goods, and results of their physical anthropological analysis (after Peake et al. 1999, table 3).

Appendix 8



Appendix 8: Digital drawing of layer 2 of the urn cremation from Venlo-Zaarderheiken, with a few cremated human remains belonging to the extremities (made by author).

Appendix 9

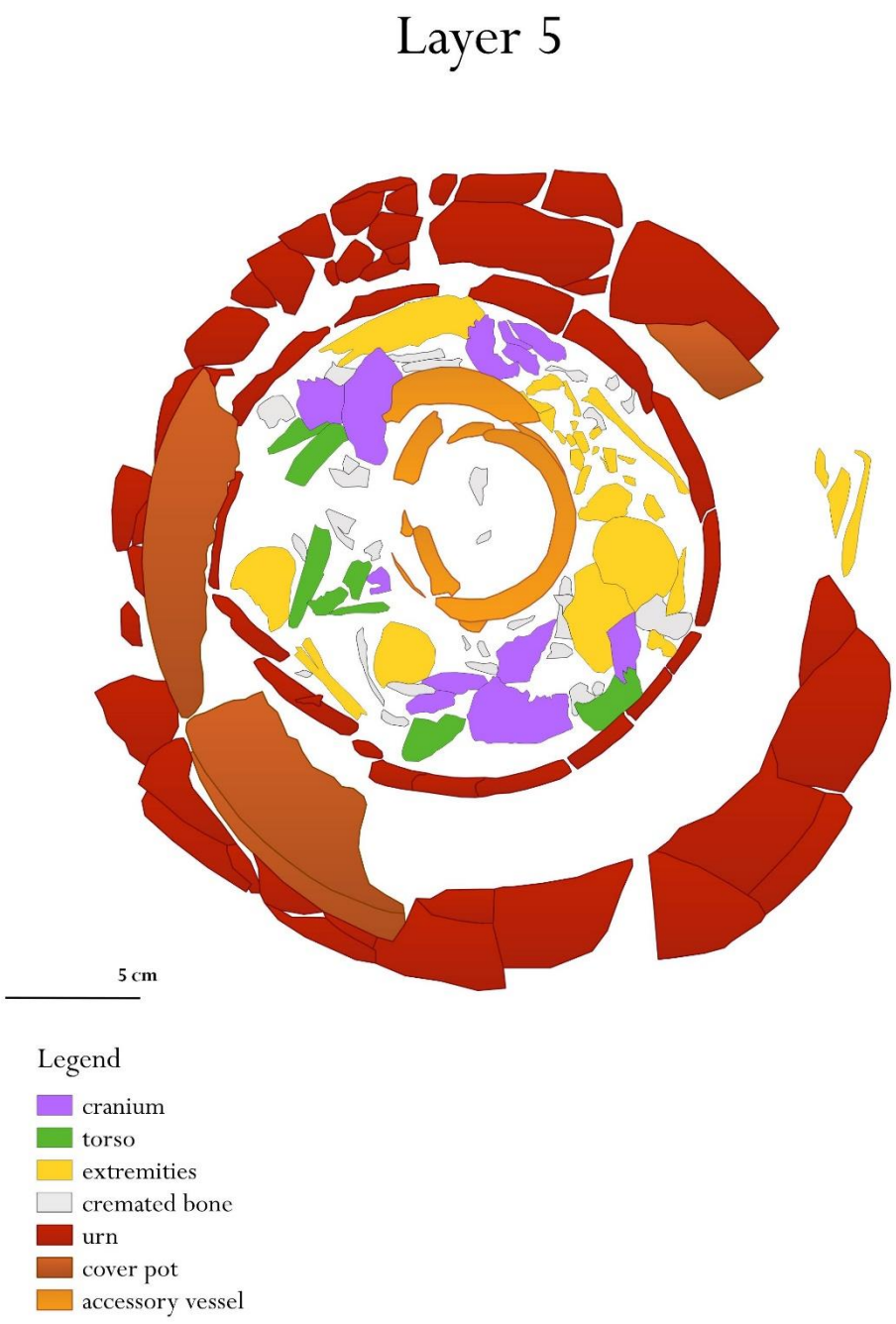


Appendix 9: Digital drawing of layer 3 of the urn cremation from Venlo-Zaarderheiken, showing the spread of the body parts (cranium, torso, and extremities) in this layer (made by author).

Appendix 10

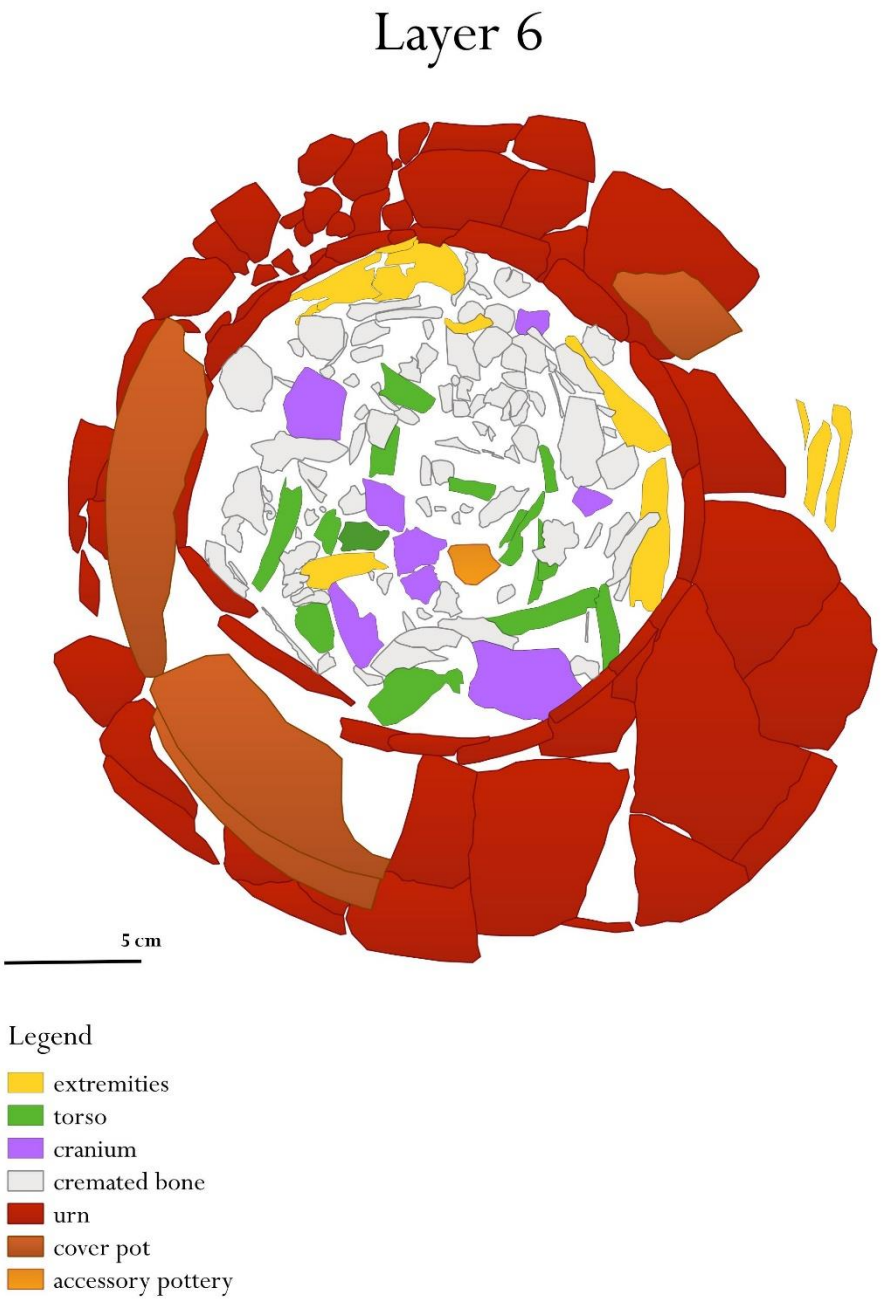
Appendix 10: Digital drawing of layer 4 of the urn cremation from Venlo-Zaarderheiken, showing the spread of the body parts (cranium, torso, and extremities) in this layer (made by author).

Appendix 11



Appendix 11: Digital drawing of layer 5 of the urn cremation from Venlo-Zaarderheiken, showing the spread of the body parts (cranium, torso, and extremities) in this layer (made by author).

Appendix 12



Appendix 12: Digital drawing of layer 6 of the urn cremation from Venlo-Zaarderheiken, showing the spread of the body parts (cranium, torso, and extremities) in this layer (made by author).