

Searching for patterns among special animal deposits in the Dutch river area during the Roman period

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Abstract

This paper explores recurring patterns among special animal deposits in rural settlements in the Dutch river area from the Roman period and draws a comparison with finds of other material categories. Recognising patterns is a step towards interpreting special deposits as the material remains of ritual actions since ritual usually follows strict rules. Any interpretation of special deposits, such as animal burials, should be based on sound argumentation. Archaeologists may be faced with, and have to distinguish between, deliberate or casual rubbish disposal, intentional deposition without attending rituals and deposition surrounded by ritual actions. Detailed descriptions of good examples of both rubbish dumps and structured deposits will be of great value in this process. This paper also argues for a more holistic approach where various find categories are studied together. This will lead to the identification of similarities between deposits. As an example, remarkable bone and non-bone finds from wells are described. Some of these finds should be seen as foundation or abandonment deposits, suggesting that like farmhouses, wells had a life cycle punctuated by ritual moments. Special deposits of animal remains and other find categories deserve much more attention than they now receive in excavation reports.

Keywords: Roman Period, Animal Deposits, Ritual, Dutch River Area, Recurring Patterns

1 Introduction

The temples from the Roman period in the Netherlands are built in a Roman architectural style and dedicated to gods that look Roman. Ritual practices in the sanctuaries also fit neatly with our knowledge of Roman religion. This suggests that the prevailing religion in the region conformed to Roman religious practice (Derks 1998; 2002). However, the rural settlements in the area provide a more complex picture of religion and ritual. Bronze statuettes of Roman gods are found next to structured deposition, both of pottery and of parts of animals. The study of structured deposition, both of animal remains and other material categories, seems the most promising way to discover how religion and beliefs were applied in daily life within the settlements in the Roman Netherlands. Burying objects or (parts of) animals underground was

clearly perceived as a meaningful act, meant to achieve certain goals or to keep some control in special situations.

The interpretation of burials of complete animals as anything other than dumped carcasses on the basis of clear methodology remains rare within Dutch archaeology. Some examples where animal burials are seen as 'special' can be found in Lauwerier 2002 and 2004. Generally, deposits of articulated remains and loose skulls are still seen as butchery waste, while deposits of unarticulated remains are often not even considered worthy of mention (with some exceptions: Lauwerier 2002, 2004; Prummel & Van der Sanden 1995). This, however, does not explain recurrent, seemingly non-functional, patterns such as the selection of certain body parts, the burial of wild animals, and the combination of animal remains with non-bone finds. Ultimately, the interpretation of such special animal bone assemblages as waste or as structured deposits generally seems to be based on personal assessments and not on sound argumentation. Modern values are often unconsciously applied. Studies of special deposits of animal remains and other finds should question the intentionality of deposits and develop arguments for a ritual versus non-ritual interpretation.

One way to get a better grasp of settlement rituals and structured deposition is to search for patterns among the deposits – based on the fact that rituals are often conservative and repetitive. Another is to include deposits of other material categories in an analysis. Recent evidence demonstrates that the practice of structured deposition of animal remains is much more common during the Roman period than previously believed (Therkorn 2004; Van Londen 2006; Groot 2008a, 2009). This paper will explore whether recurrent patterns can be recognised among these deposits, and whether we should differentiate between deposits of animal remains (often controversial) and deposits of items that are seen as valuable (complete pots, coins). This will not be a regional survey, but a selective look at special animal deposits from rural settlements in order to demonstrate the importance of this phenomenon. The focus will be on the Dutch river area, since the number of excavated sites and the excellent bone preservation resulted in a rather rich data set for this region. I will, however, refer to examples from other regions in the Netherlands where relevant.

The following questions will be taken into account:

- How do special animal deposits in the Dutch river area compare to those in other parts of the Netherlands?
- Which recurrent patterns can be identified among special animal deposits?
- Are special animal deposits comparable to other deposits in settlements, such as foundation offerings and coin hoards?
- Can patterns found among special animal deposits be extended to other find categories?
- Should we really distinguish between deposits of animal remains and deposits of other types of material, such as pottery and coins?
- What can we say about the diversity of the inferred rituals and about the intentions or beliefs behind them?

First, the archaeological background of the study area will be described, followed by a brief history of the study of special animal deposits. The next paragraph will introduce two settlements in the Dutch river area that have yielded a large number of special animal deposits. Some aspects of ritual, and the possibilities to identify ritual in archaeology, are discussed. Different types of special animal deposits will then be described, and for each some examples will be given from the study area itself and from other regions in the Netherlands. The question of what makes an animal deposit special will also be addressed. I will then describe several patterns that can be identified among the special animal deposits in the Dutch river area and extend these to other types of material. The paper ends with a short discussion on the future of the study of special animal deposits and ritual practice within settlements.

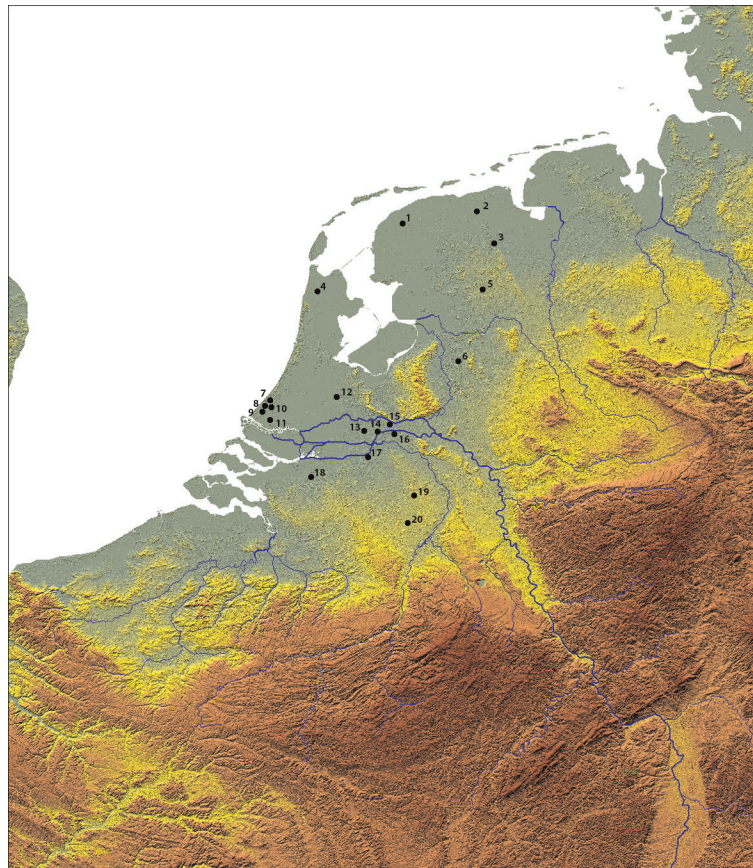


Fig. 1 Locations of sites mentioned in this article: 1. Englum, 2. Ezinge, 3. Midlaren, 4. Schagen, 5. Wijster, 6. Heeten, 7. Den Haag, 8. Naaldwijk, 9. Poeldijk, 10. Rijswijk, 11. Midden-Delfland, 12. Leidse Rijn, 13. Geldermalsen-Hondsgemet, 14. Tiel-Medel en Tiel-Passewaaij, 15. Kesteren, 16. Druten, 17. Empel, 18. Breda, 19. Deurne, 20. Nederweert.

2 Archaeological background

The Dutch river area covers the eastern-central part of the modern Netherlands and coincides with the Roman *civitas Batavorum* (fig. 1). The main developments in the Dutch river area from the Late Iron Age onwards are a result of the incorporation of this region in the Roman Empire. The presence of military camps and urban markets caused an agrarian transformation from self-sufficiency to market production. The agrarian economy formed the backbone of the rural communities and consisted of mixed farming, with a system suited to the dynamic river landscape comprised of different environmental components (Groot & Kooistra in press). Barley and emmer wheat were the most important cereals and the pastoral side of farming was based on cattle, sheep, horse and pig. Farmers in the Roman period produced both for their own needs and for the Roman urban and military markets. Taxation may also have played a role in the production of an agrarian surplus.

Rural communities in the Dutch river area maintained strong ties with the Roman army. In the 1st century taxation was in kind, with the Batavians being obliged to supply a certain number of soldiers for the Roman army. Not only did many men serve in the army for a period of 25 years – returning home for occasional visits and in some cases permanently after their discharge – but the rural settlements were part of an economic network that supplied the army's needs. Returned veterans probably played an important role in rural communities, mediating between their fellow farmers and the army over agrarian production and introducing new building styles (Groot in prep.; Vos 2009, 243–251).

Elements of Roman culture and religion were adopted by the rural communities. At least some rural people were able to read and write and finds from settlements show that typical Roman artefacts, such as toiletry items, keys, weights and seal boxes were used, although perhaps not in the way intended (Derks & Roymans 2002; Heeren 2009, 166). Evidence for Roman religion in the Dutch river area is found in the form of Gallo-Roman temples at Empel, Elst and Kessel. Bronze statuettes and terracotta images of Roman gods have been found in rural settlements (fig. 2). Altar stones and votive inscriptions refer to Roman or Romanised gods, such as Hercules Magusanus (Roymans & Derks 1994, 26).



Fig. 2 Terracotta head of Minerva and bronze statuettes of Mars and Mercury from Tiel-Passewaaijse Hogeweg (photo: ACVU).

3 The study of special animal deposits

Special animal deposits have been studied extensively for the Iron Age hillfort Danebury in southern England. Grant interpreted the burials of animal (and human) remains at this site as ritual (Grant 1984, 543). Others, such as Cunliffe and Hill, have made important contributions to the understanding of this phenomenon. Cunliffe saw the deposits of animal and human remains in Iron Age pits as part of a fertility rite, in which the gods were thanked for protecting the cereals during storage and asked for a good harvest (Cunliffe 1993, 22-27). Hill examined special deposits – or as he preferred to call them *Articulated/Associated Bone Groups* – from Danebury and other hillforts in a detailed study. He included non-bone finds to determine how the pit fills were built up and by what activities and processes they were produced (Hill 1995, 1, 30-31). He emphasised the importance of studying formation processes and, including all categories of material, to find out whether finds in special deposits have a different ‘signature’ from finds in non-special deposits (Hill 1995, 16-17).

Burials of complete animals have long been recognised in Dutch excavations (e.g. the burial of two horses and a dog uncovered by Van Giffen in the 1930s in an early medieval cemetery in

De Bouwerd, Ezinge; Boersma 1980; Prummel 1993, 53-54), and some special deposits of skulls and articulated remains have also been published in the past (Bogaers 1955; Clason 1978, 426; Van Giffen 1963). Van Es recognised the significance of animal burials in Wijster, where he related the deposits to houses (Van Es 1967). Animal skeletons were also interpreted as building deposits in Druten (Hulst 1978). Deposits of animal parts are, however, not always described in excavation reports, and their potential is still underestimated. In general, when special deposits are mentioned scant attention is paid to the archaeological context and no attempt is made to relate them to religious practices. This is partly a result of the small number of deposits per site but also because archaeologists have generally viewed animal skeletons or articulated remains as dumps. Detailed analyses of special deposits, whether of animal remains or other finds, are rare. An excellent recent example is the excavation report of a terp at Englum, Groningen, where special deposits of human and animal remains were described in detail, including information on other finds and formation processes (Nieuwhof 2007). Another recent study set out to understand special deposits within their context. Therkorn focused on settlement rituals in several settlements from the Late Iron Age and Roman period in Noord-Holland (Therkorn 2004). The excellent preservation made it possible to include deposits of wood in the study. Therkorn viewed pits and ditches with special deposits as part of stellar constellations projected on the settlement plan. Therkorn's interpretations remain controversial, but an undeniable strength of her study is as a data set of a large number of carefully excavated deposits. I analysed special animal deposits from Tiel-Passewaaij as part of my doctoral research and more recently from a similar site, Geldermalsen-Hondsgemet (Groot 2008a, 2009). Synthetic studies of special deposits or ritual practices in Iron Age or Roman-period settlements in the Netherlands are rare (see for instance Van Hoof 2007 for deposits associated with houses).

A recent French study focuses mainly on rituals in sanctuaries and includes data for a number of sites (Lepetz & Van Andringa 2008a). The methodology and related problems for studying animal bones from sanctuaries are discussed in one of the first chapters (Lepetz & Van Andringa 2008b). The authors emphasise the importance of an understanding of the formation processes involved and of course this is also important for settlement contexts. Another paper describes deposits in a domestic context, but the deposits themselves (complete pots with food portions of pork and beef) are very different from the ones we find in our region (Lepetz *et al.* 2008). A third paper includes criteria for interpreting animal burials as ritual, but the uniqueness of some of the French sites (for instance the 'animal cemeteries') means that the approach cannot be applied directly to Dutch settlement sites (Lepetz & Meniel 2008).

4 Site background

The main focus of this paper will be on special animal deposits from two rural settlements in the Dutch river area: Tiel-Passewaaijse Hogeweg and Geldermalsen-Hondsgemet. Passewaaijse Hogeweg (Tiel-PH) is one of two settlements excavated at Tiel-Passewaaij (Heeren 2006; Roymans *et al.* 2007; Heeren 2009). The settlement was inhabited continuously from around 50 B.C. until 350 A.D., although probably by different people from 270 A.D. onwards. Late Iron Age and Early Roman habitation was oriented on a residual channel, which silted up in the late 1st century A.D. The settlement consists of either one or several farmhouses (varying in each phase), with outbuildings, wells and enclosure ditches. The byrehouse is the typical farmhouse for this region, containing space for human habitation and a stable section. Seven habitation phases are distinguished, with the earliest one only yielding some finds but no structures; two later ones (5 and 6) were studied as one phase during the animal bone analysis because of their short time periods and lack of major developments. Tiel-PH is larger than the second settlement at Passewaaij, Oude Tielseweg, and a much larger proportion of the site was excavated. One part of the settlement Oude Tielseweg was excavated by amateur archaeolo-

gists, with little time and money, and there is little information on special animal deposits, apart from three dog burials. Furthermore, c. 80% of a cremation cemetery located between the two settlements was excavated and has yielded new insights into the Batavian funerary ritual, including the role of animals (Groot 2008a).

Geldermalsen-Hondsgemet (referred to as 'Geldermalsen' below) was also inhabited during the entire Roman period, but habitation there was continuous from earlier in the Late Iron Age (Van Renswoude & Van Kerckhove 2009; Van Renswoude 2009a, b). Similar structures are found there as at Tiel-PH. Five main phases have been distinguished, of which the earliest dates to the Iron Age (200-50 B.C.). Habitation was already intensive during the Iron Age, evidenced by over a hundred small granaries. As at Tiel-PH, farmhouses were situated near a residual channel, of which only a depression remained after the late 1st century AD. In the Middle Roman period, the settlement was structured by ditch systems which enclosed farmyards. Enclosure ditches also surrounded the entire settlement.

Both sites were excavated entirely and analysis shows that they were inhabited continuously during the Roman period and have excellent preservation of finds, including animal bones. The large animal bone assemblages have allowed a reconstruction of the pastoral side of the agrarian economy, showing a specialization in horse breeding in the Middle Roman period. In both settlements, quite a large number of special animal deposits were excavated and described (Groot 2008a, b, 2009). At Tiel-PH, 67 special animal deposits were found, and 47 at Geldermalsen. While some of these can be seen as refuse, others are interpreted as ritual.

Although the two settlements are exceptional as far as excavation and publication is concerned, they were probably average-sized settlements for the Roman Dutch river area, albeit at the larger end of the spectrum (Heeren 2009, 225). The fact that the sites have been excavated by the same excavation team ensures that any comparisons between the settlements are based on a consistent methodology.

5 What is ritual? Ritual in archaeology

It is an old joke among archaeologists: if it cannot be explained or if we do not understand it, it must be ritual. Although a lack of understanding is not the best basis for any interpretation, we know that material evidence for rituals exists in archaeology. Most finds in temples and cemeteries, as well as foundation deposits in farmhouses, are linked to ritual and no one doubts the validity of a ritual explanation in these cases. However, when 'ordinary' finds from settlement contexts, such as animal remains, are interpreted as ritual deposits, criticism may follow. This seems to be based on modern ideas on what constitutes a good offering, namely something valuable. Many archaeologists do not realize that a dead animal may have been of value, even if it is of a species that is not normally eaten. Similarly, broken pottery or other artefacts from settlements are nearly always regarded as discarded rubbish. A second reason for the scepticism among archaeologists with regard to ritual practices in settlements is a direct result of our modern Western attitude that ritual and normal daily life are two separate spheres that do not overlap (Bradley 2005, 20, 29, 35). Bradley argued that, on the contrary, ritual and daily life were closely interlinked in the past and that buildings or objects could have both a practical and symbolic function (*idem*, 8, 16).

The following aspects are part of ritual activities and of importance to archaeologists:

- ritual is consciously experienced by the participants (Lewis 1980, 20, 25),
- rituals are often intended to manipulate or be part of a dialogue with supernatural powers (Derks 1998, 76; Bradley 2005, 32),
- ritual is a kind of practice, and not just a way of communication. Ritual can put an emphasis on certain parts of life (Bradley 2005, 33-34),

- ritual is formal, governed by rules (Merrifield 1987, 6; Lewis 1980, 13; Moore & Meyerhoff 1977, 4, 8),
- rituals are repetitive since they follow a set of rules (Moore & Meyerhoff 1977, 7).

In archaeology, many other distinguishing elements of ritual, such as singing, dancing, clothing and movement are lost, but the consciousness of doing something special can be reflected in the way objects are buried. The burial of artefacts or animals is of course only one way of offering to supernatural powers, but it is the one that is most visible archaeologically. Deliberate burning is another (Halstead & Isaakidou 2004; Hamilakis & Konsolaki 2004), but so far little evidence has been found for this practice with regard to animal remains in the Roman Netherlands (for an exception, see Lauwerier 2002, 66). The motivation behind many rituals lies in the belief that supernatural powers can be reached this way. Gods are asked for health or wealth or thanked for acts of generosity. The formal, repetitive aspect of ritual is the most promising for archaeologists, since this should create recurring patterns in deposits. In fact, it is possible that much of the material culture and organic remains found by archaeologists survived only because they were intentionally buried (Bradley 2005, 21; Hill 1995).

When studying structured deposition it is essential to have some idea of what ritual in archaeology should look like, formulate criteria based on deposits for which a ritual interpretation is agreed upon, and then apply these to other deposits. It is likely that both ritual burials and dumping of dead animals occurred. How can we then tell the difference archaeologically? While burials of complete animals are the first to be described in publications regardless of the interpretation (ritual or non-ritual), these may be the most difficult to interpret. There is a sliding scale of interpretation, with 'profane' at one end and 'ritual' at the other. Intentional burial of animals occurs at either side of the scale. Animals die of disease in any agrarian community and it is likely that some animal burials are dumped carcasses. On the other end of the spectrum, the context or posture of some complete animal burials leave little doubt about their ritual origin, for instance because of an association with other objects. A careful analysis of these (animal species, location, type of burial etc.) may lead to a set of criteria that can be applied to those burials that are harder to interpret. Recurrent patterns and characteristics reflect the rules of the ritual the deposit was part of. A ritual deposit is always meaningful but the precise meaning may be impossible to reconstruct by archaeologists.

Many archaeological finds represent rubbish, which may have been disposed of either casually (e.g. throwing a bone away during a meal) or deliberately (e.g. sweeping a farmhouse and dumping the rubbish). Rubbish disposal occurs alongside the burial of animal remains or other objects, whether surrounded by ritual or not. Recognising these different ways in which the archaeological record was created, as well as knowing their archaeological 'signature', will be valuable in advancing the study of structured deposition. In practice, this means that both deposits interpreted as ritual and clear-cut rubbish dumps need detailed descriptions in excavation reports.

Distinguishing between ritual and non-ritual seems to incorporate more assumptions and biases than other aspects of burial practices. It is important to be aware of our own assumptions and make them explicit. Most of these assumptions are rooted in modern western culture. One of my own personal assumptions is that dead animals would not be dumped or buried close to habitation unless there was a very specific reason. Another is that people would not make the effort of digging a large pit specifically to dump a carcass but that they would drag it outside the settlement.

6 Types of special animal deposits

What is special about special animal deposits? A special animal deposit consists of animal remains that deviate from what is perceived as a normal pattern of butchery and consumption waste. The difference can relate to preservation, fragmentation, species or combination of several species, skeletal elements or the number of animal bones. In this sense, special animal deposits also include industrial or craft waste, since the composition of this type of refuse is also atypical for butchery or consumption waste. Dumped carcasses are also special animal deposits. The location, the way in which the remains are buried, and/or an association with other, non-bone finds should allow us to identify ritual animal deposits.

Five types of special animal deposits can be recognised in settlements in the Dutch river area:

1. Complete animals (fig. 3). Burials of complete animals are frequently found in rural settlements. While dogs and horses are overrepresented, other species are also found.



Fig. 3 Complete skeleton of a dog from Tiel-Passewaaij (photo: ACVU-HBS).



Fig. 4 Skull of a horse in a ditch at Geldermalsen-Hondsgemet (photo: ACVU-HBS).

2. Separate skulls, with or without mandibles (fig. 4). Complete skulls occur as special deposits. They are difficult to interpret when found without associated special material. Completeness is one of the criteria which may indicate ritual burial. Preservation is probably not a good indicator. A complete skull may point to the immediate burial of a killed animal's head (and perhaps selection of an individual animal for sacrifice), but an older skull may have been curated or displayed.

3. Separate articulated (lower) limbs. Articulated legs are found on their own or as part of larger deposits. A common subtype of this type of deposit is that of a skull and lower limbs (fig. 5). While these are often seen as butchery waste, there are indications that they should rather be seen as structured deposits. The elements are buried together, without other refuse, and often one or more limbs are missing. It is important to realise that it was not bare bones that were deposited, but an entire head and lower legs, and possibly also the skin.



Fig. 5 Deposit of a horse skull and two lower legs from Geldermalsen-Hondsgemet (photo: ACVU-HBS).



Fig. 6 Concentration of unarticulated remains from Tiel-Passewaaijse Hogeweg (photo: ACVU-HBS).

4. Concentration of unarticulated remains (fig. 6). It is characteristically the representation of more individuals and the excellent preservation that suggests that the animal bones are the remains of a single event. Only one or two animal species are present in large numbers. The deposits that I know of comprise only horse, only cattle, only sheep, cattle and horse, or cattle and pig (Groot 2008a, 134-135, 137; 2009, 401-404; Lauwerier *et al.* 1999, 176-177). The high proportion of complete (unbroken) bones indicates an abundance of meat and wastage of meat and marrow. The bones are clearly the remains of one large butchery event, possibly associated with feasting. It is, however, also possible that they reflect normal autumn slaughter.

5. Combination. This type of deposit is a combination of two of the first four types, for instance a complete skeleton and a separate skull (fig. 7). The four deposits of this category from Tiel-PH comprise more than one animal species.



Fig. 7 Combination deposit of a dog skeleton and a horse skull. Tiel-Passewaaijse Hogeweg (photo: ACVU-HBS).

The first four types were found at Geldermalsen, and all five at Tiel-PH. Which types occur at other sites is probably related to a large extent to the individual attention paid by archaeologists to the details of find conditions. Separate skulls and articulated limbs are still seen by

many as ordinary butchery refuse and not deserving special mention in excavation reports. The same can be said for concentrations of unarticulated remains. The only type of deposit that is nearly always mentioned and illustrated in excavation reports is that of complete animal burials, although even these are still mainly interpreted as dumps.

7 Recognising patterns

Several recurrent patterns can be found among the special animal deposits from the Dutch river area, both with regard to the contents of the deposit and the location. The patterns described below are based on my personal observations of special animal deposits at Tiel-PH, Geldermalsen, and several smaller excavations: Tiel-Bedrijvenpark Medel site 6 in the Dutch river area, and Poeldijk-Westhof site 3 and Naaldwijk-Holland College in the western coastal zone (Groot 2005; 2007; 2008a; 2008b; 2008c; 2009). I will also refer to published data from other sites, both on special animal deposits and other finds. In describing the patterns, I will depart from the categorisation of deposits described above. This categorisation is merely used in the field and during analysis to identify possible deposits and I have tried to go beyond this in my approach below.

7.1 Deposits in wells

Wells sometimes contain striking bone deposits. We would not expect deposits of animal remains to be made during the use of a well, as this would contaminate the water, but when a well was no longer in use it was a convenient place to dump rubbish. This makes the interpretation of animal deposits in the fills of wells difficult. Special finds of other materials demonstrate that deliberate deposits also occurred in wells. The special animal deposits in wells should be seen as one aspect of this tradition. In some cases, special animal deposits are found in an otherwise findless fill, suggesting that the well was not systematically used as a rubbish bin, but only on a special occasion.

Non-bone deposits

No one doubts the ritual context of deposits of certain objects in wells, such as a beautifully decorated part of a helmet found in a well outside the castellum of Leidse Rijn-De Woerd (<http://www.utrecht.nl/smartsite.dws?id=12564&persberichtID=113706&type=pers>). This metal object was deliberately bent, making it unfit for further use. The excavators see the deposit of this object in a well as an offering. A well in the temple compound at Empel contained several remarkable finds: a complete helmet, a shield boss and the partial skeleton of an eagle owl (Roymans & Derks 1994, 25; Seijnen 1994, 164, 171). The two metal objects were interpreted as offerings and I would suggest a similar explanation for the exceptional bird remains. An axe, complete with handle, and fragments of a wooden lid and bowl were found at the bottom of the pit dug when the well was constructed. These objects must have been left there during the construction (Hiddink 1994, 63, figs. 7 and 8). While finds such as this are often interpreted as accidental loss, the recurrence of tools found associated with wells is suspicious (see below).

While these deposits are from wells in non-rural contexts (military, temple), remarkable but somewhat less spectacular finds are known from rural settlements. Some of the wells at Roman sites near Breda also contained remarkable finds. An iron ploughshare, the bronze rim of a bucket and a bronze helmet were found in the pit dug during the construction of a well (Hoegen 2004, 253-254; Hoegen et al. 2004, 366-367). In another pit containing a well a nearly complete salt container was found (Van Enckevort 2004, 347). Two complete pots were found in the

fill of a third well (Hoegen 2004, 258). They were interpreted as accidental losses during water collecting or cleaning of the pots (Van Enckevort 2004, 346). A small amphora was seen as an intentional deposit because it was found in a depression left by an Iron Age well (Van Enckevort 2004, 346).

The most remarkable non-bone find from a well at Geldermalsen consists of a complete bronze vessel and a ceramic jug (fig. 8). The vessel was repaired at least three times and must have been in use for a long period of time. The jug was placed inside the vessel before being deposited in the well. This find was interpreted as an abandonment deposit (Van Renswoude 2009c, 271).



Fig. 8 A complete jug and bronze vessel from a well at Geldermalsen-Hondsgemet (photo: ACVU-HBS).

Wooden ladders have been found in wells at several Roman sites throughout the Netherlands, such as Kesteren-De Woerd, Deurne-Groot Bottelsche Akker, Geldermalsen-Hondsgemet, Midlaren-De Bloemert and Den Haag-Uithofslaan (fig. 9; Kooistra & Van Haaster 2001, 327-332; Hiddink 2008, 185-189; Kooistra 2009, 427-428; Hänninen 2008, 453-454; De Hing & Van Ginkel 2009, 73). Wooden ladders, especially when they are broken, are easily discarded as rubbish. A ladder is not perceived by archaeologists as a surprising find since wells had to be cleaned occasionally. It is assumed that people would not bother to remove a broken ladder from a well. Hiddink sees the small effort needed for the quick construction of the ladder from Deurne as a reason for abandoning it (Hiddink 2008, 189). When seen from another perspective, this is strange, since even a broken ladder could be repaired or reused, if nothing else as firewood. The ladder from Kesteren is complete and of a height that is much too short to provide access to a well and is more likely to have been used to access granaries. An additional reason for not interpreting the ladder as abandoned after a cleaning operation is that it was found upside down (Kooistra & Van Haaster 2001, 331; pers. comm. L.I. Kooistra).



Fig. 9 Wooden ladder in a well at Deurne-Groot Bottelsche Akker (photo: ACVU-HBS).



Fig. 10 Wooden spade deposited on the outside of the wooden lining of a well at Deurne-Groot Bottelsche Akker (photo: ACVU-HBS).

The location of a wooden spade from Deurne-Groot Bottelsche Akker indicates that this is not simply an abandoned object. The oak spade was found at the bottom of the pit that contained the well, outside the wooden lining and left there when this lining was constructed (fig. 10; Hiddink 2008, 185). This is reminiscent of a foundation deposit. Both location and material type ('tool') are similar to the axe from Empel. Another wooden spade was found in a well at

Nederweert-Rosveld, but in this case in the fill (Hiddink 2005, 169-170). Wooden bowls have also been found in wells. Two examples are broken and therefore interpreted as rubbish (Hiddink 2005, 169; Kooistra 2009, 428). As with the ladders, throwing away wood when this was the main source of fuel seems strange.

Another category of wooden objects found in wells are wagon wheels. When deposited at the bottom of a well, a wheel can play a functional role in the construction. However, wheels or parts of wheels are also found in the fill of wells (for instance at Weert, pers. comm. H.A. Hiddink; and the Roman town of Forum Hadriani, Kooistra & Kubiak-Martens 2007, 18-20).

The examples above are not an exhaustive list. Every field archaeologist probably knows some examples. While former wells were certainly used for dumping rubbish, some of the finds cannot be explained in purely functional terms. Remarkable finds from wells seem to be common in Roman sites. Like farmhouses, the construction and abandoning of wells seem to have been surrounded by rituals. Finds in the pit outside the core or wooden lining of the well, such as the wooden spade from Deurne and the ploughshare and bronze finds from Breda, should be seen as foundation deposits, left during the construction of a well. Finds in the fill may be considered as abandonment deposits. The bronze vessel from Geldermalsen is the best example but some of the animal deposits may also be understood in this way. A third category of deposit is found in the upper fill of a well or in the depression left when a well was filled up and went out of use. The depression may have been merely considered as a convenient location for deposition but in some cases earlier ritual may have been commemorated.

Deposits of (parts of) animals

While non-bone finds are sometimes interpreted as ritual deposits, when it comes to animal remains in wells these are nearly always seen as the dumping of rubbish, if interpreted at all. Special animal deposits in wells vary from complete skeletons to skulls. They can be present in the fill of a well, in the pit dug when the well was constructed, or in the depression left after a well had been filled up. Dogs seem to be regularly deposited in wells that were also used as rubbish dumps. A skeleton of an adult dog was found in a well at Tiel-PH together with more animal bones. At Geldermalsen an adult male dog was found in the fill of a well (fig. 11). With a withers height of 73 cm, this dog is at the upper end of the range in size of dogs in the Roman Netherlands. An incomplete cattle skull was found next to the dog, but it is not certain whether they were deposited at the same time. Again this well contained some fragmented animal bones from various other animals. In another well, a dog was found in the upper fill. A large bone concentration was found lower in the well (see below). Finally, a partial dog skeleton was found in a well at Naaldwijk, together with bone refuse (Groot 2008c, 180). While the deposition of dogs in wells must have been a deliberate act, the choice for wells that were in use as rubbish dumps suggests that convenience rather than ritual was the motivation behind this act. That is not to say that the disposal of dogs in this way was not surrounded by affinity or affection, as the carcasses could also have been left where they died or dumped outside the settlement.

Two wells at Tiel-PH contained skulls that have been interpreted as ritual deposits. The first is the skull of an adult mare with cracks in the frontal bone, indicating that she did not die a natural death. The well contained very few other bones, which indicates that it was not used for dumping rubbish. The second case comprises two complete sheep skulls. Very few other bones were found in the well, but it did contain the mandibles from one of the skulls, as well as three complete cattle scapulae. In this case, the absence of rubbish and the coincidence of finding three complete scapulae is taken as an indicator of intentional deposition. A third example is the nearly complete but not freshly deposited cattle skull in an otherwise empty well at Geldermalsen.



Fig. 11 Dog skeleton and cattle skull in a well at Geldermalsen-Hondsgemet (photo: ACVU-HBS).

Another deposit of quite different composition from a well at Geldermalsen is a large concentration of cattle bones, representing six cows that were killed and butchered in one event (fig. 12). Of course, it is possible that a disused well was simply seen as a convenient spot to dump a large amount of refuse, but why was it only used as a rubbish dump on one occasion? An argument against an interpretation as a rubbish dump is the inclusion in the deposit of two skulls of other species. Skulls from a male horse and a male sheep were found among the cow bones (fig. 13). The burial of a dog in the top fill of the same well does not seem coincidental and may indicate a communal memory of the location of the previous deposit. Deposits of a horse skull and lower legs were made in the top fills of other wells at Tiel-PH and Geldermalsen (see below).



Fig. 12 Concentration of cattle bones from a well at Geldermalsen-Hondsgemet (photo: ACVU-HBS).



Fig. 13 Skulls of horse, cattle and sheep from the bone concentration in fig. 12 (photo: ACVU-HBS).

It is hard to interpret many of the animal deposits in these wells, especially when the well was clearly used for dumping rubbish. Those that are found in an otherwise empty well, however, are unlikely to represent waste. Deposits of animal remains in wells fit in with other, special non-bone finds from wells in rural settlements.

7.2 Emphasising and manipulating (lower) limbs

A common type of special animal deposit is that of a skull and lower limbs and variations on this theme. Traditionally, this deposit type was seen as typical butchery waste, based on the fact that skull and lower limbs contain little meat. An animal skull does, however, carry some meat, and the brain is a delicacy in some cultures. Besides, there is another reason for seeing these deposits in a different context: missing legs.



Fig. 14 Deposit of a cattle skull and three lower legs from Tiel-Passewaaijse Hogeweg (photo: ACVU-HBS).

The first example is from Tiel-PH, and consists of an adult horse skull with mandibles and three lower limbs. The right foreleg is missing. This deposit was found in the upper fill of a well. A second deposit, also from a well, comprises the skull, neck and three lower limbs of an adult sheep, the left hind leg is missing in this case. The third deposit, this time of a calf, con-

sists of a skull with mandibles and three lower limbs and the right foreleg is missing (fig. 14). An example from Geldermalsen is a horse skull (without mandibles) buried upside down with two crossed lower legs (fig. 5). This deposit was found in the fill of a well outside the settlement. The smashed frontal bone is a sign of a non-natural death. Cut marks indicate the removal of the mandibles and the tongue. Only the two forelegs were present. A cattle skull and two lower forelegs were buried in another pit at the same site. A deposit of a horse skull and two lower legs from Tiel-Bedrijvenpark (Medel site 6) looks very similar to one from Geldermalsen (fig. 15; Groot 2005, 63, 68).



Fig. 15 Deposit of a horse skull and two lower legs from Tiel-Bedrijvenpark (Medel vindplaats 6) (photo: ACVU-HBS).



Fig. 16 Concentration of horse bones from Naaldwijk (photo: ADC).

Outside the research area, a deposit of a skull and one lower leg of a young cow occurred in a ditch enclosing a small rectangular area at Poeldijk (Groot 2007, 86). A deposit of a horse skull and four lower legs found near a house at Den Haag-Johan Willem Frisolaan was interpreted as a foundation deposit (De Hingh & Van Ginkel 2009, 103). One of the possible interpretations of

this structure was a ritual enclosure. A cow skull and three lower legs were found at Schagen-Muggenburg II (Therkorn 2004, 51). A deposit from Naaldwijk probably represents a double burial of the 'skull-and-three-legs' deposit, with two horse skulls, six lower legs and a series of vertebrae (fig. 16; Groot 2008c, 187).

An interesting phenomenon occurring in deposits of skull and lower legs is that often one or more legs are absent. This is not simply a result of elements being accidentally removed during excavation; in that case, at least some of the smaller bones of the missing leg would be present. The recurrent pattern of missing legs is an argument against an interpretation as butchery waste. It also makes it less likely that the skull and lower limbs represent animal skins.

There is also a series of finds of one or more lower limbs without skulls. An example of a deposit of all four lower limbs is from Tiel-PH, where four horse lower legs were buried without a skull. A single right lower back leg from a young horse was buried in a ditch surrounding an Early Roman house at Tiel-PH. A front leg of a horse, complete from the radius down, was found in a ditch at Geldermalsen together with the phalanges of a second leg. The ditch was part of a ditch structure where several other remarkable finds were encountered, including a concentration of burned cereals (barley, emmer wheat and oat), three brooches, a piece of La Tène glass, two pots and several pieces of stone (Van Renswoude 2009a, 95). Two front legs of a horse were found together at the settlement of Rijswijk-De Bult (Clason 1978, 426). A deposit of three lower legs of a horse was found in a pit at Schagen-Muggenburg I (Therkorn 2004, 24). Articulated horse legs were also deposited at sites in Midden-Delfland (Van Londen 2006, 131, 150).



Fig. 17 Burial of a horse at Naaldwijk. The lower legs are absent (photo: ADC).

Further evidence for the manipulation of (lower) limbs is found in animal burials. Several lower limbs were missing from horse burials at Druten (see below), as was the right lower forelimb of a calf buried in Midden-Delfland (Van Wijngaarden-Bakker 1996, 20, 23). In a horse burial from Naaldwijk, all four lower legs of a 12-month-old horse were absent (Groot 2008c, 184; fig. 17). In a second horse burial at Naaldwijk, the front legs were missing but some smaller bones are present. Since the humeri are damaged, it is almost certain that the front legs were accidentally removed during excavation. This is clearly different from the first horse, where no bones from the lower limbs were present at all and no damage to the other limb bones was observed. Missing foot bones in a horse burial have also been noted for Schagen-Muggenburg I (Therkorn 2004, 24). A possible explanation for missing limbs in otherwise complete animal burials is that elements have been removed for bone working, although the author also considers the possibility that excavation methods are responsible for the missing bones (Lauwerier 1988, 107). While

metapodials of horse and cattle were certainly used for making artefacts, they are frequently found intact among refuse in rural settlements. It seems unlikely that they were removed from an animal that was buried when so many were routinely discarded during butchery. An additional argument supporting a symbolic explanation is a dog burial from Schagen-Muggenburg I, where seven toes had been cut off (Therkorn 2004, 24).

7.3 Arranging skeletal elements within a deposit

Unequivocal evidence for arranging of skeletal elements is uncommon but it is found in several deposits. A convincing example is a burial of a sheep at Tiel-PH, where the sheep's head was removed and replaced by the jaws of a calf (fig. 18). The sheep's head was found near the back end of the skeleton, together with remains from two neonatal lambs. The dog buried in the lower half of an amphora at Tiel-PH provides another example of the arranging of elements within a deposit. The crossed legs of the skull-and-lower-legs deposit from Geldermalsen seem to be deliberately arranged (fig. 5), as do the legs from two other deposits, which are lying parallel with all feet pointing in the same direction (figs. 14 and 15). Two horse skulls in a pit at Tiel-PH were lying parallel to each other, leaving most of the pit empty. They seem to have been deposited in a deliberate manner. The mandibles from one of the skulls were found at the other side of the pit. The horses were of a similar age (younger than 2.5 years), which could indicate deliberate selection of animals for burial.



Fig. 18 Burial of a sheep at Tiel-Passewaaijse Hogeweg. The sheep's head has been replaced by the jaws of a calf (photo: ACVU-HBS).

The possibly deliberate arrangement of horse skeletal elements was also encountered at Naaldwijk (Groot 2008c, 187). Two skulls and mandibles, six lower legs and cervical and thoracic vertebrae were placed in a ditch. The arrangement looks deliberate, with the skulls touching and flanked by a line of vertebrae on one side and metapodials on two of the other sides (fig. 16). At two sites in Midden-Delfland, legs had been removed from cattle and buried next to the body. Further evidence of manipulation may be identified in the deposit of a stork where the head and several other elements were removed (Van Londen 2006, 64, 70, 131).

7.4 Animal deposits in farmhouses and house ditches

In some cases there is a clear association between a special animal deposit and a farmhouse. A cattle skull was found in a ditch surrounding a Late Roman house at Tiel-PH. This complete skull does not seem to have been thrown in the ditch, but was positioned so that it looked toward the house (fig. 19). The ditch also contained animal bone refuse. Just outside the other Late Roman house, a horse skull-and-lower-legs deposit was found. A ditch surrounding an earlier house contained two dog burials, one of which was associated with large pottery sherds (see below; fig. 20). Deposits of a concentration of horse bones and a dog skull were located close to two other houses from the same period. A single lower leg of a horse was found in the ditch of an Early Roman house. Another find in a house ditch from this period is a deposit of articulated remains of sheep. It is unlikely that the deposit represents rubbish since no other bone refuse was found in the ditch. A large quantity of pottery was found nearby. This kind of refuse has been connected with abandonment rituals (Gerritsen 2003, 97). A combination deposit of a complete sheep and a calf's head (see below) was located close to a farmhouse. Figure 21 shows the distribution of special animal deposits in phase 2 at Tiel-PH. The three special deposits that are interpreted as ritual are all associated with houses. The only deposit from Geldermalsen that could be directly associated with a farmhouse is that of a concentration of horse ribs. Butchery marks on the ribs indicate that these are consumption waste. This, however, does not imply that the deposit could not have been meaningful.

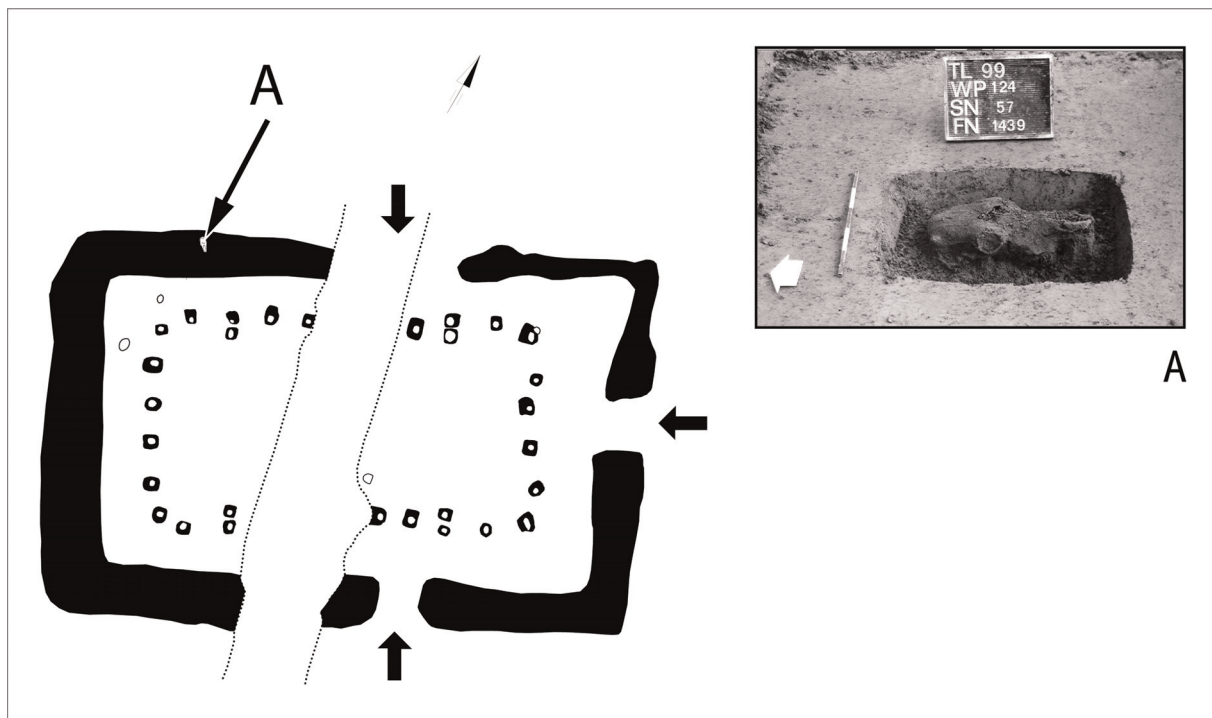


Fig. 19 Cattle skull found in a house ditch at Tiel-Passewaaijse Hogeweg (illustration: Jan van Renswoude, ACVU-HBS).

An example from another site in the Dutch river area is the settlement of Druten, where four pits containing complete or partial horse skeletons were found associated with late 1st-century farmhouses (Lauwerier 1988, 104-105). Two of the pits were located next to the entrance of a house. Only one of the horses was complete. One of the skeletons was missing all lower limbs, another both forelegs and the left lower hind leg, and of the last animal, only the back half was present (with the left hind lower leg missing). It is not entirely certain whether these parts were lost due to bad preservation or were removed intentionally, for instance for bone-working

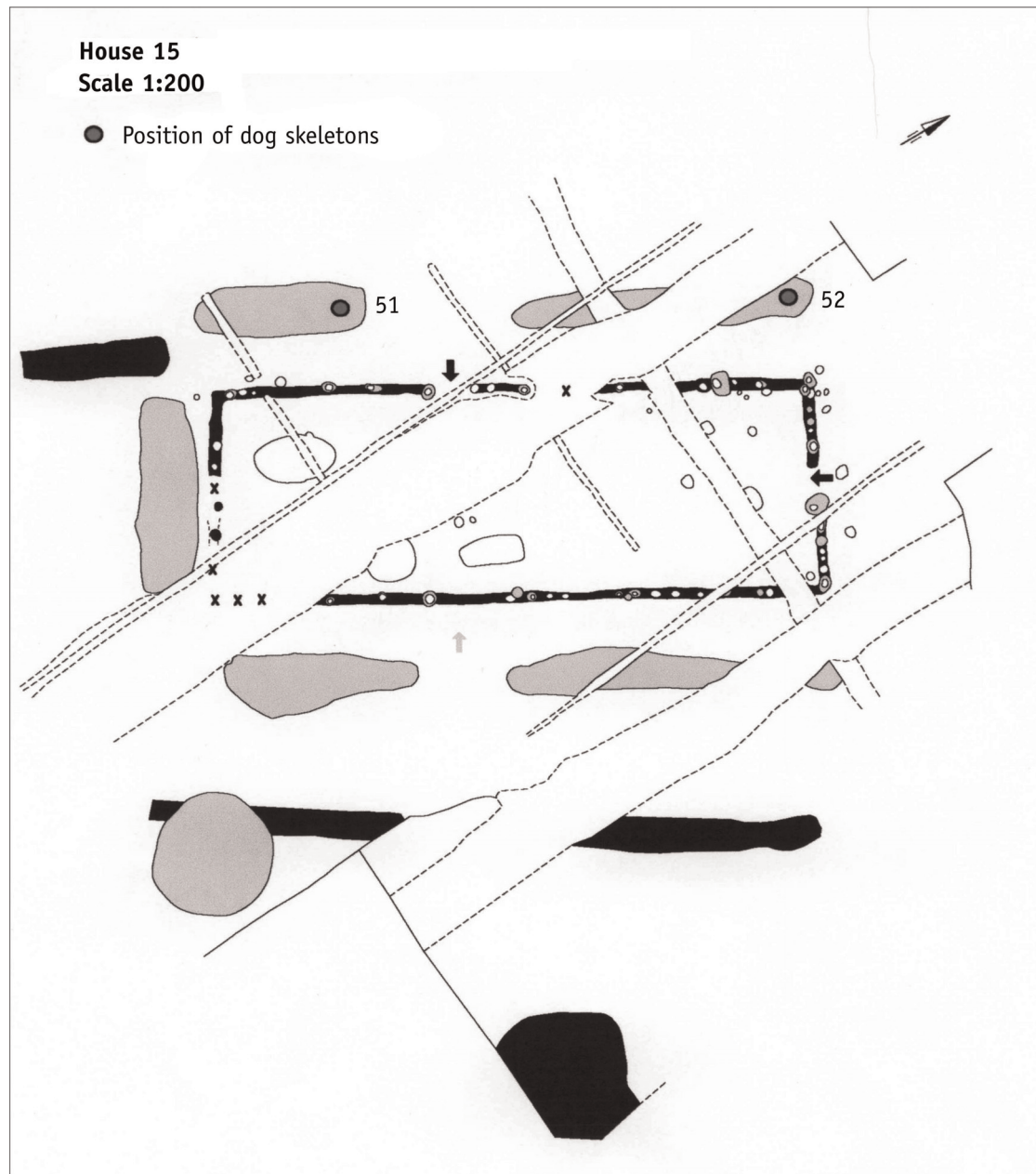


Fig. 20 Plan of a farmhouse with two dog burials in the surrounding ditch. Tiel-Passewaaijse Hogeweg (illustration: Jan van Renswoude, ACVU-HBS).

(Lauwerier 1988, 107). A dog at Tiel-Bedrijvenpark (Medel site 6) was buried in a pit next to an Early Roman house ditch (Groot 2005, 63).

Animal burials are also associated with houses outside the Dutch river area. In an Iron Age site at Ezinge, the skulls of a horse, cow and dog were found next to the outer wall of a farmhouse. This find was interpreted as a foundation deposit (Van Giffen 1963, 246-248). In Wijster (Drenthe) burials of horses and cattle could be linked to houses and granaries. Preservation was not good at this site, so there is very little information on the burials (Van Es 1967, 114-117, 371, 374, 376). A cattle burial was also related to a house at Heeten (province of Overijssel; Lauwerier *et al.* 1999, 180). At Schagen-Muggenburg I and Midden-Delfland site 01.17 dogs were buried close to farmhouses (Therkorn 2004, 24; Van Londen 2006, 27). At Schagen-Muggenburg III a complete hind leg of a horse was buried under the threshold of a house (Therkorn 2004, 47-48).

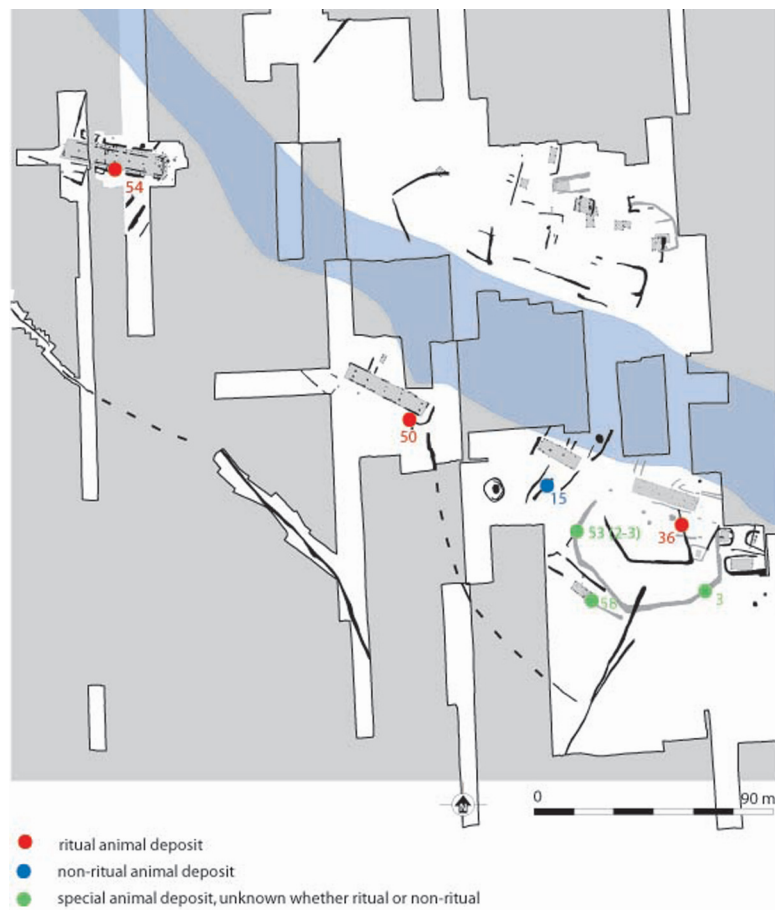


Fig. 21 Distribution of special animal deposits and their interpretation for phase 2, Tiel-Passewaaijse Hogeweg (illustration: Stijn Heeren and Bert Brouwenstijn, ACVU).

7.5 Other deposits associated with houses

Special animal deposits within or close to farmhouses should be seen in the same context as complete pots found in postholes, namely as part of a ritual related to the building, use or abandonment of the house. At Tiel, five finds from farmhouses were interpreted as foundation deposits. All were complete pots and in one case two pots and a coin (fig. 22). Four of the five deposits were placed in one of the main postholes and one in a ditch outside the main entrance. A concentration of silver coins was found in a corner posthole. The coins were interpreted as a hoard and not a foundation deposit, since the latter are usually of little value (Heeren & Van Renswoude 2006, 215, 219, 225, 229, 234, 246-247; Aarts 2007, 126-127). In contrast to Tiel-PH, deposits from farmhouses are not found at Geldermalsen. A complete strainer from the core of a posthole of an Early Roman granary is interpreted as an abandonment deposit (Van Kerckhove 2009, 157). Two pots were buried in the upper fill of Late Iron Age postholes, suggesting that these are also abandonment deposits (Van Kerckhove 2009, 191). The postholes could not be associated with buildings, but are likely to have belonged to small granaries.

Animals or animal parts do not seem to have been deposited as house offerings in Midden-Delfland. Foundation deposits in that region were placed in the north-eastern corner of the house and include a willow wreath and a metal object that could be a curved knife or a horse-shoe. A Mesolithic flint core was buried in a wall ditch, resting on top of a complete coarse ware lid. An example of a deposit from a house ditch is an iron shoe of an ard (Van Londen 2006, 36, 147-149). At Schagen-Muggenburg III an inverted pot was found under the threshold

of a house entrance, while the hearth was built over three partial cooking pots which were placed in a row (Therkorn 2004, 48-49).

Foundation deposits are usually found at the base of postholes, in wall ditches and near the entrance of the house. Gerritsen suggests that they generally consist of complete pottery vessels, but Van Londen's and Therkorn's studies have shown their variability (Gerritsen 2003, 63-65; Van Londen 2006; Therkorn 2004). A recent study claims that the contents and location of house deposits varies according to the region (Van Hoof 2007). Deposits made during the habitation of the house are so-called site maintenance practices. When habitation of the house ended, abandonment deposits could be made. These typically consist of pits filled with large quantities of refuse (Gerritsen 2003, 97-102). Gerritsen mentions the use of organic material as a possible explanation for the relative paucity of foundation deposits in his study area (Gerritsen 2003, 64-65). It has indeed been suggested that it is the contents of the complete pots that are the real offering (Gerritsen 2003, 64); these are seldom preserved. A find from Schagen-Muggenburg I supports this idea; while not associated with a house, a near complete pot contained the edible seeds of orach and chickweed (Therkorn 2004, 35).

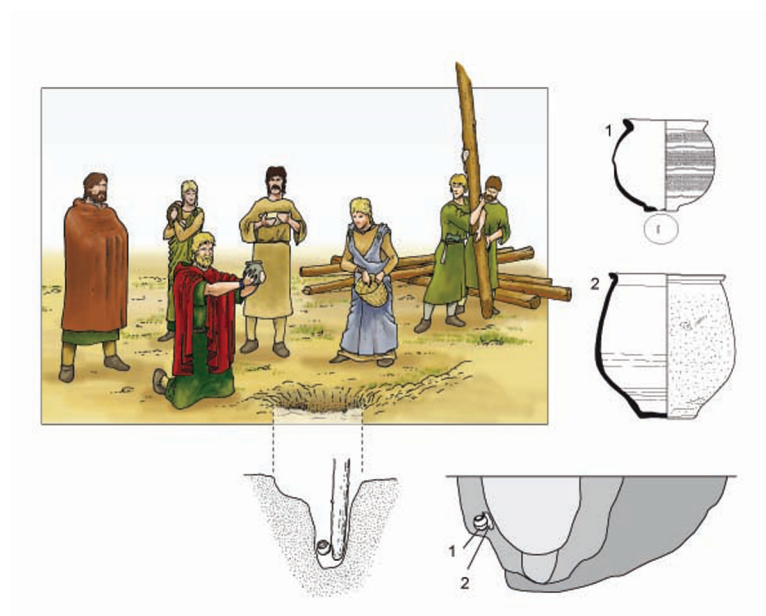


Fig. 22 Foundation deposit from Tiel-Passewaaijse Hogeweg and a reconstruction of the moment when the pots were buried (illustration: Mikko Kriek, ACVU-HBS).

7.6 Burials and deposits in enclosure ditches

Special animal deposits are often found in settlement enclosure ditches. Skeletons of a cow, a dog, a red deer, a combination deposit of a complete dog and a horse skull, several horse skulls and one dog skull were all recovered from Middle and Late Roman enclosure ditches at Tiel-PH (fig. 23). The skull and mandibles of a ram were found in the eastern enclosure ditch of Geldermalsen phase 4, right across from the main entrance point to the settlement (fig. 24; Groot 2009, 392). Other finds from enclosure ditches include a skeleton of a piglet, two cow skeletons, two dog skeletons and a horse skull. The animal deposits are not confined to corners or entrances. It may be that marking the boundary between settlement space and outside space was one of the aims. The horse skull from Geldermalsen (fig. 4) was found in a ditch surrounding a farmyard for which the percentage of horse bones was relatively high. A specialisation in



Fig. 23 Distribution of special animal deposits and their interpretation for phase 7, Tiel-Passewaaijse Hogeweg (illustration: Stijn Heeren and Bert Brouwenstijn, ACVU).



Fig. 24 Skull of a ram found in the enclosure ditch of Geldermalsen-Hondsgemet (photo: ACVU-HBS).

horse breeding was suggested for the family inhabiting this house; in that case, the choice of animal for the deposit reflects the livelihood of the family.

At Heeten, horse and cattle burials were related to enclosure ditches by orientation and proximity. A burial of a red deer was located just outside the enclosure and therefore associated

with the natural world outside the settlement (Lauwerier *et al.* 1999, 180-181, 186). Two animal burials are interpreted as having marked the entrance to the settlement; the others are seen as site sacrifices, demarcating or confirming the enclosure of the settlement. A similar interpretation is given for two complete pots in a pit in the south-western corner of the enclosure (Lauwerier *et al.* 1999, 186).

A region where animal deposits have also been linked with enclosures is Midden-Delfland. Animal burials were often present at the boundaries of settlement space. A revealing result of the excavation methods of the large-scale research in this area – ditches were followed into the surrounding land and complete field systems could thus be reconstructed – is that special deposits also occur in isolated locations. Three cattle burials were found in the middle of a field system. A cluster of pits containing several special animal deposits was located between two settlements (Van Londen 2006, 70, 85, 131). At Geldermalsen a skull-and-lower-legs deposit was also found in a field ditch outside the settlement.

Coin finds from Geldermalsen can also be related to enclosure ditches, with a concentration of coins found in the western corner of the settlement enclosure and a high number of coins deposited on one side of the entrance to the settlement (Aarts 2009, 293, 296). While coins may have a higher chance of being lost along roads and at settlement entrances, this does not explain their concentration on one side and near absence on the other side of the entrance. Entering or leaving the settlement was clearly associated with ritual practices. Apart from coins and animal deposits, complete pots are also found in ditches at Geldermalsen (Van Kerckhove 2009, 183). A complete coarse ware pot was also found in the main ditch of a field system in Midden-Delfland site 01.23, opposite the farmhouse, and interpreted as a ritual deposit (Van Londen 2006, 36).

7.7 *Combination of animal remains with other finds*

In some deposits animal remains are buried with other finds, such as metal objects and pottery. Two complete bronze brooches were found with a horse burial at Tiel-PH. Their location and the fact that the brooches were intact and closed suggest that the horse was covered by a piece of cloth which was fastened by the brooches. A parallel is known from Oosterhout, where dismembered parts of a horse seem to have been wrapped in a cloth held together by a brooch (Van den Broeke 2002, 16; 2004, 8). Another remarkable deposit from Tiel-PH is that of a horse skull, a complete crow and an iron knife, all buried in a pit (fig. 25). In a settlement at Beuningen a large 7-year-old male horse was buried with its head gear. This burial was explained as a possible offering to the gods from a grateful veteran soldier (Van der Kamp & Polak 2001, 23, 25). At Den Haag-Wateringseveld a horse burial was associated with a large fragment of a quern stone (Nieweg 2009, 307-308; fig. 26). Two deposits of combinations of horse remains and other finds are known for the Roman period in Midden-Delfland where the hind legs of a foal were deposited with an unbaked axe-shaped clay object and, at another location, the hind legs of a horse were associated with several wooden pegs (Van Londen 2006, 131, 150).

In Tiel-PH there are two known examples of dogs found associated with pottery. One dog was placed on top of the bottom of a vessel that was already broken and incomplete when it was buried; the dog was not placed inside it (fig. 27). Although the dog's head and feet were missing, the presence of a single phalanx and damage to the lower tibiae make it likely that these parts were accidentally removed during excavation. A second dog was found close to the first one. Another association of a dog with pottery is known from Tiel-PH, but in this case the dog was lying partly on top and partly next to some large sherds (fig. 28). Again, a second dog was buried close to the first; both were buried in house ditches.

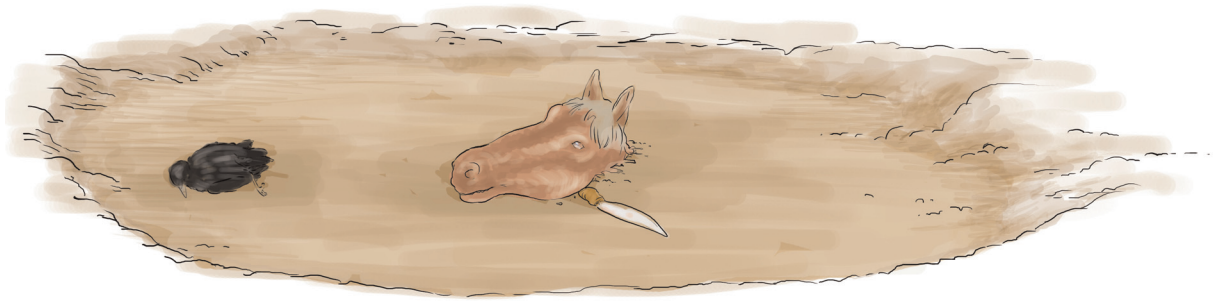


Fig. 25 Impression of special animal deposit of a horse's head buried with a crow and an iron knife, Tiel-Passewaaijse Hogeweg (illustration: Mikko Kriek, ACVU-HBS).



Fig. 26 Horse buried with a large fragment of a quern, Den Haag-Wateringseveld (photo: Gemeente Den Haag, Afdeling Archeologie).

Dogs buried with pots are also known outside the Dutch river area. In Midden-Delfland site 01.23 a dog skeleton was deposited in a ditch next to a partial Belgic ware pot (Van Londen 2006, 40, 43). The otherwise clean ditch and scattered bones were seen as indications that this was a ritual deposit in a ditch that was carrying water. In another site in this area, the skull and forelegs of a young dog were deposited in a pit in the southwestern corner of the main settlement area together with a partial native ware pot (Van Londen 2006, 119). In the terp De Leege Wier at Englum, Groningen, dog remains were found under a pot that was placed upside down (Nieuwhof 2007, 222-223; Prummel 2007, 152-153). The remains probably represent a dog skin since only skull, feet and tail were recovered, together with three ceramic game counters. A second pot contained an intriguing mix of pottery, animal bones, stone, manure and part of a dog coprolite. The two pots were found in a long pit or ditch dating to the 1st century AD. A similar feature, dated to the 1st century AD and with a similar orientation, was located close to this pit or ditch, suggesting an approximate contemporaneity. In it remains of a cod were deposited between sherds of three pots, possibly complete when buried (Nieuwhof 2007, 226-227). The cod was not complete, only the middle (meatiest?) section was present. A single cod fragment was also present in the feature with the dog skin and two pots. Cod was not found in other features (Prummel 2007, 153).



Fig. 27 Dog buried on the bottom half of a vessel. Tiel-Passewaaijse Hogeweg (photo: ACVU-HBS).



Fig. 28 Dog buried with large sherds of pottery at Tiel-Passewaaijse Hogeweg (photo: ACVU-HBS).

At Heeten, the head and three lower limbs of cattle were found in a posthole together with a large fragment of a pot (Lauwerier 1999, 186). In Midden-Delfland a complete coarse ware pot

in the deposits of a muddy pool close to a farmhouse contained the remains of three geese (Van Londen 2006, 144). Only the bones carrying flesh were present (Groot 1998). This could be seen as a pot of food or food remains. A comparable find is published for Schagen-Muggenburg I, where the remains of a lamb were deposited in the base of a broken pot. It shows the active collecting of consumption waste and the secondary use of a broken pot (Therkorn 2004, 36).

An Early Roman concentration of sheep bones (skull and at least three legs) from Geldermalsen was located close to a deposit of three loomweights. Although it is not certain whether the two pits are associated, it is tempting to link the deposits in view of the relation between species (sheep) and object (processing wool). The find of an articulated horse leg in a ditch at Geldermalsen, close to other finds including burned cereals, brooches and two pots must also be mentioned here. Human remains were not found as special deposits at Tiel-PH, but at Geldermalsen a dog skeleton was deposited close to a human skull.

An association between an animal deposit and other finds is rare for any site but the resemblance between some of the deposits is striking. The presence of other finds in or near special animal deposits points to the selection of both animal and object and to deliberate burial.

8 Discussion

Special animal deposits are present throughout the Netherlands at sites from the Roman period. They show a large variety, but nevertheless parallels for many deposits from the Dutch river area can be found in other regions in the Netherlands. Synthetic studies for different regions are needed to discover whether the similarities outweigh the differences. While a detailed description per site remains essential, a wider comparison is necessary to reveal patterns. Animal remains are not the only objects selected for structured deposition. Foundation deposits of complete ceramic vessels, for instance, are regularly found in postholes. Metal objects and coins are sometimes found and interpreted as hoards or votive deposits. The exceptional preservation at settlements in a peat area in the province of Noord-Holland has shown that wooden artefacts were also selected for deposition (Therkorn 2005, 36). Wells from other regions are the only places where wood has been preserved and they reveal deposition of ladders, spades and (broken) bowls.

Some patterns can be identified among the special animal deposits from the Dutch River Area and these patterns also apply to other find categories. In some cases, such as deposits in wells, it is only when we include find categories other than bone that we can interpret them. I see no reason to distinguish between a foundation offering of a pot, a coin hoard and a deposit of skull and lower limbs. All are intentional deposits that may or may not have occurred in a ritual context. Distinguishing between find categories such as pottery, metal and bone is a modern construct, what is clear is that all were used for deposition in the past. Ideally, a study of settlement rituals would include all deposits, whether of animal remains, artefacts or coins. Such an integrated approach would provide a much better insight into ritual practices in domestic contexts. The combination of finds may be even more important than the finds by themselves and even broken objects may have been used for ritual deposition (Hill 1995, 108-109, 126). Sceptics need only think of the deliberate destruction of metal finds in votive deposits, for instance at the cult place at Kessel/Lith (Roymans 2004, 108, 133-34). It is not far-fetched to assume that things selected for deposition in settlement rituals were also destroyed. A pot could be broken, an animal killed, and cereals burned.

It is obvious that it was everyday objects that were selected for ritual deposition, namely pottery, bones and ladders. Archaeologists should use this as a clue to the nature of the ritual instead of seeing this overlap between ritual and daily life as a problem (Bradley 2005, 36). Some of the finds from wells – wagon wheels and plough shares – may be related to the practice of depositing objects in bogs in north-western Europe in the same period, where wagon

wheels and ards are relatively common (Bradley 2005, 82-85). Further studies of finds from settlements and combinations of finds are clearly needed to identify meaningful patterns.

The three rural temples in the Dutch river area demonstrate that the people inhabiting this area practised religion in a Roman way. This is supported by finds of statuettes of Roman gods and altars dedicated by Batavians. Religion was expressed in a different way in the villages where they lived. Animals, artefacts, wood and cereals were buried or deposited at meaningful locations. The intention behind some of these deposits may have been to communicate with supernatural powers. However, Bradley argues that not all rituals reflect religious beliefs (2005, 33). Several themes can be identified when it comes to the reasons and beliefs behind the deposits of animal remains and other objects. The life cycle of farmhouses and wells was punctuated by ritual practices. Foundation deposits and abandonment deposits can be recognised for both farmhouses and wells. Site maintenance practices are harder to identify. Bradley suggests that the intention behind offerings of living matter (human or animal remains and food) was to animate the newly built house (2005, 52). The location of many deposits in or near enclosure ditches indicates that marking boundaries, perhaps with the intent of protecting those within, was also important. Seasonality and the marking of time is believed to have been important in settlement rituals in Noord-Holland (Therkorn 2004). The fertility of livestock and crops must have been surrounded by rituals but so far there is little concrete evidence for this among the special deposits from the Roman Netherlands.

In the past, studies of ritual practice have focused on cult places and cemeteries. While complete animal skeletons have received some attention, they and other deposits have not been subjected to systematic studies. This fits in with the supposition that ritual should be separated from daily life and also makes for easy interpretations. Considering the increasing emphasis on the interrelationship between ritual and daily life, settlement rituals deserve much more attention. Despite the complications involved in identifying the meaning behind the deposition of organic remains and objects, it should at least be possible to recognise intentional deposition.

9 Conclusion

In this paper I have attempted to draw attention to what I believe are repeated patterns in special deposits of animal and other remains in settlements. My aim was not to provide an exhaustive list of deposits. I have discussed some examples from a number of sites and of various material categories in the hope of illuminating the meaning and importance of these types of deposits. I am not suggesting that all deposits mentioned denote ritual. For some we can be fairly certain that they must have a ritual inspiration, while for others it is hard to reach a definitive conclusion. Research into settlement rituals and structured deposition and into religion in general will not progress unless these special deposits are described and illustrated in publications. Since a better knowledge of rubbish dumps should allow us to distinguish better between rubbish disposal and structured deposition, clear-cut examples of disposed rubbish also deserve detailed descriptions in excavation reports, both regarding their contents and context.

Recurrent patterns that can be identified in special deposits of animal and other remains in Roman settlements are remarkable finds from wells, an association between different find categories (animal-metal, animal-pottery, pottery-metal etc.), selection or exclusion of certain skeletal elements and a relation with farmhouses and enclosure ditches. These patterns are not limited to the Dutch river area, as my examples show. The resemblance between special animal deposits and deposits of other remains provides a warning against studying deposits of different material categories in isolation. A comprehensive study of all types of deposit will be much more fruitful.

In particular, finds from wells especially deserve more attention. They are now accepted too easily as accidental losses, dumps or the result of good preservation, when circumstances sometimes clearly indicate that this is not the case, or unlikely. A close examination of finds may reveal patterns in which objects are found in, or excluded from, wells. This may help us understand the process of construction, use and abandonment, and any rituals that accompanied these moments. Like farmhouses, wells seem to have had their own biographies.

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References

- Aarts, J.G. 2007, Romeins geld: ritueel en de markt in een Bataafse gemeenschap. In: N. Roymans, T. Derks & S. Heeren (eds), *Opgravingen te Tiel-Passewaaij. Een Bataafse plattelandsgemeenschap in de wereld van het Romeinse rijk*, Utrecht (Matrijs), 115-130.
- Aarts, J.G. 2009, Romeins geld in Geldermalsen-Hondsgemet. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 287-302.
- Boersma, J.W. 1980, Bij het graf van twee paarden en een hond, *Bulletin Vereniging Vrienden van het Groninger Museum* 5, 2-4.
- Bogaers, J.E. 1955, *De Gallo-Romeinse tempels te Elst in de Over-Betuwe*, Den Haag (Nederlandse Oudheden 1).
- Bradley, R. 2005, *Ritual and domestic life in Prehistoric Europe*, London (Routledge).
- Clason, A.T. 1978, Animal husbandry and hunting at Rijswijk (Z.H.). In: J.H.F. Bloemers, *Rijswijk (Z.H.), 'De Bult' – Eine Siedlung der Cananefaten*, Amersfoort (Nederlandse Oudheden 8), 424-437.
- Cunliffe, B.W. 1993, *Fertility, propitiation and the gods in the British Iron Age*, Amsterdam (Stichting Nederlands Museum voor Anthropologie en Praehistorie).
- De Hingh, A. & E. van Ginkel 2009, *De archeologie van Den Haag*, Utrecht (Matrijs).
- Derks, T. 1998, *Gods, temples and ritual practices. The transformation of religious ideas and values in Roman Gaul*, Amsterdam (Amsterdam Archaeological Studies 2).
- Derks, T. 2002, Roman imperialism and the sanctuaries of Roman Gaul, *Journal of Roman Archaeology* 15, 541-545.
- Derks, T. & N. Roymans 2002, Seal-boxes and the spread of Latin literacy in the Rhine delta. In: A. E. Cooley (ed.), *Becoming Roman, writing Latin? Literacy and epigraphy in the Roman West*, Portsmouth, Rhode Island (*Journal of Roman Archaeology*, Supplementary Series 48), 87-134.
- Gerritsen, F. 2003, *Local identities. Landscape and community in the late prehistoric Meuse-Demer-Scheldt region*, Amsterdam (Amsterdam Archaeological Studies 9).
- Grant, A. 1984, Animal husbandry. In: B. Cunliffe, *Danebury: an Iron Age hillfort in Hampshire 2*, London (Council for British Archaeology), 496-548.
- Groot, M. 1998, *Goosebumps. The animal remains from site 21.23 ('OB') in Midden-Delfland*. MA thesis VU University Amsterdam. (unpublished)

- Groot, M. 2005, Archeozoölogie. In: S. Heeren (ed.), *Een nederzetting uit de Romeinse tijd te Tiel-Bedrijvenpark. Medel-Rotonde (vindplaats 6)*, Amsterdam (Zuidnederlandse Archeologische Rapporten 26), 53-71.
- Groot, M. 2007, Archeozoölogisch onderzoek. In: E. Blom & L. van der Feijst (eds), *Poeldijk Westhof, vindplaats B. Een inheems-Romeinse nederzetting uit de 1e tot de 3e eeuw*, Amersfoort (ADC rapport 909), 83-89.
- Groot, M. 2008a, *Animals in ritual and economy in a frontier community. Excavations in Tiel-Passewaaij*, PhD thesis Amsterdam (Amsterdam Archaeological Studies 12). (published thesis)
- Groot, M. 2008b, Rituelen op het Romeinse platteland, *Vitruvius* 1 (2), 32-38.
- Groot, M. 2008c, Archeozoölogisch onderzoek. In: L. van der Feijst, J. de Bruin & E. Blom (eds), *De nederzetting te Naaldwijk II. Bewoningssporen uit de Romeinse tijd en de Middeleeuwen*, Amersfoort (ADC-monografie), 179-188.
- Groot, M. 2009, Dierlijk bot en speciale deposities met dierlijk bot. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 355-409.
- Groot, M. in prep., Specialisation in animal husbandry at household level in two Roman rural settlements. A methodological exploration. In: J. Piro & P. Crabtree (eds), *Choice, competition, and livestock management in complex societies: negotiating risk and reward in herding practices*, Oxford (British Archaeological reports).
- Groot, M. & L.I. Kooistra in press, Land use and the agrarian economy in the Roman Dutch River Area, *Internet Archaeology* 27.
- Halstead, P. & V. Isaakidou 2004, Faunal evidence for feasting: burnt offerings from the palace of Nestor at Pylos. In: P. Halstead & J.C. Barrett (eds), *Food, cuisine and society in prehistoric Greece*, Oxford (Sheffield Studies in Aegean Archaeology), 136-154.
- Hamilakis, Y. & E. Konsolaki 2004, Pigs for the gods: burnt animal sacrifices as embodied rituals at a Mycenaean sanctuary, *Oxford Journal of Archaeology* 23 (2), 135-151.
- Hänninen, K. 2008, Het hout uit waterputten en andere contexten. In: J.A.W. Nicolay (ed.), *Opgravingen bij Midlaren. 5000 jaar wonen tussen Hondsrug en Hunzedal, deel II*, Groningen (Groningen Archaeological Studies 7/II), 423-456.
- Heeren, S. 2006, *Opgravingen bij Tiel-Passewaaij 1. De nederzetting aan de Passewaaijse Hogeweg*, Amsterdam (Zuidnederlandse Archeologische Rapporten 29).
- Heeren, S. 2009, *Romanisering van rurale gemeenschappen in de civitas Batavorum. De casus Tiel-Passewaaij*, Amersfoort (Nederlandse Archeologische Rapporten 36).
- Heeren, S. & J. van Renswoude 2006, Catalogus nederzettingenstructuren. In: S. Heeren (ed.), *Romanisering van rurale gemeenschappen in de civitas Batavorum. De casus Tiel-Passewaaij*, Amersfoort (Nederlandse Archeologische Rapporten 36), 205-313.
- Hiddink, H.A. 1994, Romeinse waterputten uit de nadagen van het heiligdom. In: N. Roymans (ed.), *De tempel van Empel. Een Hercules-heiligdom in het woongebied van de Bataven, 's-Hertogenbosch* (Graven naar het Brabantse verleden 2), 58-71.
- Hiddink, H.A. 2005, *Opgravingen op het Rosveld bij Nederweert 1. Landschap en bewoning in de IJzertijd, Romeinse tijd en Middeleeuwen*, Amsterdam (Zuidnederlandse Archeologische Rapporten 22/1).
- Hiddink, H.A. 2008, *Archeologisch onderzoek op de Groot Bottelsche Akker bij Deurne. Bewoning uit de Steentijd, IJzertijd, Romeinse tijd, Vroege en Volle Middeleeuwen*, Amsterdam (Zuidnederlandse Archeologische Rapporten 33).
- Hill, J.D. 1995, *Ritual and rubbish in the Iron Age of Wessex: a study on the formation of a specific archaeological record*, Oxford (British Archaeological Reports British Series 242).
- Hoegen, R.D. 2004, Bewoningssporen uit de periode Late IJzertijd-Romeinse tijd (250 v. Chr.-450 n. Chr.). In: C.W. Koot & R. Berkvens (eds), *Bredase akkers eeuwenoud. 4000 jaar bewoningsgeschiedenis op de rand van zand en klei*, Amersfoort (Rapportage Archeologische Monumentenzorg 102/Erfgoodstudies Breda 1), 211-271.
- Hoegen, R.D., A. Koster & H. van Enckevort 2004, Voorwerpen van metaal, glas, steen en aardewerk uit de Late IJzertijd en Romeinse tijd. In: C.W. Koot & R. Berkvens (eds), *Bredase akkers eeuwenoud. 4000 jaar bewoningsgeschiedenis op de rand van zand en klei*, Amersfoort (Rapportage Archeologische Monumentenzorg 102/Erfgoodstudies Breda 1), 359-375.
- Hulst, R.S. 1978, Druten-Klepperhei. Vorbericht der Ausgrabungen einer Römischen Villa, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 28, 133-151.
- Kooistra, L.I. 2009, Botanische materialen. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 411-457.

- Kooistra, L.I. & H. van Haaster 2001, Archeobotanie. In: M.M. Sier & C.W. Koot (eds), *Kesteren-De Woerd. Bewoningssporen uit de IJzertijd en Romeinse tijd*, Amersfoort (Rapportage Archeologische Monumentenzorg 82), 293-359.
- Kooistra, L.I. & L. Kubiak-Martens 2007, *Stad of platteland in het zuidwestelijke deel van Forum Hadriani. Resultaten van botanisch onderzoek*, Zaandam (BIAXiaal 343).
- Lauwerier, R.C.G.M. 1988, *Animals in Roman times in the Dutch Eastern River Area*, Amersfoort (Nederlandse Oudheden 12).
- Lauwerier, R.C.G.M., B.J. Groenewoudt, O. Brinkkemper & F.J. Laarman 1999, Between ritual and economics: animals and plants in a fourth-century native settlement at Heeten, the Netherlands, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 43, 155-198.
- Lauwerier, R.C.G.M. 2002, Animals as food for the soul. In: K. Dobney & D. Brothwell (eds), *Bones and the man. Studies in honour of Don Brothwell*, Oxford (Oxbow), 63-71.
- Lauwerier, R.C.G.M. 2004, The economic and non-economic animal: Roman depositions and offerings. In: S. Jones O'Day, W. van Neer & A. Ervynck (eds), *Behaviour behind bones. The zooarchaeology of ritual, religion, status and identity*, Oxford (Oxbow), 66-72.
- Lepetz, S. & W. Van Andringa 2008a, *Archéologie du sacrifice animal en Gaule romaine. Rituels et pratiques alimentaires*, Montagnac (Archéologie des Plantes et des Animaux 2).
- Lepetz, S. & W. Van Andringa 2008b, Les os et le sacrifice: problèmes de méthode. In: S. Lepetz & W. Van Andringa (eds), *Archéologie du sacrifice animal en Gaule romaine. Rituels et pratiques alimentaires*, Montagnac (Archéologie des Plantes et des Animaux 2), 11-26.
- Lepetz, S. & P. Ménériel 2008, Les dépôts d'animaux non consommé en Gaule romaine. In: S. Lepetz & W. Van Andringa (eds), *Archéologie du sacrifice animal en Gaule romaine. Rituels et pratiques alimentaires*, Montagnac (Archéologie des Plantes et des Animaux 2), 155-164.
- Lepetz, S., D. Pouille & F. Labaune 2008, Les dépôts alimentaires de Rennes-Condade, témoignages de rituels célébrés en contexte privé?. In: S. Lepetz & W. Van Andringa (eds), *Archéologie du sacrifice animal en Gaule romaine. Rituels et pratiques alimentaires*, Montagnac (Archéologie des Plantes et des Animaux 2), 125-136.
- Lewis, G. 1980, *Day of shining red: an essay on understanding ritual*, Cambridge (Cambridge University Press).
- Merrifield, R. 1987, *The archaeology of ritual and magic*, London (Batsford).
- Moore, S.F. & B.G. Meyerhoff 1977, *Secular ritual*, Assen & Amsterdam (Van Gorcum).
- Nieuwhof, A. 2007, Restanten van rituelen. In: A. Nieuwhof (ed.), *De Leege Wier van Englum. Archeologisch onderzoek in het Reitdiepgebied*, Groningen (Jaarverslagen van de Vereniging voor Terpenonderzoek 91), 187-248.
- Nieweg, D.C. 2009, Archeozoölogie. In: H. Siemons & J.J. Lanzing (eds), *Bewoningssporen uit de Romeinse tijd in het Wateringse Veld*, Den Haag, Den Haag (HOP 11).
- Prummel, W. 1993, Paarden en honden uit vroeg-middeleeuwse grafvelden. In: E. Drenth, W.A.M. Hesling & E. Knol (eds), *Het tweede leven van onze doden*, Amersfoort (Nederlandse Archeologische Rapporten 15), 53-60.
- Prummel, W. 2007, Dieren op de wierde Englum. In: A. Nieuwhof (ed.), *De Leege Wier van Englum. Archeologisch onderzoek in het Reitdiepgebied*, Groningen (Jaarverslagen van de Vereniging voor Terpenonderzoek 91), 116-159.
- Prummel, W. & W.A.B. van der Sanden 1995, Runderhoorns uit de Drentse venen, *Nieuwe Drentse Volksalmanak* 112, 84-131.
- Roymans, N. 2004, *Ethnic identity and imperial power. The Batavians in the Early Roman Empire*, Amsterdam (Amsterdam Archaeological Studies 10).
- Roymans, N. & T. Derks 1994, Het heiligdom te Empel. Algemene beschouwingen. In: N. Roymans (ed.), *De tempel van Empel. Een Hercules-heiligdom in het woongebied van de Bataven, 's-Hertogenbosch* (Graven naar het Brabantse verleden 2), 10-38.
- Roymans, N., T. Derks & S. Heeren 2007, *Opgravingen te Tiel-Passewaaij. Een Bataafse plattelandsgemeenschap in de wereld van het Romeinse rijk*, Utrecht (Matrijs).
- Seijnen, M. 1994, Dierebotten en rituele maaltijden. In: N. Roymans (ed.), *De tempel van Empel. Een Hercules-heiligdom in het woongebied van de Bataven, 's-Hertogenbosch* (Graven naar het Brabantse verleden 2), 162-173.
- Therkorn, L.L. 2004, *Landscaping the powers of darkness and light. 600 BC-350 AD settlement concerns of Noord-Holland in wider perspective*. PhD thesis University of Amsterdam. (unpublished)
- Van den Broeke, P. 2002, *Vindplaatsen in vogelvlucht. Beknopt overzicht van het archeologisch onderzoek in de Waalsprong 1996-2001*, Nijmegen (Archeologische Berichten Nijmegen, Rapport 1).
- Van den Broeke, P. 2004, *Rituelen in de Waalsprong*, Nijmegen (Ulpia Noviomagus 9).

- Van der Kamp, J.S. & M. Polak 2001, *Archeologisch onderzoek aan de Molenstraat te Beuningen (1997-1998)*, Amersfoort (Rapportage Archeologische Monumentenzorg 92).
- Van Enckevort, H. 2004, Het gedraaide aardewerk uit de Romeinse tijd. In: C.W. Koot & R. Berkvens (eds), *Bredase akkers eeuwenoud. 4000 jaar bewoningsgeschiedenis op de rand van zand en klei*, Amersfoort (Rapportage Archeologische Monumentenzorg 102/Erfgoedstudies Breda 1), 281-357.
- Van Es, W.A. 1967, Wijster, a native village beyond the imperial frontier 150-425 AD, *Palaeohistoria* 11, PhD thesis Groningen (J.B. Wolters).
- Van Giffen, A.E. 1963, Het bouwoffer uit de oudste hoeve van Ezinge (Gr.), *Helinium* 3, 246-253.
- Van Hoof, L. 2007, Variaties op een rechthoek. Huizenbouwtradities en huisoffers in Romeins Nederland. In: R. Jansen & L.P. Louwe Kooijmans (eds), *Van contract tot wetenschap. 10 jaar archeologisch onderzoek door Archol BV, 1997-2007*, Leiden (Archol), 255-270.
- Van Kerckhove, J. 2009, Aardewerk. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 115-192.
- Van Londen, H. 2006, *Midden-Delfland. The Roman native landscape past and present*. PhD thesis University of Amsterdam. (unpublished)
- Van Renswoude, J. & J. Van Kerckhove (eds) 2009, *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35).
- Van Renswoude, J. 2009a, Sporen en structuren. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 85-114.
- Van Renswoude, J. 2009b, Synthese. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 459-475.
- Van Renswoude, J. 2009c, Metaal. In: J. van Renswoude & J. Van Kerckhove (eds), *Opgravingen in Geldermalsen-Hondsgemet. Een inheemse nederzetting uit de Late IJzertijd en Romeinse tijd*, Amsterdam (Zuidnederlandse Archeologische Rapporten 35), 231-286.
- Van Wijngaarden-Bakker, L.H. 1996, *Zoöarcheologisch onderzoek I. Midden-Delfland – vindplaatsen 19.07, 20.17, 16.55, 5.01/02*, Amsterdam (Westlandproject rapport 5).
- Vos, W.K. 2009, *Bataafs platteland. Het Romeinse nederzittingslandschap in het Nederlandse Kromme-Rijngebied*, Amersfoort (Nederlandse Archeologische Rapporten 35).