

The biography of wells: a functional and ritual life history

Martijn van Haasteren and Maaïke Groot



Review data
Submission: 15/2/2012
Revision: 24/8/2012
2nd submission: 22/12/2012

available online at www.jalc.nl and www.jalc.be

Abstract

This article discusses the lifecycle of wells in Late Iron Age and Roman settlements in the Netherlands. This lifecycle consists of different phases: construction, taking into use, the period of use, abandonment, and the period after abandonment. During these phases different kinds of objects can enter a well. This can happen in two ways: as a result of functional use or when objects are placed in wells during rituals. It is important to understand the 'normal' pattern of finds associated with the functional side of wells to be able to distinguish between lost items, rubbish and ritual deposits.

By discussing 'special' deposits in wells from Dutch archaeological sites it becomes clear that the location of the deposit within the well is related to the moment within the well's life. There are indications that the phases of a well's lifecycle were marked by rituals. By combining the functional and ritual aspects connected to a well it is possible to write a biography of the well.

The analysis of finds from wells is an important contribution to the discussion about the existence of a division between functional and ritual practices, since both can be recognised in wells.

Keywords: well, biography, lifecycle, Roman, Iron Age, Netherlands, ritual, rubbish, well construction, abandonment

1. Introduction

A worn shoe sole was found in the fill of a well in a Roman settlement near modern Venray (fig. 1). It was interpreted as waste that entered the well when it was filled after abandonment. A second shoe sole was found in the pit dug for the construction of the same well. The location and the high quality of this sole led to the interpretation that this was a building offering made during the construction (Van Driel-Murray 2000, 166). Two similar objects found in the same feature are thus interpreted in very different ways. We would like to offer an alternative interpretation: the similarity between the objects, and the fact that one entered the well during construction, and one after abandonment, suggests that both were deliberately deposited in the well during two different stages of the well's life. This paper investigates whether it is possible to write a biography of wells, as has been done for houses and landscapes (e.g. Gerritsen 2003; Kolen 2005). We will discuss the lifecycle of wells and evidence for rituals marking the various stages in this lifecycle.

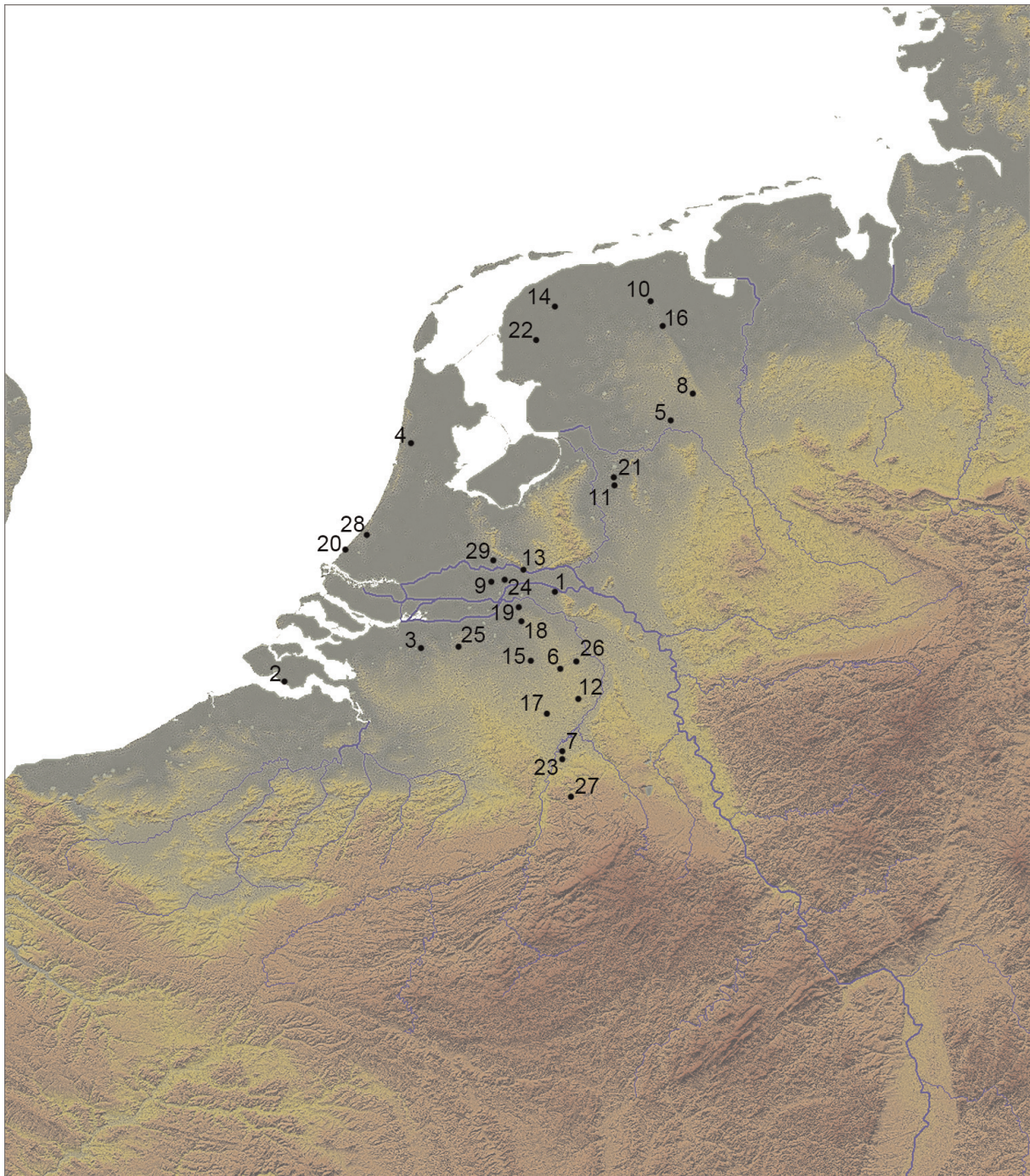


Figure 1 Location of: 1 Beuningen, 2 Borsele, 3 Breda, 4 Castricum, 5 Coevorden, 6 Deurne, 7 Echt, 8 Emmen, 9 Geldermalsen, 10 Groningen, 11 Heeten, 12 Helden, 13 Kesteren, 14 Leeuwarden, 15 Lieshout, 16 Midlaren, 17 Nederweert, 18 Nistelrode, 19 Oss, 20 Poeldijk, 21 Raalte, 22 Sneek, 23 Susteren, 24 Tiel, 25 Tilburg, 26 Venray, 27 Voerendaal, 28 Voorburg, 29 Wijk bij Duurstede, all The Netherlands.

Ritual in archaeology is still a subject that can lead to lively discussions. Some archaeologists believe that ritual is used too much as a default explanation for anything for which we cannot find a rational explanation, while others feel that, like any other human behaviour, ritual can be identified by explicit criteria (Groot 2008, 115-117; Fontijn 2003; Gerritsen 2003; Hill 1996; Levy 1982). Rituals in settlements have received less attention than rituals in 'special' contexts such as sanctuaries and cemeteries, because it is more difficult to recognise ritual behaviour among the remains of everyday life. An early exception is a study by Van den Broeke (1977) which focused on construction or foundation offerings. Later he described deposits of burned material

as evidence for abandonment practices (Van den Broeke 2002). Gerritsen (2003) discussed special deposits, foundation offerings and abandonment deposits to create a biography of houses. This biography includes rituals that marked the construction, phase of habitation, abandonment and the phase after habitation (Gerritsen 2003, 31-105). If deposits of materials are clearly related to a house then these can be recognised by archaeologists as deposits connected to, for instance, construction rituals.

A recent paper by the second author focuses on recurring patterns in settlement rituals, and includes a short discussion of deposits in wells (Groot 2009a, 59-64). She points out that finds from wells are usually explained in functional terms. Concentrations of animal bones, especially, are seen as waste, with an abandoned well offering a useful space to dump rubbish. However, the interpretations are not always based on well-funded arguments (Groot 2009a, 50). Several examples are given that demonstrate that not all deposits can be explained in a functional way, and – without denying the use of abandoned wells as rubbish pits – that many finds from wells can be alternatively explained in a ritual way. The idea is proposed that, like houses, wells were perceived to have lifecycles, and that rituals marked the various stages of the lifecycle, such as construction and abandonment (Groot 2009a, 62). This idea was further investigated by the first author in his Master's thesis (Van Haasteren 2011). The present paper is based on these two studies, and investigates the lifecycle of wells in settlements from the Late Iron Age and Roman Netherlands. By recognising the various stages in a well's life and the possible ritual deposits connected to these stages, it is possible to write a biography of the well.

Our research questions are:

- What stages can be recognised in the lifecycle of a well?
- What kind of material remains related to the various stages of a well's life can we find in archaeological excavations?
- Do we find material remains that do not fit within the functional life history of a well? Can these be seen as ritual deposits? How can we distinguish remains of rituals from construction materials, lost items and waste?
- Can ritual deposits in wells be linked to specific rites of passage marking stages in the lifecycle?
- What is the effect of different classifications of finds on our interpretation of the deposits, and our wider understanding of rites related to wells?
- Is it possible to reconstruct the biography of a typical Late Iron Age or Roman well, including functional and ritual aspects?

First, the lifecycle of a well, and the various stages in the lifecycle, will be discussed. The model of a typical well's life will form the basis of this paper. Second, we will describe what remains and objects can enter a well with functional, non-ritual use during each stage of its life. This will be important to understand the 'normal pattern' of material remains associated with the functional side of wells. Third, we will discuss whether it is possible to distinguish ritual deposits in wells from material that was lost accidentally or dumped as rubbish. Fourth, examples of 'special' finds from wells will be given, and we will argue that these are intentional, ritual deposits related to distinct stages in the well's life. Finally, we will attempt to reconstruct the lifecycle of wells, and the rituals marking stages in the lifecycle. Approaching wells in this way will enable us to write biographies of specific wells, and come to a better understanding of the perception of wells in the past.

2. The lifecycle of a well: the functional side

Before we can look into rituals surrounding wells, it is important to understand the functional elements and life stages of a well. The following stages can be distinguished: construction, period of use, abandonment and post-abandonment. For each stage, we will discuss what

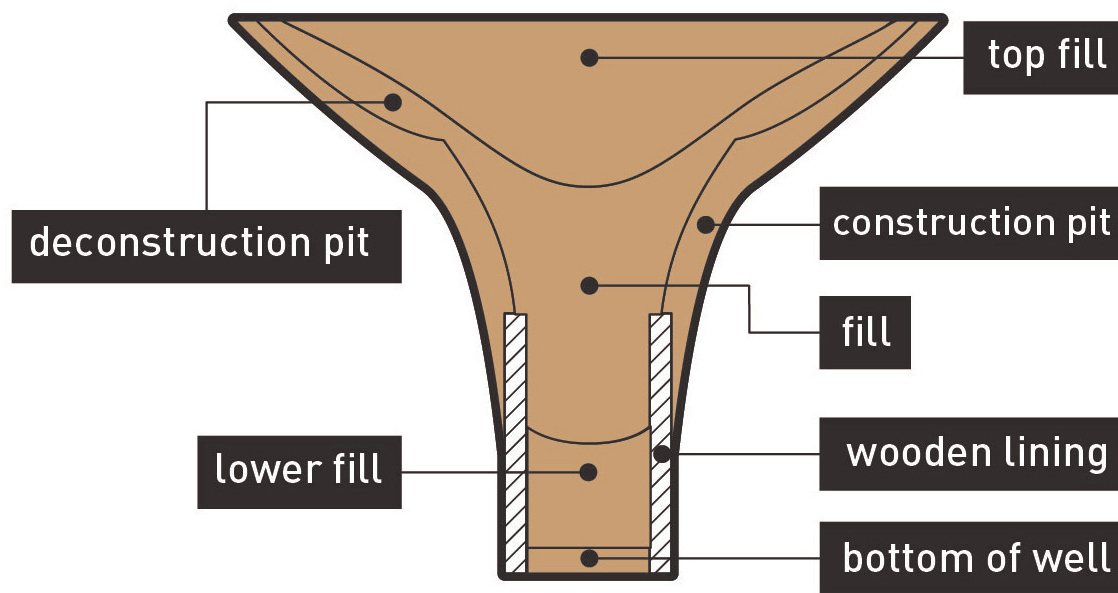


Figure 2 Schematic representation of a section through a typical Roman well (Illustration: B. Brouwenstijn).

materials can be expected to enter the well. This forms the basis for a later separation between rubbish and lost items on the one hand and ritual deposits on the other.

2.1 Construction

The construction of a well starts with the digging of a pit. When a well is lined, a wide construction pit is dug to a level below that of the water table, followed by the placing of the wooden lining and the filling of the space around the lining (fig. 2). When a well does not have a lining, a construction pit is not necessary. In that case, the pit is wide at the top and narrows towards the lower end. This way, the well acquires a funnel shape.

It is likely that the pit was dug with a spade. Examples show that digging spades from the Iron Age and Roman period were often quite narrow, comparable to modern spades (Hiddink 2005, 169). In several excavations, however, short wooden spades with a wider blade were found in wells (fig. 3; Jansen & Van Hoof 2003, 59-61; Kooistra *et al.* 2008, 41-42; Hiddink 2005, 169). Archaeologists disagree about the use of these spades. Hiddink, for instance, writes that a wooden spade from Deurne would not be strong enough to dig a deep pit in hard soil. This may have been possible if a metal edge was attached to the blade, but no evidence – such as attachment points – was found on this spade (Hiddink 2008, 185). If not for digging, this type of spade could have been used if the soil was first loosened with other tools (Hiddink 2005, 169). Contrary to Hiddink, the excavators of the site Raalte-Boetelerenk believe that the short spades found at this site would be especially suitable for digging narrow pits such as wells (Bloo *et al.* 2007, 191).

Wells are often provided with a lining to improve their stability. Various types of lining can be recognised. Schinkel has developed a classification for the linings of the wells at Oss-Ussen (Schinkel 1994). He distinguished constructions of horizontal or vertical beams and planks, hollowed-out tree trunks, wattle and reused wine barrels. This classification is useful but incomplete. Variations on the types that are mentioned exist, as well as combinations of the various types, but also entirely different types, such as layered sods or reused canoes (Sier 1999, 61; Bink & Franzen 2009, 104-106).

Another regularly recurring phenomenon in the construction of wells and water pits is the occurrence of a wooden stake at the bottom of a well. Such stakes are often pointed and driven

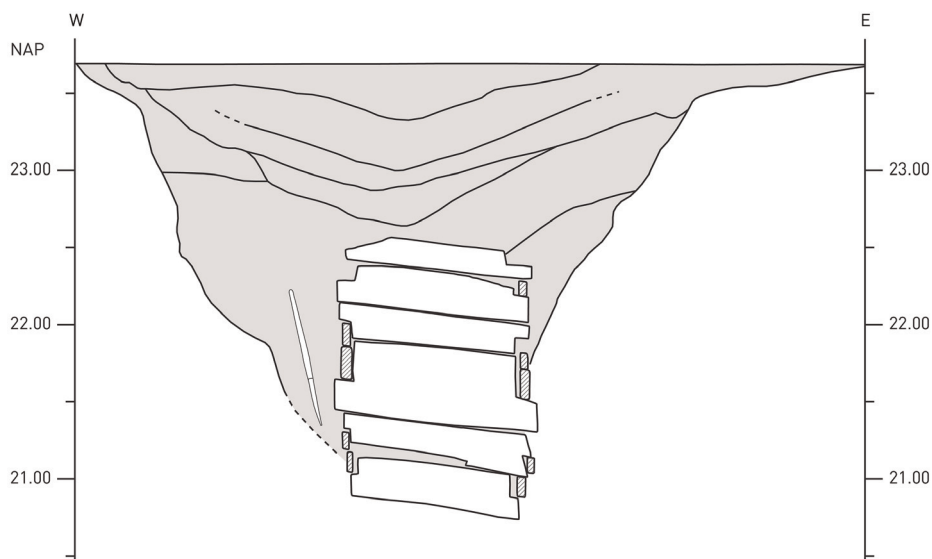


Figure 3 Wooden spade found in the construction pit of a well in Deurne (Hiddink 2005, fig. 18.41 and colour plate 13A).

through the bottom of a well at an angle (fig. 4). Schinkel believes that these 'flow stakes' guaranteed a good flow of water (Schinkel 1994, 183). However, some people have raised doubts about this proposed function. Experiments have shown that a pointed stake in the bottom of a well does not affect the rise of water at all (Jansen & Van Hoof 2003, 44; Wesselingh 2000, 200). Another possibility is that the stakes served as ladders to go down into the well (Jansen & Van Hoof 2003, 44). This also seems unlikely, since stakes are also found in narrow, deep wells, where they cannot have been used as ladders. The function of these objects thus remains unclear. However, below other explanations will be suggested.

In some wells, wagon wheels were placed horizontally on the bottom as part of the construction (Sier 1999, 61; a medieval example can be found in Hiddink 2009, 102). The hub and spokes of the wheel were removed, partly in order not to hinder the flow of water, and partly because they had iron parts and may have been greasy.

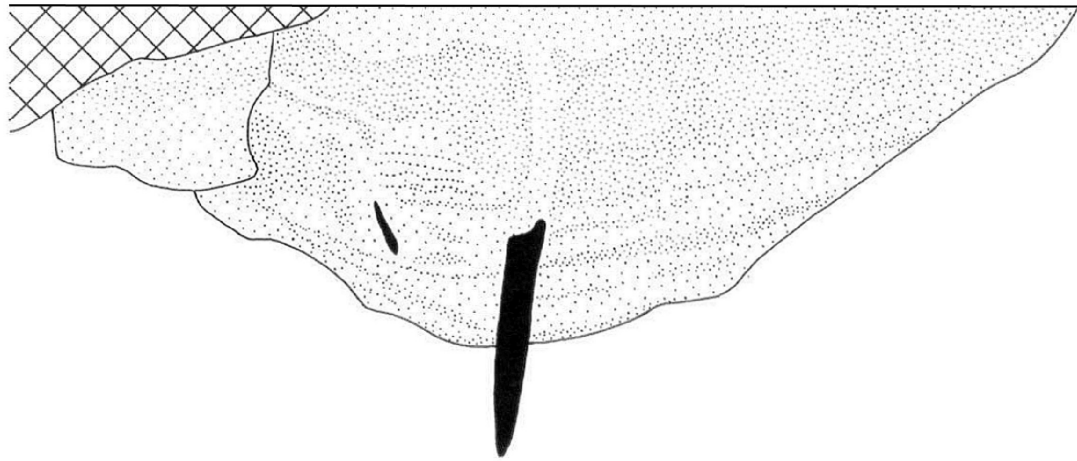


Figure 4 Section through a water pit in Oss-Ussen, showing the position of the 'flow stake' (Schinkel 1998, fig. 313).

Apart from the lining underground, constructions will often have been built aboveground. The lining itself will certainly have continued to the ground surface. Nicolay mentions historic examples where the lining was built to knee height, to prevent people and animals and probably also stray rubbish to fall into the well (Nicolay 2008, 151-152). A high lining would also have made it easier to close the well. Hiddink states that the water in wells that were not closed would quickly have become polluted and therefore less suitable for human consumption (Hiddink 2008, 100). Apart from closure with a lid some wells were protected by a well house (Bink & Franzen 2009, 99; Heirbaut & Jansen 2007, 634). Next to constructions for the protection of the water quality, constructions are also known that facilitated the drawing of water, such as pulleys and swipes.

The materials related to the construction of a well will largely consist of wood from the lining. This includes wooden planks, posts and beams, barrel staves, parts of hollowed-out tree trunks, wattle and wagon wheels (with the hub and spokes removed). The degree to which it is clear that wood belongs to the construction can vary. Often, parts of the lining will be found in their original place. In other cases, isolated pieces of wood are found in the fill, which makes it less certain that this is construction material. Furthermore, isolated pieces of wood could be so-called flow stakes, which have been described above. Finally, not only material from the construction itself can be found, but also tools that were used during the construction, such as the spades that have already been mentioned.

2.2 Period of use

After the construction of a well was completed, the period of use begins. Not only was water drawn from the well, but the well may have been cleaned regularly, and where necessary, repairs were made to the construction.

Material entering the well during this stage will mainly be related to these activities. Several types of containers could be used to draw water from the well. Objects have been found in wells that can perhaps be related to this function, such as (parts of) a bucket, metal cauldrons and other vessels, ceramic bowls, pots and jugs, and wooden bowls (Hoegen 2004, 253-255; Bink & Franzen 2009, 107-108; Vos 2002, 59; Hiddink 2005, 288-291). Of course, some vessels are more suitable for drawing water than others. For maintenance, it was necessary to go down into the well. Ladders have been found in wells at several sites (fig. 5; Kooistra & Van Haaster

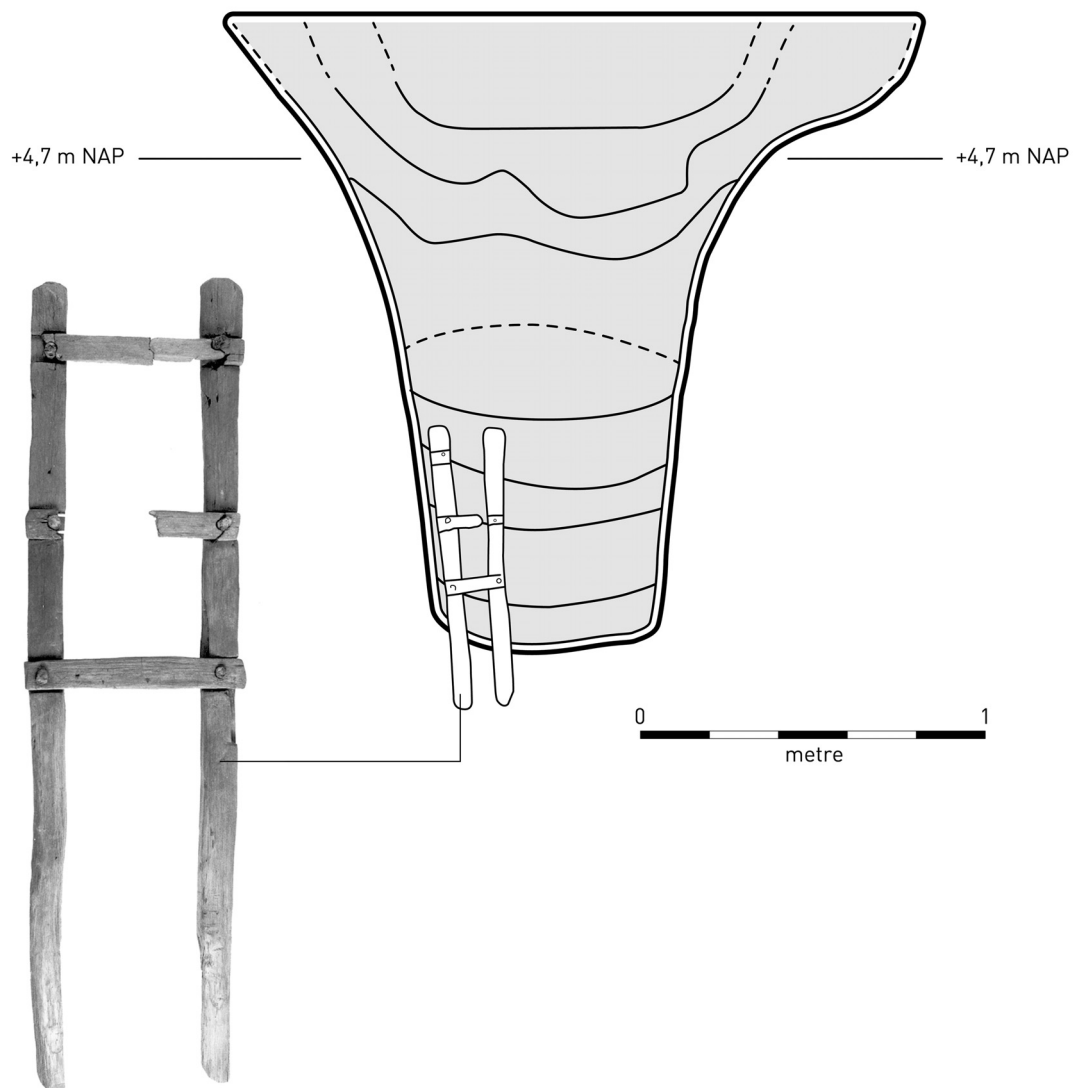


Figure 5 Ladder found in a well in Kesteren-De Woerd. The ladder was placed in the well upside down (After Siemons 2001, fig. 4.12 and Kooistra & Van Haaster 2001, fig. 10.4; adapted by B. Brouwenstijn).

2001, 327-332; Verwers 1992, 174; Hiddink 2008, 185-189). Hiddink believes that these ladders were used during cleaning of the well (Hiddink 2008, 102). The previously mentioned spades may also have been used during cleaning. Although they were less suitable for digging in hard soil, they may have been used to remove soft debris from the bottom of the well. In that case, the short handle would have been an advantage in the cramped space.

Furthermore, during the time of use, all sorts of material could have been accidentally lost in the well. We should mainly think of objects that can be lost when bending over a well to draw water, or during cleaning or making repairs, such as brooches or other personal items carried on the body. Besides loss it is also possible that some objects were deliberately placed in a well. Animal bones, for example, are sometimes placed in a well to contaminate the water in times of feuds or war (Van den Broeke, personal comment).

2.3 *Abandonment*

After a certain period of time, a well falls out of use. This can be for the simple reason that the well has dried up. Other possible reasons can be pollution of the water, or moving away of the users (Schinkel 1994 II, 180). A fourth reason is when the well construction caves in. When a well falls out of use, part of the construction, if still of good quality, may be dug up for reuse. When a well has collapsed, then it can sometimes be repaired.

When a well is no longer used, it will fill up sooner or later. This can happen in different ways, for instance slowly by natural causes, quickly by deliberate filling up, or suddenly when the well collapses. The fill layers often reveal the way in which a well is filled. The top layer of a well – the top fill – is of a later date than the rest of the fill, whether the well has filled up slowly or quickly. This is a result of the compaction of the main fill, resulting in a depression at ground level. Such a depression can last for years, but will eventually be filled up as well.

The chance of materials entering a well after it has fallen out of use is high. First of all, materials can enter the well when the construction is dug up. The most obvious examples are parts of the construction or tools, but other items can also end up in the pit. An example consists of two brooches found in a deconstruction pit in Geldermalsen (Van Renswoude & Roessingh 2009, 595). Furthermore, when the construction has been dug up, and the well is no longer closed off or protected in other ways, all kinds of stray rubbish can fall in the shaft, such as pottery sherds, animal bones, charcoal and stone. At this moment, small animals can also fall into the well. Examples are known of wells or steep-sided pits with large amounts of remains of frogs and mice that were unable to climb out of the well.

Finds can also enter the well when it is filled deliberately. This can either be accidental (stray rubbish or lost items) or on purpose. In some cases, wells were not only filled with soil, but also with rubbish. A well that has fallen out of use can be used secondarily as a rubbish pit. In that case, the shaft is also filled up with rubbish, but the filling of the well is not the primary goal; moreover, the filling up would take place over a longer period of time. Most archaeologists have no doubts about former wells being used as rubbish pits, but there is uncertainty about how to recognise a rubbish pit (Therkorn & Besselsen 2008, 243). It seems likely that a rubbish pit contains large amounts of settlement rubbish of all kinds, such as pottery sherds, building debris, stone, glass, wood and animal bones. Rubbish should be broken or fragmented and no longer of use (Groot 2009b, 390).

Finds from the top fill seem to constitute a separate category. As described above, the soil in the fill of a well is compressed over time, causing a depression on the ground surface. Such a depression will function as an artefact trap: stray rubbish will end up in the depression and remain there. This depression can exist for decades, and collect all sorts of materials. For instance, pottery from the Middle Roman period and Early Middle Ages was found in a well in Breda, which dates to the late Middle or early Late Iron Age (Berkvens 2004, 132-133). In this case, the depression lasted for centuries. Finds can also be placed in the top fill on purpose. In Geldermalsen, for example, a dog was buried in a depression left by an old well (Van Renswoude & Roessingh 2009, 596). A practical reason for this could be that it was more convenient than digging a pit, although the dog still had to be covered with soil.

In this discussion of what kinds of materials can end up in wells, a functional explanation has been the basis, and only the objects that can be expected to enter wells during normal use have been discussed. Below, we will offer an alternative explanation for many of these finds. Before we can look at more special finds from wells, and discuss whether these should be interpreted as rubbish, accidental loss or as ritual deposits, we must discuss how we can make this distinction.

3. Rubbish, loss or ritual

As we have seen, different kinds of materials can end up in wells during normal, functional use. Some finds seem less likely to represent loss or rubbish. Functional interpretations are not satisfactory in all cases. Objects can also enter wells in the context of a ritual. To recognise this, it is necessary to go into a more general discussion on ritual and recognising ritual in archaeology.

While the term 'ritual' is hard to define, it is not as difficult to name a number of aspects of ritual. First, it is consciously carried out. Second, it is intended to have an effect (for instance to placate or ask favours of supernatural powers). To the people carrying out a ritual, there is nothing irrational about it, even if observers may not grasp its meaning. Next, it usually follows a set of rules that is clear to the person carrying out the ritual. Finally, culturally specific symbols are often used to emphasise the special message. In short, ritual is meaningful and intentional (see Groot 2008, 97-115 for a more elaborate discussion on ritual and ritual in archaeology).

So how can ritual deposits be recognised in archaeology? Without written sources, and especially where everyday objects are used in rituals, it is extremely difficult to recognise them archaeologically. Studying funerary ritual or ritual within sanctuaries is less problematic, as here the context itself provides an important clue to the ritual nature of finds. In studying rituals occurring in settlements, we have to separate the material remains of rituals from 'normal' settlement rubbish. While this is no excuse for not attempting such studies, it is important to realise that the full set of settlement rituals carried out in the past is likely to elude us.

First of all, the intuition of the archaeologist plays an important role. Although this does not sound very scientific, in fact 'intuition' is based on the knowledge and expertise of an individual archaeologist. An experienced archaeologist can thus recognise deposits that differ from ordinary, everyday waste (Groot 2008, 104-106; Lewis 1980, 20). What the archaeologist will notice are special, scarce or valuable finds. It does not naturally follow that it is only 'special' finds that have their origin in certain rituals. Every day, common and (to us) worthless items can also have played a role in rituals. Finds like these will be less noticeable to archaeologists than 'special' finds.

A more systematic way to identify ritual deposits is to look for patterns within the deposits. Material found more than once in a similar context or deposited in a similar way can indicate a structural way of depositing objects. Rituals often follow traditional rules with little variation, which should mean in theory that tangible remains of ritual should enter the archaeological archive in a certain way (Fontijn 2003, 21; Groot 2008, 106; Hill 1996, 24). However, not every pattern is evidence for a ritual. Other human behaviour, such as crafts or rubbish disposal, may also have followed traditions or habits and resulted in specific patterns. An example of a pattern that seems to indicate a ritual is that of a dog and nearly complete pot buried together (Groot 2009a, 73-75).

A next step in identifying rituals is to examine the location of a deposit. Some locations seem to have been especially meaningful to people. Inside houses, in house ditches or near the entrance of enclosure ditches are all locations where deposits of special finds occur. Complete vessels in postholes and coins in an enclosure ditch near the entrance to the settlement are examples of deposits in meaningful locations (Gerritsen 2003, 63-65; Van Kerckhove 2009, 157, 191; Aarts 2009, 296). In the case of houses, ditches and wells, it is important for our understanding to identify the relation between the deposition and the stage of the feature's life.

The last step in recognising ritual deposits is the value or usefulness of the deposited material. A complete pot is still useful, and less likely to be thrown away than a broken one. Metal can be reused, and wooden objects, when broken, can be used as firewood. Smaller objects are more likely to be lost than larger ones, although temporary storage – and neglect to retrieve an

object – must be considered. The next paragraph will discuss ritual deposits in wells, and apply these steps for recognising them.

4. Ritual deposits in wells

It is generally accepted by archaeologists that ritual deposits occurred in wells. Several rich deposits in wells have been interpreted as ritual, such as half a Roman helmet with an iron ploughshare in Breda, and two wagon wheels with 27 amber beads at Forum Hadriani/Voorburg (fig. 6; Hoegen *et al.* 2004, 366; Bink & Franzen 2009, 93-95). These deposits were interpreted as ritual because no functional explanation could be given. A complete ceramic pot or wooden tool are also special finds, but are not automatically interpreted as ritual, since these are considered less valuable. By collecting data on ritual deposits and other finds from wells, it should be possible to recognise less obvious ritual deposits, for instance consisting of finds that are understood to be of little value. In this paragraph we hope to recognise any recurring patterns within deposits, by grouping them in different ways. The study that this paper is based on described around 60 deposits in detail (Table 1; Van Haasteren 2011, 25-40). Before going into the actual grouping of deposits we will explain how this data set was collected.

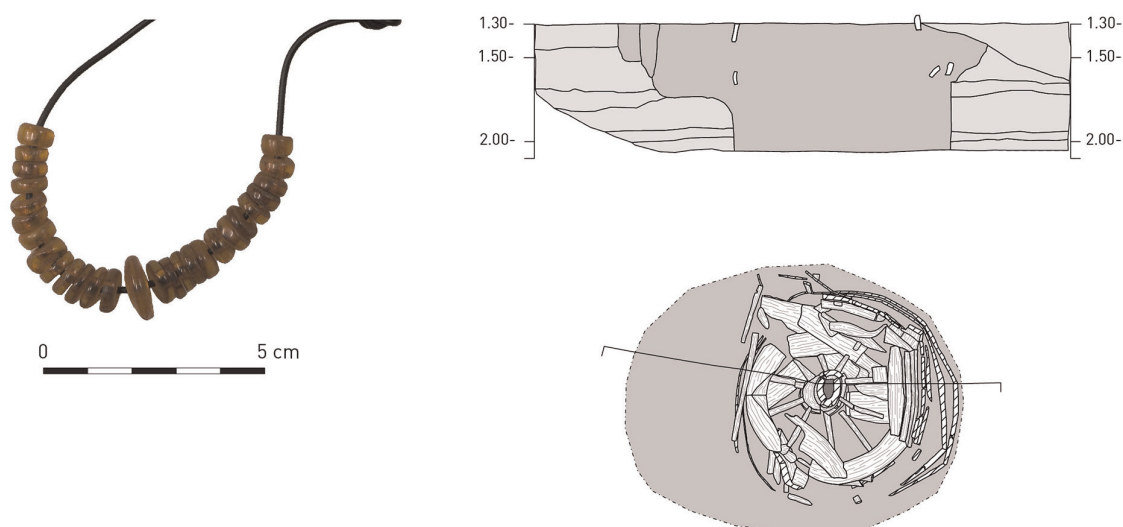


Figure 6 Section through a well in Voorburg, showing two wagon wheels. The amber beads were found between the wagon wheels (Bink & Franzen 2009, fig. 9.31 & fig. 5.9; adapted by B. Brouwenstijn).

4.1 Inventory

To make our inventory reports about excavations of Late Iron Age and Roman period sites in The Netherlands have been searched for information on finds from wells. Besides libraries and lists of publications on websites of archaeological companies, the e-depot for Dutch archaeology (www.edna.nl) has been an important source for these reports.

Naturally, the deposits were not picked randomly from these reports. If the authors of a report marked a find as 'special' or 'ritual', it was automatically included in our selection. The selection was expanded by including what we understood to be 'special' finds. The criteria for selection are mainly comparable to the ways for identifying ritual deposits discussed above. In the first place deposits with remarkable or valuable objects have been selected. Secondly, de-

posits with wooden objects and complete ceramics have been added, as well as remarkable deposits of bone, and stone objects. Besides special objects, attention is paid to deposits in which various materials are found together. Finally, the location of the deposit has been an important focal point. As has been said before, to find objects in one part of a well can be more exceptional than in other parts. Furthermore, it is important to note that because of these criteria deposits of fragmented objects have rarely been selected. That does not imply, however, that they cannot be (part of) ritual deposits.

Something that also played a role in the selection of deposits is the way in which wells and deposits have been described in reports. Some archaeological services produce more elaborate reports than others. When features or finds are only briefly mentioned or listed in tables, then the possibility that they were included in our selection decreases. On the other hand, if finds were described in detail, and information on other finds and the find location within the well was included, they were far more likely to be included in our selection.

This inventory focused on identifying potentially ritual deposits from a range of sites in The Netherlands. In the future, a more extensive inventory of all published wells from a selection of sites may provide a useful indication of the extent of special finds in wells.

4.2 *Grouping of deposits*

The deposits have first been grouped according to their material category, since this is usually the way finds are presented in archaeological reports. Moreover, synthetic studies of ritual deposits often focus on one category, such as animal bone or bronze (Groot 2008; Fontijn 2003). As we shall see, the danger involved in splitting up finds according to material properties lies in losing sight of similarities between finds. Depositions of the following materials have been identified: pottery, stone, animal bone, metal, wood, leather and botanical remains. It is mainly rich deposits and deposits of combinations of different types of material that are interpreted as ritual deposits in archaeological reports. Apart from the examples already described above, other 'rich' deposits are a ceramic jug found inside a copper cauldron in Geldermalsen-Hondsgemet, two bronze vessels with a quernstone and a wooden animal head from Voorburg, and a concentration of animal bones with a brooch from Heeten (fig. 7; Van Renswoude 2009, 271; Bink & Franzen 2009, 107-108; Kenemans & Van der Velde 2007, 176).

There are several arguments for a ritual interpretation of two find categories usually explained in functional terms: wooden ladders and spades. First, some of the ladders were placed in the well upside down. Second, one complete ladder is much too short to have been of any practical use with regard to cleaning the well. Third, a ladder in Midlaren was found together with another special find: a wooden bow. Finally, in an Early Medieval well in Raalte, three spades were found next to each other, indicating deliberate placement (Kooistra & Van Haaster 2001, 327-332; Verwers 1992, 174; Nicolay 2008, 168; Bloo *et al.* 2007, 190-191).

A second grouping is based on the function of the objects, and distinguishes four categories: containers, tools, clothes and personal items, and food. The aim of this classification was to look at the finds from a different perspective, independent of the used materials. One of the discoveries was that drawing water is unlikely to have been the primary use of the containers found in wells. Cooking pots, salt containers, pots containing cereals, wicker baskets and a wooden bowl have all been found in wells (Hoegen 2004, 255; Vos 2002, 59-60; Sier 1999, 67; Hiddink 2005, 288-291). Self-evidently, a wicker basket would be useless for holding water, and pots with contents were also clearly not used for drawing water. While these could represent waste (e.g. moldy grain), this would only make sense if the well had already gone out of use. Tools include the ladders and spades, which have already been mentioned, as well as ploughshares, which were found in several wells (fig. 8). Even when damaged, ploughshares could have been remade into other objects, so they are unlikely to represent waste. The category food



Figure 7 Section through a well in Voorburg showing a quernstone and two bronze vessels in the lower fill, including the bronze bowl (Bink & Franzen 2009, fig. 8.43 & fig. 5.21; adapted by B. Brouwenstijn).

includes deposits of animal bones and plant remains. An example is a deposit of three rare medicinal plants from Helden; the plants are said to have had a ritual significance among the Germans (Van der Meer 2008, 9).

A problem with a non-material classification is that there are many different ways to define categories. For instance, 'containers' could be seen as part of a category 'kitchen and cooking utensils', which would include deposits with quernstones. Food could also be seen as part of a wider category. Bradley discusses deposits of 'animated materials', which are objects that contained life (Bradley 2005, 52). It is indeed interesting to separate this category of 'animated



Figure 8 Ploughshare and helmet from a well in Breda (Koot & Berkvens 2004, fig. 14.9 & 14.10).

materials'. Apart from animal bones and seeds and fruits, human bones and (unworked) wood also belong to this category. No examples were found of deposits of human bones in wells during our inventory. Examples of deposits of wood are a piece of maple wood together with two ceramic pots, a piece of oak wood, and an oak plank with the skull and front legs of a horse (Hoegen 2004, 257-258; Van Putten & Ter Wal 2006, 37-38; Groot 2009b, 398). The 'flow stakes', which have been described earlier, may also be attributed to this category, if it is indeed true that they did not improve the flow of water.

A final way of classifying deposits is according to their location within the well, and as such, their relation to its lifecycle. Within a well, finds can be found in different locations, such as on the bottom, in the fill or top fill, but also in the construction pit or deconstruction pit. Some types of materials are more likely to be found in some locations rather than others. Finds from the construction pit of a well are less likely to represent rubbish, since the chance of rubbish entering the construction pit are small due to the short time period in which a well is constructed. It is more likely that refuse ends up in the top fill, because of its effect as an artefact trap. The locations which we have distinguished are – in order of the life cycle – the construction pit, the bottom of the well, the fill, the deconstruction pit and the top fill.

Examples of deposits in the construction pit are a Roman helmet found with an iron ploughshare (fig. 8), a leather shoe sole, a wicker basket and three deposits of a wooden spade. These spades show different degrees of wear. On the bottom of wells, deposits were found of several complete pots (fig. 9), pots with cereals, ladders, and several pieces of wood, such as a heavy pointed beam with wooden pins (Nicolay 2008, 154). The deposits of vessels seem to form a pattern. Although in some cases it can be ruled out that they were used for drawing water, we should still consider this explanation for other cases. However, if the ladders were indeed used for cleaning wells, and this task was frequently carried out, we should ask ourselves why these vessels were not recovered.

Examples of deposits within the fill include a heavy tuff stone pedestal, a concentration of pottery including a storage vessel containing the bottom of a jug, wagon wheels with barnstone beads, a concentration of bones from six cattle together with skulls of a horse and a ram, several deposits of complete eared pots with remains of rope in combination with manure, bone

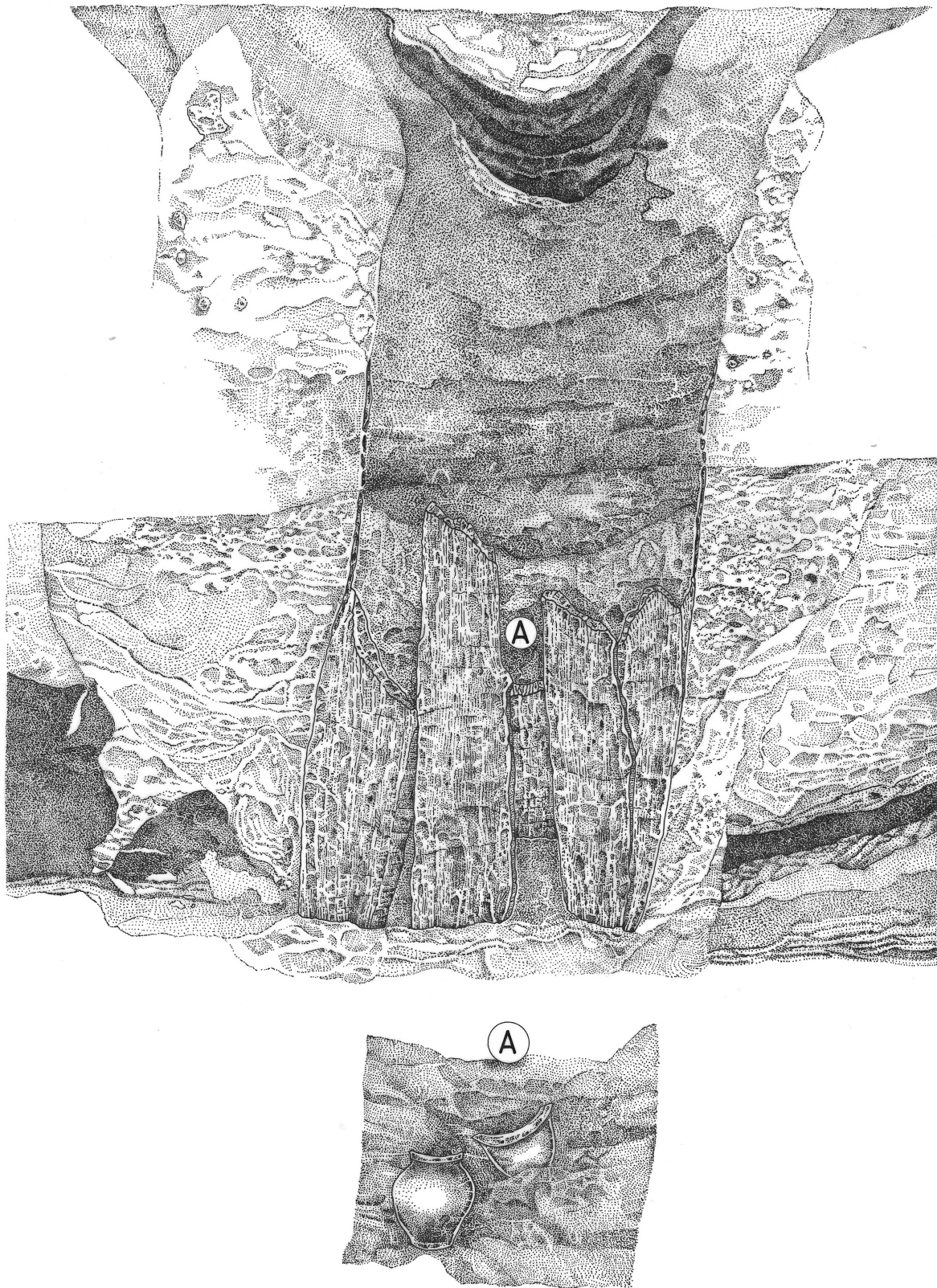


Figure 9 Section through a well in Breda with two complete ceramic pots in the lower fill (Koot & Berkvens 2004, fig. 11.44).

and pottery, and two large concentrations of wood (Van der Kamp & Polak 2001, 22; fig. 5; Bink & Franzen 2009, 87, 93-95; Groot 2009b, 401-4; Kenemans & Van der Velde 2007, 176; Waldus 2000, 37-38, 42-44; Niekus 2002, 20-21). Only one deposit is known to have come from a deconstruction pit. This is the find of two bronze brooches from Geldermalsen-Hondsgemet (Van

Renswoude & Roessingh 2009, 592-595). The fact that the deposit consists of two brooches is an argument for a deliberate deposit and against accidental loss. Losing two brooches at once is unlikely to have gone unnoticed by the owner.

The final category consists of deposits in the top fill. These fills often contain many finds, mostly small fragments of rubbish, since such depressions function as artefact traps. Small, isolated items are therefore difficult to interpret as either rubbish or a ritual deposit. However, some finds are clearly deliberate or non-rubbish, such as a small complete amphora, a complete dog skeleton, the bottom part of a hand quern and a group of four complete dog skeletons (Berkvens 2004, 136-137; Groot 2009b, 401-403; De Wit 2000, 18-19; Kooistra 1996, 134-135, 180-181).

Possible patterns consist of complete pots on the bottom of wells and dog skeletons in the top fill. However, these patterns can also be explained from a functional point of view, as lost containers for drawing water, and the convenience of using an existing depression to bury a dead dog. It is details such as the unsuitability of some of the containers for drawing water and the presence of ritual deposits in the fill of wells with dog burials at the top that lead to an alternative conclusion of these finds as ritual deposits. Many of the finds from the fill also seem to be deliberate deposits of material.

The first method of classifying deposits – by material – has demonstrated that it is usually deposits of remarkable items (helmet, ploughshares) or of combinations of various items that can be interpreted as ritual. The classification by function has shown that less remarkable objects, such as containers, as well as items which are valueless, such as wood and twigs, were also used in ritual deposits. This is based on recurring patterns or the lack of a functional explanation for the presence of objects in the well. What did not become clear from these classifications was the reason behind the deposits. It is the location within the fill that tells us the moment of deposition with regard to the life of the well, and so indirectly the reason behind the deposit. For instance, deposits found in the construction pit can only have been placed there during the construction of the well. Finds from the bottom of a well relate to the period of use, while deposits higher in the fill have either been placed there when the well was no longer in use, or at the moment when the period of use was ended. The next paragraph will discuss deposits in relation to the lifecycle of wells.

5. Rituals surrounding the life of a well

Now that we have discussed the variety of deposits, we can look at the rituals leading to these deposits. We have already suggested that the deposits can be related to a distinct moment within the life of a well: the construction, the moment the well is taken in use, the period of use, abandonment and post-abandonment. In this paragraph, we will explore this idea further.

5.1 *Marking the construction*

Deposits found in the construction pit form the clearest indication for the ritual marking of the construction of a well (and indeed for marking stages in the well's life). The wooden spades found several times in the construction pits of wells have a direct relationship with the construction of the well (fig. 3). Although the spades could have been 'lost', it seems unlikely that useful tools would be left behind. Although the spades are not big, they are also not small items that would easily be overlooked and left behind by accident.

Marking the building of the well or reaching the groundwater level are both important landmarks that may have required rituals including the deposition of objects. In Iron Age England,

deposits at the bottom of storage pits have been interpreted as offerings to thank the underground gods for protecting the stored cereals, or to propitiate them for entering their domain (Cunliffe 1993, 22-23). In a similar way, deposits in wells may also have served to appease the gods, or to thank them for providing water. Whether the spades were actually used for digging the well pit is not important. Broken or worn spades or unusable representations of the tools that were actually used worked just as well (Glob 1951, 132; Bradley 2005, 85).

An Early Medieval example found in Raalte, where three spades were buried at an equal distance from each other, and from the centre of the well, strengthens a ritual interpretation. Loss is clearly not a satisfactory explanation in this case, as the spades seem to have been deliberately placed. The archaeologists who excavated this well claim that there are more examples of spades in Early Medieval wells (Bloo *et al.* 2007, 191). This forms an indication for the continuity of certain practices, such as burying a spade during the construction of a well.

A deposit of an iron ploughshare, a helmet and bucket can also be linked to the construction of the well because of its location. Examples of ploughshares in the construction pit are also known for the Iron Age (in Groningen and Breda; Daleman 2007, 10, 21; Kranendonk *et al.* 2006, 609-613), and again this suggests long-term continuity of ritual practices as well as a widespread occurrence within the Netherlands.

5.2 *Taking the well into use*

Deposits on the bottom of a well could indicate the moment when the well is taken into use. It seems no coincidence that such offerings would consist of pots (fig. 9). Although some of the pots could have been used for drawing water, Kok believes that the large number of pots found in wells and the combination with other materials is evidence for offerings (Kok 2008, 176-179). Gerritsen also describes the use of pots as offerings, although not in wells but in houses, where complete ceramic containers are the most common building offering (Gerritsen 2003, 74, 95-98). Gerritsen believes that the pots contained fluids or food, and names an example of a pot with barley found in a wall ditch of a house. A similar deposit was found at the bottom of a well in Castricum (Sier 1999, 67). The fact that some of the pots were useless as water containers is another argument for a non-functional interpretation. Just as there is a relationship between offer and occasion for the marking of the construction, in the same way the taking into use of the well is marked by an obvious offering of a container, either for drawing water or holding food.

Other objects may also have played a role in rituals marking the taking into use of wells. The category of 'animated materials' is important in this respect. Bradley believes that animated materials were used in deposits in new houses to give life to the house (Bradley 2005, 52). Something similar may have taken place with wells. A deposit of 'living material' on the bottom of a well may have given life to the well. Fresh animal bones (or animal parts) are not a good choice for such offers, since they will rot and contaminate the water supply. For house offerings, this problem did not occur (Bradley 2005, 52; Gerritsen 2003, 74). Unlike animal parts, plant materials were suitable for giving life to wells, and deposits of cereals, nuts and seeds have been found. Another example is the deposit of medicinal plants. According to Van der Meer, one of the three plants, St John's wort, represents the blood of the god Wodan to the Germans (Van der Meer 2008, 9; De Cleene & Lejeune 2000, 983-984).

Apart from plants, larger pieces of (unworked) wood may have been offered in the same spirit. In a Late Iron Age well in Oss-Ussen a long oak plank was found. It was carved in the shape of a stylised anthropomorphic figure and is seen as a tutelary deity of water. The statue rested against a large pointed wooden beam that was driven through the bottom of the well (Schinkel 1998, 139; Van der Sanden 1986, 73-78). Kok points out as well that not only certain

plants, but also certain species of wood such as oak and alder were associated with gods and blood (Kok 2008, 166-169). The above mentioned 'flow stakes' can be seen in this respect as well. The doubts about their practical function and the above mentioned find of a deity statue with a flow stake strengthen a ritual interpretation.

5.3 *Ritual deposits within the fill*

Deposits within the fill may have been placed there to mark the end of the period of use of the well. Some deposits would have made it impossible to use the well any longer, such as those of a stone pedestal from Beuningen, complete wagon wheels and deposits of fresh animal skulls at Tiel-Passewaaij (Van der Kamp & Polak 2001, 22; Groot 2008, 129). Deposits consisting of butchery and settlement refuse could have been used for the same purpose. The fact that such waste often includes still usable or special items, such as a brooch or several animal skulls, makes a ritual interpretation more likely. Of course, it is possible that cases like these represent the merging of functional and ritual behaviour. Placing the special objects in a well together with a concentration of waste materials would mark the moment with an offering while the waste would end the practical usefulness of the well.

5.4 *Deposits in the top fill*

The final category is that of deposits in the top fill of the well. Explanations for such deposits are not straightforward. One possible explanation is that the deposit commemorates earlier deposits in the well, or the well itself. An example is the skeleton of a dog at Geldermalsen-Hondsgemet. This animal was buried in the top fill of a well. A large deposit of cattle bones was found lower in the fill of the same well. This concentration contained remains of six cows and skulls of a ram and a stallion. A second explanation is related to the fact that filled-up wells are visible as depressions, and may have been wetter than the surrounding area. Deposits in such depressions could be similar to deposits in wet contexts (Kok 2008, 176-178). A possible example is a small Roman amphora from Breda-Huifakker (Berkvens 2004, 136-137). Finally, the depression may have been considered as a convenient location to bury things, for whatever reason.

The strongest argument for the hypothesis that the life of a well was punctuated by rituals is formed by the deposits from a single well. We return to the example with which we started this paper: the shoe soles found in a well in Venray. One shoe sole was of high quality and found in the construction pit. This shoe sole was interpreted as ritual. Van Driel-Murray believes – and we agree – that this shoe sole should be seen as a construction offering, with the high quality of the shoe strengthening the interpretation as an offering (Van Driel-Murray 2000, 164-166). The second shoe sole was worn and found in the fill. This shoe sole was thrown in the well several decades after the first deposit, and interpreted as refuse. It seems to us more likely that the occurrence of two shoe soles in this well is not coincidental, but that the second one marked the end of the well's life, at the same time commemorating the earlier deposit, with which the life of the well began. Even the choice of a worn shoe sole could be deliberate, since the shoe's life, like that of the well, had reached its end. An explanation as refuse is less likely, since the fill contained few other finds. If a well was used to dump rubbish, we would expect to find more of it (Krist 2000, 61). The deposits in this well mark both the beginning and the end of the period of use of the well, and thus complete the well's lifecycle.

This paragraph has shown that the different life stages of a well could be marked by rituals. Deposits in the construction pit were placed there to mark the building of the well, reaching the

ground water level or propitiating the underground gods. Deposits on the bottom of the well could have given life to the well, or marked the start of the period of use. The end of the well's useful life could be marked by deposits that made it impossible to use the well any longer, or more symbolically by throwing an object in the well. Earlier deposits and the well itself were commemorated by deposits in the top fill, which could occur decades later.

Of course, these interpretations of deposits in wells are not valid for all finds in wells. Accidental loss is always possible, and wells were certainly used as convenient locations for dumping rubbish. However, using a well as a 'rubbish bin' does not mean that the well's lifecycle was not marked in some way. Functional and ritual behaviour may have gone hand in hand in some cases.

6. Conclusion and suggestions for future research

This paper has examined the lifecycle of wells in Late Iron Age and Roman settlements in the Netherlands. Deposits of 'special' finds in wells formed the basis of the discussion. It has become clear that deposits in different locations within a well related to different moments within the well's life. Thus, the life of a well was punctuated by rituals.

By combining the functional and ritual aspects it is possible to reconstruct a biography of wells from the Late Iron Age and Roman period (fig. 10). The life of the well starts with the digging of the construction pit. Objects can be buried in the construction pit to mark the beginning of the well's life, and can be related to the building of the well, reaching ground water, or propitiating the gods. In some cases, the function of the offered object has a clear relation to the moment in the lifecycle.

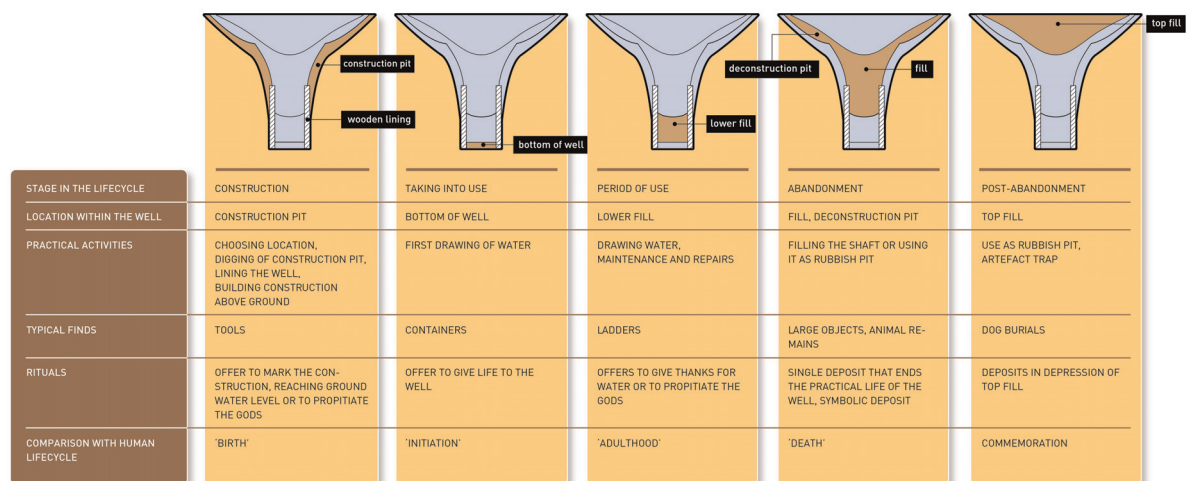


Figure 10 The biography of a well: schematic representation (Illustration: B. Brouwenstijn).

After the digging of a pit, the construction was placed, consisting of a wooden lining. Above ground, a construction may have been built to protect the well or to ease the drawing of water. Offerings on the bottom of the well marked the beginning of the period of active use. The frequent occurrence of vessels on the bottom of wells could be connected to this moment. In some cases, wells were initiated or 'given life' by placing large pieces of wood or other botanical materials at the bottom of the well. During the period of use, water was of course drawn from the well, and the well will have been maintained to some extent.

When a well went out of use, the lining was sometimes dug up. The well would have been filled up naturally or deliberately. The end of the period of use was marked by placing deposits

in the fill that obstructed or spoiled the well, or more symbolically by throwing objects into it. The soil of the fill would compress over time, which resulted in a depression on the ground level. Earlier deposits and perhaps the well itself could be commemorated by new deposits in the upper fill or depression.

The aim of this paper was to argue for a more systematic investigation and interpretation of finds from wells, and to suggest the possibility that some finds represent specific rituals linked to the lifecycle of wells. Some questions remain to be answered. We have not looked into the possible relationship between the type of construction and ritual deposits. Also, deposits may have been placed at the time of repairs, which we have not considered yet. The relationship between the type of object selected for deposition and the ritual or occasion also deserves more attention.

The occurrence of deposits in the upper or top fill of wells, which sometimes occurred decades after earlier deposits lower in the well, suggest a long communal memory of rituals. Another remarkable finding is the long-term survival of some rituals, from the Iron Age to the Middle Ages. It would be interesting to extend this research into later periods and cover a wider region.

By careful excavation and analysis, it is possible to write a biography of a well, including the construction, practical use and abandonment, and rituals related to the various stages of the well's life. This will lead to a better understanding of the position of wells in Late Iron Age and Roman settlements, and go beyond a mere functional consideration.

Acknowledgements

We would like to thank the following people for allowing us to use their illustrations: Bert Brouwenstijn (VU University Amsterdam), Henk Hiddink (ACVU-HBS), Harry Fokkens (Leiden University), Maaïke Sier (BOOR), Laura Kooistra (BIAX), Otto Brinkkemper (RCE), Mariëtte de Rooij & Eddy Smits (BAAC), Hans de Kievith (municipality of Breda), Miranda de Wit (ARC).

Martijn van Haasteren
martijnvanhaasteren@hotmail.com

Maaïke Groot
VU University Amsterdam
m.groot@vu.nl

References

- 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.
- Berkvens, R. 2004, Bewoningsporen uit de periode Late Bronstijd-Midden IJzertijd (1100-400 v.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/Erfgoedstudies Breda 1), 94-150.
- Bink, M. & P.F.J. Franzen (eds) 2009, *Forum Hadriani Voorburg. Definitief archeologisch onderzoek*, 's-Hertogenbosch (BAAC rapport A-05.0125).
- Bloo, S.B.C., W. Jezeer & H.M. van der Velde 2007, Aardewerk en houten voorwerpen van de Boetelerenk (Zegge VI). In: H.M. van der Velde (ed.), *Germanen, Franken en Saksen in Salland. Archeologisch en landschappelijk onderzoek naar de geschiedenis van het landschap en nederzettingsresten uit de Romeinse tijd*

- en Vroege Middeleeuwen in centraal Salland. Een Archeologische Opgraving, Amersfoort (ADC rapport 675/ ADC Monografie 1), 181-192.
- Bradley, R. 2005, *Ritual and domestic life in prehistoric Europe*, Londen/New York.
- Cunliffe, B.W. 1993, *Fertility, propitiation and the gods in the British Iron Age*, Amsterdam.
- Daleman, M. 2007, *Bewoning uit de Late Bronstijd, IJzertijd en Romeinse Tijd in de woonwijk 'De Linie' te Groningen*, Groningen (Stadse Fratsen 9).
- De Cleene, M. & M.C. Lejeune 2000, *Compendium van rituele planten in Europa*, Gent.
- De Wit, M.J.M. 2000, *Romeinse bewoning in het tracé van de verlengde Frieslandweg te Emmen, provincie Drenthe*, Groningen (ARC-publicaties 29).
- Fontijn, D.R. 2003, *Sacrificial landscapes. Cultural biographies of persons, objects and 'natural' places in the Bronze Age of the southern Netherlands, c. 2300-600 BC*, Leiden.
- Gerritsen, F. 2003, *Local identities. Landscape and community in the late prehistoric Meuse-Demer-Scheldt region*, Amsterdam (Amsterdam Archaeological Studies 9).
- Glob, P.V. 1951, *Ard og plov i Nordens Oldtid*, Aarhus (Jysk Arkæologisk Selskabs Skrifter 1).
- Groot, M. 2008, *Animals in ritual and economy in a frontier community. Excavations in Tiel-Passewaaij*, Amsterdam (Amsterdam Archaeological Studies 12).
- Groot, M. 2009a, Searching for patterns among special animal deposits in the Dutch river area during the Roman period, *Journal of Archaeology in the Low Countries* 1-2, 49-81.
- Groot, M. 2009b, 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.
- Heirbaut, E. & R. Jansen 2007, Sporen en structuren uit de Romeinse tijd. In: R. Jansen (ed.) *Bewoningsdynamiek op de Maashorst. De bewoningsgeschiedenis van Nistelrode van laat-neolithicum tot volle middeleeuwen*, Leiden (Archol rapport 48), 593-650.
- 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).
- 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).
- Hiddink, H.A. 2009, *Bewoningssporen uit de Volle Middeleeuwen en de Nieuwe Tijd op de Beekse Akkers bij Beek en Donk, gemeente Laarbeek*, Amsterdam (Zuidnederlandse Archeologische Rapporten 36).
- Hill, J.D. 1996, The identification of ritual deposits of animal bones. A general perspective from a specific study of 'special animal deposits' from the southern English Iron Age. In: S. Anderson & K. Boyle (eds), *Ritual treatment of human and animal remains. Proceedings of the first meeting of the osteoarchaeological research group*, Oxford, 17-32.
- Hoegen, R.D. 2004, Bewoningssporen uit de periode Late IJzertijd-Romeinse tijd (250v. Chr.-450n. 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.
- Jansen, R. & L.G.L. van Hoof 2003, *Archeologisch Onderzoek Oss - De Geer, bewoning uit de Bronstijd en de Romeinse tijd*, Leiden (Archol rapport 19).
- Kenemans, M.C. & H.M. van der Velde 2007, De opgravingscampagne bij Hordelman uit 1994. In: H.M. van der Velde (ed.), *Germanen, Franken en Saksen in Salland. Archeologisch en landschappelijk onderzoek naar de geschiedenis van het landschap en nederzittingsresten uit de Romeinse tijd en Vroege Middeleeuwen in centraal Salland. Een Archeologische Opgraving*, Amersfoort (ADC rapport 675/ ADC Monografie 1), 159-180.
- Kok, M.S.M. 2008, *The homecoming of religious practice. An analysis of offering sites in the wet low-lying parts of the landscape in the Oer-IJ area (2500 BC – AD 450)*, Amsterdam.
- Kolen, J. 2005, *De Biografie van het landschap. drie essays over landschap, geschiedenis en erfgoed*, Dissertatie Vrije Universiteit, Amsterdam.
- Kooistra, L.I. 1996, *Borderland farming. Possibilities and limitations of farming in the Roman period and early Middle Ages between the Rhine and Meuse*, Amersfoort.
- Kooistra, L.I., M.J. Kooistra & J. Schelvis 2008, *Breda-Huifakker (Heilaar-Noord). Ecologisch en micromorfologisch onderzoek naar de geschiedenis van het landschap en het landgebruik in Breda-West, Zaandam (BIAX-iaal 359)*.

- 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.
- Koot, C.W. & R. Berkvens (eds) 2004, *Bredase akkers eeuwenoud. 4000 jaar bewoningsgeschiedenis op de rand van zand en klei*, Amersfoort (Rapportage Archeologische Monumentenzorg 102/Erfgoedstudies Breda 1).
- Kranendonk, P., P. van der Kroft, J.J. Lanzing & B.H.F.M. Meijlink (eds) 2006, *Witte vlekken ingekleurd, archeologie in het tracé van de HSL-Zuid*, Amersfoort (Rapportage Archeologische Monumentenzorg 113).
- Krist, J. 2000, De waterput. In: H. Stoepker (ed.), *Venray-Hoogrieboek en Venray-Loobeek. Nederzettingen uit de prehistorie, Romeinse tijd en late Middeleeuwen*, Amersfoort (Rapportage Archeologische Monumentenzorg 46), 59-61.
- Levy, J.E. 1982, *Social and religious organization in Bronze Age Denmark: an analysis of ritual hoard finds*, Oxford (BAR International Series 124).
- Lewis, G. 1980, *Day of shining red. An essay on understanding ritual*, Cambridge.
- Nicolay, J.A.W. 2008, Waterputten, waterkuilen en natuurlijke laagtes: de watervoorziening in en direct rondom de woonplaats. In: J.A.W. Nicolay (ed.) *Opgravingen bij Midlaren. 5000 jaar wonen tussen Hondsrug en Hunzedal*, Groningen (Groningen Archaeological Studies 7), 151-180.
- Niekus, M.J.L.Th. 2002, Resultaten. In: M.J.L.Th. Niekus & M.A. Huisman, *Een huisterpje uit de Romeinse Tijd in het veen-kleigebied. Een archeologische opgraving in het tracé van de Stadsrondweg Oost te Sneek, gemeente Sneek (Fr.)*, Groningen (ARC-publicaties 53), 15-24.
- Schinkel, K. 1994, *Zwervende erven. Bewoningssporen in Oss-Ussen uit bronstijd, ijzertijd en Romeinse tijd. Opgravingen 1976-1986*, Leiden.
- Schinkel, K. 1998, Unsettled Settlement, occupation remains from the Bronze Age and the Iron Age at Oss-Ussen. The 1976-1986 excavations, in: H. Fokkens (ed.) *The Ussen Project. The first decade of excavations at Oss. (Analecta Praehistorica Leidensia 30)*.
- Sier, M.M. 1999, Waterputten. In: J.-K.A. Hagers & M.M. Sier, *Castricum-Oosterbuurt, bewoningssporen uit de Romeinse tijd en middeleeuwen*, Amersfoort (Rapportage Archeologische Monumentenzorg 53), 60-67.
- Therkorn, L.L. & E.A. Besselsen 2008, 'Speciale' kuilen op de vindplaats AHR02: enkele opmerkingen over de betekenisgeving aan het graven en opvullen van kuilen. In: J.P. Flamman & E.A. Besselsen (eds), *Het verleden boven water. Archeologische monumentenzorg in het AHR-project*, Delft/Amersfoort (Rapportage Archeologische Monumentenzorg 148), 243-256.
- Van den Broeke, P. 1977, *Bouwoffer en archeologie: een literatuurstudie van het bouwoffer en identificatie van bouwofferresten in de archeologie van Noordwest-Europa van vóór 1300 AD* (thesis, Leiden University).
- Van den Broeke, P. 2002, Een vurig afscheid? Aanwijzingen voor verlatingsrituelen in IJzertijd-nederzettingen. In: H. Fokkens & R. Jansen (eds), *2000 jaar bewoningssamenleving. Brons- en IJzertijdbewoning in het Maas-Demer-Scheldegebied*, Leiden, 45-61.
- Van der Kamp, J.S. & M. Polak 2001, *Archeologisch onderzoek aan de Molenstraat te Beuningen (1997-1998)*, Amersfoort (Rapportage Archeologische Monumentenzorg 92).
- Van der Meer, W. 2008, *Hongersnood en hartklachten? Archeobotanisch onderzoek aan materiaal van de vindplaats Helden-Schrames (Bronstijd-Middeleeuwen)*, Zaandam (BIAXiaal 382).
- Van der Sanden, W.A.B. 1986, Houtsnijwerk uit de late ijzertijd uit een waterput in Oss-Ussen. In: H. Fokkens, P. Banga & M. Bierma 1986, *Op zoek naar mens en materiële cultuur, feestbundel aangeboden aan J.D. van der Waals ter gelegenheid van zijn emeritaat*, Groningen: 73-84.
- Van Driel-Murray, C. 2000, Schoenzolen. In: H. Stoepker (ed.), *Venray-Hoogrieboek en Venray-Loobeek. Nederzettingen uit de prehistorie, Romeinse tijd en late Middeleeuwen*, Amersfoort (Rapportage Archeologische Monumentenzorg 46), 164-166.
- Van Haasteren, M. 2011, *De levenscyclus van een waterput. Een onderzoek naar functionele en rituele gebruiken rond waterputten in nederzettingen uit de Late IJzertijd en Romeinse tijd in Nederland* (unpublished Master thesis VU University), Amsterdam.
- 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 Putten, M.J. & A. ter Wal 2006, *Tilburg Surfplas-Zuid, definitief archeologisch onderzoek, 's-Hertogenbosch* (BAAC rapport 05.209).
- Van Renswoude, J. 2009, 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 Renswoude, J. & W. Roessingh 2009, *Catalogus nederzettingsstructuren*. 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), 477-616.
- Verwers, W.J.H. 1992, *Archeologische kroniek van Noord-Brabant 1991, Brabants heem* 4.
- Vos, W.K. 2002, *De inheems-Romeinse huisplattegronden van De Horden te Wijk bij Duurstede*, Amersfoort (Rapportage Archeologische Monumentenzorg 96).
- Waldus, W.B. 2000, *Vergraven en verdronken. Het archeologische onderzoek van een overslibde nederzetting uit de late ijzertijd en de Romeinse tijd bij de vinex-locatie Hempens-Teerns direct ten zuiden van Leeuwarden*, Groningen (ARC-publicaties 30).
- Wesselingh, D.A. 2000, *Native neighbours. Local settlement system and social structure in the Roman period at Oss (the Netherlands)*, Leiden.

Appendix

Site	Date	Deposit	Location	Other finds in top fill	Well with lining	Remarks	Publication
De Linie, Goningen	Mid Iron Age, 500-250 B.C.	Oak ard share, ard is broken and damaged	Lower fill	Animal bones, pottery fragments, spindle whorl, wooden beam, botanical remains	–	–	Daleman 2007, 10, 21.
Steenakker, Breda	Mid to Late Iron Age	Remains of a basket, polished tripartite pot; alder beam, remains of a wooden rack	Basket and pot on bottom, wood in fill	Pottery fragments, a quern, Roman and Early Middle Age pottery in top fill	Wattle, repaired once, collapsed	Depression must have been visible for centuries.	Berkvens 2004, 132-133.
Huifakker, Breda	Well: Early Iron Age. Deposit: Roman period.	Complete 17cm long Roman pointed amphora	Top fill	Burned whetstone in construction pit, stone and pottery in lower fill	Water pit, no lining	According to author deposit is probably ritual because of wet context.	Berkvens 2004, 136-137.
Breda	Roman, 2nd half of 3rd century A.D.	Edge of bronze bucket, half a Roman helmet, iron shoe of a ploughshare	Construction pit	–	Square with vertical beams	–	Hoegen 2004, 253-254; Hoegen <i>et al.</i> 2004, 366-367.
Breda	Roman, 77 A.D.	Burned cooking pot, glass sherds, burned acorns	Fill	Broken blade of a flint knife, tuff, tephrite, building ceramics	Square with vertical planks	–	Hoegen 2004, 255.
Breda	Roman, 3rd century A.D.	Remains of a wooden dish	Fill	Flint core and scraper, molars of cattle, pebbles, tephrite	Square, with vertical beams and planks. Repaired several times with wattle.	–	Hoegen 2004, 254.
Breda	Roman, 3rd century A.D.	Maple wood, two complete pots	Fill	None	Hollowed tree trunk.	–	Hoegen 2004, 257-258.
Breda	Roman, 3rd century A.D.	Cattle scapula and teeth, horse mandible	–	Stone, pottery, building ceramics	Circular, with vertical beams.	Well is dug over an older well, in which a 2nd cent. fibula was found at the bottom.	Hoegen 2004, 259.

Table 1 Inventory of 'special' deposits. (Cont. on next page).

Site	Date	Deposit	Location	Other finds in top fill	Well with lining	Remarks	Publication
Breda	Roman, 3rd century A.D.	5 kg of a tephrite handquern	–	Stone, pottery, building ceramics, worked flint, cattle mandible	Wattle. Naturally filled up.	–	Hoegen 2004, 260.
Oss-De Geer	Roman, 27-119 A.D.	Ash spade	Construction pit	Wooden beams and planks, pottery fragments	–	–	Jansen & Van Hoof 2003, 59-61.
Kesteren-De Woerd	Roman period	Complete oak ladder, without signs of wear	Lower fill	Pottery in top fill	Water pit, no lining, filled up slowly with clay and plant remains	Ladder was found upside down.	Siemons 2001, 103; Kooistra & Van Haaster 2001, 327-332.
Molenstraat, Beuningen	Roman period	Tuff stone pedestal, measures 70x70x40 cm, weighs 300-400 kg	Fill, just above wooden lining	None	–	Author remarks that instead of being re-used, stone was used to obstruct the well.	Van der Kamp 2001, 22.
Venray	Roman, 230 A.D.	2 leather shoe soles, one of high quality, one used	1st in construction pit, 2nd in fill	Fragments of pottery and tephrite	Square with vertical beams and horizontal planks	The first sole is seen as a ritual deposit by the author.	Krist 2000, 59-61; Van Driel-Murray 2000, 164-166.
Schrames, Helden	Roman, 159-160 A.D.	Pollen of medicinal plants St John's wort and the rare Motherwort. Parsley fern.	Fill	Pollen of cereals and weeds, seeds of fruits, Roman pottery fragments	Hollowed tree trunk	St John's wort is connected to the god Wodan. Parsley fern does not grow in the Netherlands.	De Winter 2010, 105; Van der Meer 2008, 9-10.
Forum Hadriani, Voorburg	Roman, 125-150 A.D.	Complete handmade storage pot, in which the bottom of a jar was placed	Fill	Deposit is part of a large concentration of wheel-thrown and handmade pottery	No lining, lining was possibly removed	–	Bink & Franzen 2009, 87.
Forum Hadriani, Voorburg	Roman, 150-170 A.D.	Two wagon wheels with small planks and 27 amber beads in between.	Fill	–	–	Wheels cannot have been used for construction. Ritual deposit according to authors.	Bink & Franzen 2009, 93-95.
Forum Hadriani, Voorburg	Roman, 165-210 A.D.	2 unworn bronze vessels, a complete quern, carved wooden animal head.	Lower fill	Pottery	Two stacked wine barrels, well was re-dug and lined at least twice	Intentional deposit according to authors.	Bink & Franzen 2009, 107-108.
Lieshout	Roman, 2nd century A.D.	Ladder made of willow wood.	–	–	–	Ladder was little used and was found upside down.	Verwers 1992, 174.
Castricum-Oosterbuurt	Roman period	Complete handmade indigenous pots, (some) containing cereals	Bottom of the wells	Pottery	Deposits found in 3 wells with lining, wells are intentionally sealed with sods	Ritual deposits according to author.	Sier 1999, 67.

Table 1 Inventory of 'special' deposits. (Cont. on next page).

Site	Date	Deposit	Location	Other finds in top fill	Well with lining	Remarks	Publication
Tiel Passewaaij	Roman period	Bashed in skull of an adult mare, contains cut marks	–	Few	–	Ritual deposit according to author.	Groot 2008, 123, 258-259.
Tiel Passewaaij	Roman period	Complete dog skeleton	–	25 fragments of animal bone	–	–	Groot 2008, 262.
Tiel Passewaaij	Roman period	Skull, neck and three lower legs of a sheep	–	40 fragments of animal bone	–	Ritual deposit according to author. Left hind leg is missing.	Groot 2008, 129, 260.
Tiel Passewaaij	Roman period	Skull, mandible and three lower legs of a horse	–	1 fragment of cattle	–	Ritual deposit according to author. Right front leg is missing.	Groot 2008, 129, 265-266.
Tiel Passewaaij	Roman period	Two skulls of sheep, one horned, one with mandible; three scapulae of cattle	–	Few	–	Ritual deposit according to author.	Groot 2008, 123, 259.
Wijk bij Duurstede- De Horden	Roman, 1st century - 1st half 2nd century A.D.	Denarius from Domitian	–	–	Wattle	–	Vos 2002, 58.
Wijk bij Duurstede- De Horden	Roman, 2nd century A.D.	Large concentration of pottery, including fragments of salt containers	–	–	Wattle	–	Vos 2002, 59.
Wijk bij Duurstede- De Horden	Roman, probably 2nd century A.D.	Remains of a wicker basket with an outline of 145 cm	Construction pit	Roman pottery fragment	–	–	Vos 2002, 59-60.
Wijk bij Duurstede- De Horden	Roman, 1st century A.D.	Short wooden ladder with two steps.	–	Short oak beam, no ceramics	(Water) pit	–	Vos 2002, 60.
Rosveld, Neder- weert	Roman, 1st half 1st century A.D.	80 cm long oak spade	Fill	Fill: oak disc with excentric hole, fibula, a lot of wood; Upper fill: pottery sherds	Square with vertical beams and horizontal planks, possibly collapsed	Spade shows signs of wear, but was probably not used for digging.	Hiddink 2005, 32, 169, 300.
Rosveld, Neder- weert	Roman, 211-212 A.D.	Iron ring, wooden bowl	Fill	Pottery	Square with vertical corner beams and horizontal planks	–	Hiddink 2005, 288-291.
Susteren- Echt	Iron Age	Two nearly complete pots	Fill	Other finds in top fill	Possibly tree trunk, repaired once, top 80 cm of lining was dug up for reuse	–	Bink 2004, 28-29, C51-C54.
Surfplas- Zuid, Tilburg	Roman period	Block of oak wood	Lower fill	11 pottery sherds, 2 fragments of tephrite, 3 fragments of stone, 1 fragment of slag	Wattle from oak, slowly filled up	–	Van Putten & Ter Wal 2006, 37-38.

Table 1 Inventory of 'special' deposits. (Cont. on next page).

Site	Date	Deposit	Location	Other finds in top fill	Well with lining	Remarks	Publication
Heilaar-Noord, Breda	Roman or EMA based on construction of the well.	Oak spade, broken and with signs of wear	Bottom of the well	Iron Age pottery	Square with horizontal planks	–	Kooistra <i>et al.</i> 2008, 41-42.
Vinken-burg, Breda	Mid Iron Age	Oak ard share, no wear, but traces of iron shoe	Construction pit	Iron Age and Roman pottery in top fill	Hollowed alder tree trunk, probably a re-used bucket, filled up slowly	–	Kranendonk <i>et al.</i> 2006, 609-613.
Geldermal-sen-Hondsgemet	Roman, 2nd century A.D.	Skulls of a stallion and a ram and 225 fragments of 6 cattle; complete dog skeleton	Dog in top fill, skulls and cattle in fill	25 pottery sherds, 1 fragment stone	Water pit, no lining, filled up intentionally	–	Groot 2009b, 401-3; Van Renswoude & Roessingh 2009, 596.
Geldermal-sen-Hondsgemet	Roman, mid 2nd century A.D.	Skull and two front legs of a horse	Fill	Oak plank in lower fill	Water pit, dug in a ditch	The skull was bashed in and the mandible was cut off.	Groot 2009b, 398; Van Renswoude & Roessingh 2009, 597-598.
Geldermal-sen-Hondsgemet	Roman, 2nd half of 2nd century A.D.	Complete copper cauldron containing a complete jar	Fill	Pottery, building ceramics, animal bone, stone, leather, glass, metal	Vertical beams supporting a wine barrel, filled up deliberately	Cauldron was repaired several times.	Van Renswoude & Roessingh 2009, 598-600; Van Driel-Murray 2009, 854.
Geldermal-sen-Hondsgemet	Roman, mid 2nd century A.D.	Two fibulae	Deconstruction pit	Pottery, building ceramics, animal bone, stone, metal	Vertical beams supporting a barrel, wattle on bottom functioned as filter	–	Van Renswoude & Roessingh 2009, 592-595.
Groot Bottelsche Akker, Deurne	Roman, 141 A.D.	90 cm long oak spade with signs of wear	Construction pit	Pottery, 2 stones, 1 slag	Interlocking horizontal planks, partly secundarily used, collapsed	–	Hiddink 2008, 185, 292-294.
Groot Bottelsche Akker, Deurne	Roman, 236 A.D.	148 cm long ladder of willow wood	Lower fill	Few pottery sherds	Vertical corner beams and horizontal interlocking planks, filled up very slowly	According to author ladder was used for cleaning of the well.	Hiddink 2008, 185-189, 294-297.
Maashorst, Nistelrode	Roman, 112 +/- 6 A.D.	Small decorated wooden cup	Lower fill	Few pottery sherds, 50 kg of metal slag in top fill	Square with interlocking horizontal planks, filled up intentionally with slag	A house was built over this well. The slag may have been placed as a foundation.	Heirbaut & Jansen 2007, 635-638.
Borsele	Roman period	Complete handmade pot	Bottom / lower fill	–	Water pit, no lining	–	Blom 2001, 31.
Hoolinger-veld, Coevorden	Mid to Late Iron Age, 391-171 B.C.	Complete pot	Lower fill	Pottery, stone and charcoal in upper fill	Wattle	–	Kenemans & Van der Velde 2003, 18-19.

Table 1 Inventory of 'special' deposits. (Cont. on next page).

Site	Date	Deposit	Location	Other finds in top fill	Well with lining	Remarks	Publication
Boetelerenk, Raalte	Early Middle Ages, 654 A.D.	Three complete ash spades, placed at equal distance from each other	Construction pit	Few pottery sherds, wood	Hollowed tree trunk, filled up slowly	According to authors these deposits are found more often in EMA contexts.	Kenemans & Van der Velde 2007a, 104-106; Bloo <i>et al.</i> 2007, 190-191.
Hordelman, Heeten	Roman, 335 A.D.	Large dump of animal bones, remarkable disc fibula	Fill	–	Well with lining	–	Kenemans & Van der Velde 2007b, 176.
Hordelman, Heeten	Roman, 287 A.D.	Large dump of animal bones.	Fill	–	Well with lining	–	Kenemans & Van der Velde 2007b, 176.
Poeldijk, Westhof	Roman, 2nd century A.D.	Pottery	Lower fill	–	Water pit	–	Blom & Van der Feijst 2007, 33-34, 37.
De Bloemert, Midlaren	Roman, 100-150 A.D.	Wooden ladder, wooden bow	Bottom / lower fill	Plank and wooden peg in construction pit	Square, with horizontal planks, corners are strengthened with rocks	According to author bow and wood in construction pit are waste.	Nicolay 2008, 168.
De Bloemert, Midlaren	Late Roman, 300-550 A.D.	Heavy pointed beam, 3 pegs, wood	Bottom	–	Hollowed tree trunk, supported by wooden pegs, repaired once	–	Nicolay 2008, 154.
De Bloemert, Midlaren	Late Roman, 450-550 A.D.	Different pieces of wood	Lower fill	–	Square, with vertical corner beams and horizontal beams	–	Nicolay 2008, 154.
De Bloemert, Midlaren	Roman, 100-300 A.D.	Right mandible of a sheep	–	–	–	Ritual deposit according to author.	Prummel <i>et al.</i> 2008, 242.
De Bloemert, Midlaren	Roman, 100-300 A.D.	Cattle skull, sheep molar, burned fragment of large mammal bone	–	–	–	Ritual deposit according to author.	Prummel <i>et al.</i> 2008, 242.
De Bloemert, Midlaren	Late Roman, 300-550 A.D.	Cattle molar, sheep metapodium, burned bone fragment.	–	–	–	Ritual deposit according to author.	Prummel <i>et al.</i> 2008, 243.
Hempens-Teerns, Leeuwarden	Late Iron Age - Roman period	Complete pots with handles and rope	Lower fill of 8 wells	Manure, bone, pottery	No linings, filled up intentionally	Deliberate deposits, according to author. Possibly part of abandonment ritual.	Waldus 2000, 37-44.
Hempens-Teerns, Leeuwarden	Late Iron Age - Roman period	All wooden artefacts of the site are found in 2 of the 8 wells, including a small door	Fill of 2 of 8 wells	Manure, bone, pottery	No linings, filled up intentionally	Deliberate deposits, according to author. Possibly part of abandonment ritual.	Waldus 2000, 42-44.
Frieslandweg, Emmen	Roman, 2nd-3rd century A.D.	Fragments of a large decorated pot type 'Edde-lak'	Bottom	Few pottery sherds in top fill	Water pit	–	De Wit 2000, 16-18.

Table 1 Inventory of 'special' deposits. (Cont. on next page).

Site	Date	Deposit	Location	Other finds in top fill	Well with lining	Remarks	Publication
Friesland-weg, Emmen	Roman, 2nd-3rd century A.D.	Bottom half of a tephrite hand-quern type 'Westerwijtwerd'	Top fill	None	Water pit	Diameter of the quern is 40cm. Height is 5cm. The side is decorated.	De Wit 2000, 18-19.
Stadsrondweg oost, Sneek	Late Iron Age - Roman period, 1st cent. B.C.-1st cent. A.D.	7 wells with several complete pots, some with rope attached	Fill of 7 wells	Manure, straw, pottery	Water pits, no linings, filled up intentionally	Deliberate deposits, according to author. Possibly part of abandonment ritual.	Niekus 2002, 20-21.
Voerendaal	Roman, 3rd century A.D.	4 near complete dog skeletons	Top fill.	–	–	2 skulls were bashed in, 1 nose was cut off. Animals placed in well at the same occasion.	Kooistra 1996, 134-135, 180-181.
Oss-Ussen	Late Iron Age, 3rd-2nd century B.C.	90 cm long oak plank, carved in anthropomorphic shape, and 80 cm long pointed beam	Bottom	Pottery sherds in top fill	Wattle	According to authors plank probably represents tutelary deity of water.	Schinkel 1998, 139; Van der Sanden 1986, 73-82.
Oss-Ussen	Late Iron Age, 3rd-2nd century B.C.	Round willow basket with braided rim	Lower fill	–	Wattle	According to author basket was not part of the lining.	Schinkel 1998, 127, 139.

Table 1 Inventory of 'special' deposits.

