Written in Bones

Studies on technological and social contexts of past faunal skeletal remains

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Dutch medieval bone and antler combs

Bone and antler combs are common finds in medieval northern Europe. Two major types occur in the Netherlands: the composite comb, usually made of antler, and the longbone comb. It is widely assumed that the primary function of these combs was to groom the hair, but they could also be objects of decoration, status or have a ritual role. Early medieval composite combs have been found as burnt remains in cremation graves and buried whole with inhumations. Later finds come from settlements and towns. The shapes of these combs change through time and there is a shift in the raw material used away from antler towards bone. This increased use of bone probably reflects an increasing scarcity of antler, which is better suited to the function of combs. Changing attitudes and trading routes could also play an important role in the changes observed in comb shape and raw material throughout this period.

Key words: combs, bone, antler, medieval, Netherlands

Introduction

Combs have been found all over the world, in almost all cultures and time periods. These functional, decorative and ritual objects are found in many different archaeological contexts such as cesspits, graves, wells and ditches where they may have been accidentally lost or deliberately deposited. Hard animal tissues are commonly used in their manufacture including bone, antler, ivory, horn and tortoiseshell. The focus of this research paper is the medieval (5th until 15th century AD) bone and antler combs from Dutch archaeological collections and the current research questions that are being explored. Bone and antler combs are common finds but are often unpublished, making comparison of combs between different regions difficult to undertake and much research remains to be done. The aim of this paper is to provide a synthesis of Dutch finds and discuss the outstanding research questions.

Research questions

Function

It is not necessarily safe to assume that all combs were used just for untangling human head hair. Combs are used to reduce human head lice populations and for grooming beards or moustaches. Combs are used in the grooming of other animals, such as horses, in the preparation of plant and animal fibres, such as wool for textile production, in ritual environments, as hair decorations or to support complex arrangements of the hair. Early medieval combs are often found in rich cremation burials, whilst later finds are found in settlements and towns. The function of the late medieval longbone comb, in particular, has been questioned for many years. These combs were originally described as wool carding combs, but are recently seen as regular hair combs (MacGregor 1985:110; Van Vilsteren 1987: 41; Schelvis 1992). Is it possible to assign these different uses to specific combs with any confidence?

Raw material

What does the decrease in the proportion of antler combs through the 11th and 12th centuries indicate? From the 13th century onwards the longbone comb

replaced the composite comb entirely. Was antler indeed becoming more scarce?

Trade & craft

Finally, a key point of discussion is the circulation of combs throughout Europe. The Dutch combs show similarities in shape with others found in many cultures across Europe. Was the spread of these combs a result of cultural influences and diffusion of knowledge or the result of trading networks? Where the combmakers itinerant or settled? Can we locate the production places of these combs?

Combs in the Netherlands – Collections

Some museums have yielded large collections of medieval combs, such as the Frisian Museum which houses many from terp-mounds and these have been published by Roes (1963). Another museum with a large collection of medieval terp-mound material is the National Museum of Antiquities, Leiden, and a part of this collection has been studied by the author. Other bone, antler, ivory and horn objects from sites in Amsterdam have also been published by the author (Rijkelijkhuizen 2004), and she has also undertaken the study of combs from two cities in the eastern Netherlands, those from Zutphen (Rijkelijkhuizen 2011) and Deventer (ongoing research). The Dutch medieval combs from all these sites and those published by other researchers from Dorestad (Roes 1963), Oost-Souburg (Lauwerier, Van Heeringen 1995), Kerk-Avezaath (Verhagen, Esser 2001), Maastricht (Dijkman, Ervynck 1998) have been integrated in the current paper.

Comb types – Composite combs and longbone combs

Two major types of combs occur in the Netherlands in the medieval period. The first are composite combs, which have a labour-intensive production method. The combs are usually made from pieces of antler and often elaborately decorated, varying in both form and decorative design. Two-sided and one sided combs occur, some are triangular shaped combs, some have handles, and the size can vary considerably (Fig. 1-2). Decoration may take the form of incised lines or dot-and-circle motifs. In this article no typology is constructed. Several typologies have been published for Scandinavian medieval combs (Tempel 1969; Abrosiani 1981), but these do not fit the Dutch combs as these typologies appear to be region specific. Ashby (see list of references) provides a stylistic overview of composite combs in Northwestern Europe.

The second type is the longbone comb is which simply made from a single piece of bone (Fig. 3). Only a few of these combs from the Netherlands have any decoration and this is very rudimentary, simply consisting of a few straight and crossing lines (Kerk-Avezaath; Verhagen and Esser 2001). Longbone combs which are more highly decorated, or are two-sided, have been found elsewhere, for example, in Schleswig (Ulbricht 1984) and Estonia (Luik 2008).

Small, two-sided bone combs were also produced in the medieval period and have been found in Schleswig (Ulbricht 1984), Estonia (Luik 2008), Scandinavia and England (MacGregor 1985:80-81). These are usually lozenge shaped or biconvex in cross section. According to MacGregor they date to the 11th to 14th centuries and, in time, succeed the composite combs (MacGregor 1989:113). This comb type will not be discussed here, as only two are known from this period in the Netherlands; that from Kerk-Avezaath (Verhagen, Esser 2001) and one published by Roes (1963:15, plate XVI). Two small bone combs, found in Amsterdam are flat in cross-section (Fig. 4).

Fig. 1. Triangular shaped composite antler comb. Collection: National Museum of Antiquities, photo: Marloes Rijkelijkhuizen

Fig. 2. Two side antler composite comb. Collection: National Museum of Antiquities, photo: Marloes Rijkelijkhuizen

Fig. 3. Longbone combs excavated in Amsterdam. Collection: Office for Monuments & Archaeology, photo: Marloes Rijkelijkhuizen

One is undated but the other is 18th century and both could be beard or moustache combs (Rijkelijkhuizen 2004). This type also occurs in England (Ashby 2007; type 14b).

Method of production

The production method of composite combs, from the solid outer tissues of the antler, is explained in detail in other studies (Galloway, Newcomer 1981; MacGregor, Currey 1983). Due to the properties of the antler, the method of production was very specific. Its bending strength, and the work needed to break it, is greater in the longitudinal direction than the transverse direction. Therefore the comb teeth had to be sawn in the longitudinal direction, i.e. parallel to the long axis of the antler beam. This resulted in combs with tooth plates of relatively narrow width, fixed together by two connecting plates, usually of split antler tine. The teeth were sawn after the tooth plates and connecting plates were riveted together. A uniformity in production process however is questioned by Ashby and he shows that regional differences do exist in the method of manufacture (Ashby, in press).

Dutch composite combs vary in shape, decoration and the riveting method. The rivets were either placed through the centre of the tooth plates or at the ends of the tooth plates (so that one rivet secured

Fig. 4. Two small bone combs from Amsterdam, right undated, left 18th century. Collection: Office for Monuments & Archaeology, photo: Anneke Dekker, Amsterdam Archaeological Centre

the edges of two tooth plates between the connecting plates) or a combination of both these methods were used. The endplates usually deviate from the overall pattern, which also occurs in England and Scandinavia (Ashby 2009). For example, the 7th century comb from Oegstgeest (Fig. 5) has rivets through the edges of the tooth plates, except for the end plates, which have rivets through the centre (Rijkelijkhuizen in press). In other combs both methods were used interchangeably, and seem to have no standard method. Sometimes, the rivets were placed at the same distance from each other even when the tooth plates had unequal widths, result-

Fig. 5. Composite antler comb from Oegstgeest. Photo: Marloes Rijkelijkhuizen

ing in the use of both riveting methods in one comb (Fig. 6).

The production method of longbone combs was far less demanding in terms of time and skills than that of composite combs. They were very simple and fast to execute and always made in the same way, from a single piece of bone cut from a cattle metapodials. The distal ends of the bones were removed from the shaft, and the combs were made from the back or sometimes the front of the bone. As with antler, the bending strength and work to break bone is greater in the longitudinal direction than in the transverse direction (MacGregor, Currey 1983), so the teeth were sawn longitudinally into one end and the rest of the bone shaft functioned as a handle. These teeth were sawn oblique from one side of the comb and were only sharpened at the tip of the teeth (MacGregor 1985:190; Rijkelijkhuizen 2004). The handle of the comb was usually perforated with a small hole. Combs made from the back of the metatarsal have a natural perforation, a large foramen through which blood vessels passed, but sometimes a second hole was deliberately added (Fig. 7).

Fig. 6. Close-up of a composite antler comb from Deventer. Collection: Municipal Archaeological Department Deventer, photo: Marloes Rijkelijkhuizen

Fig. 7. Longbone comb from Zutphen. Collection: Municipal Archaeological Department Zutphen, photo: Marloes Rijkelijkhuizen

Distribution and time period

Both types of combs have been found in all regions of the Netherlands, but the composite combs seem to be succeeded by the longbone combs (Fig. 8). One difficulty in constructing this time line is the large collection of undated Frisian composite combs. The problem in dating these combs is due to many of the terp mounds having been dug up to use the fertile soil as manure (Roes 1963). In figure 8, ivory combs have been added to the time line to show how these succeed the longbone combs. Wooden and horn combs were not included, because the rapid decay of these materials in the soil means that very few survive so it is difficult to draw conclusions on the geographical and period distribution of these combs.

In the Netherlands antler composite combs occur from the 4th century and dominate until the 10th-11th century, when the decline of their appearance probably begins. Evidence of wear, breakage and repair indicated that composite combs were kept in use for a very long time (see below). The production of these combs could have ceased long before some of them were lost or discarded, if they were regarded as important enough to be passed on through the generations as cherished

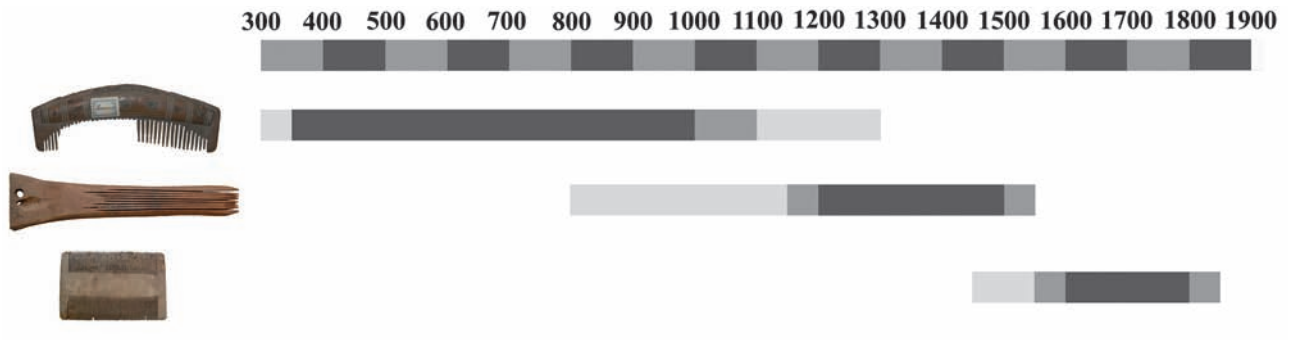

Fig. 8. Time line of Dutch medieval and post-medieval combs of bone, antler and ivory

Fig. 9. Composite bone comb from Amsterdam, 14th/15 century. Collection: Office for Monuments & Archaeology, photo: Anneke Dekker, Amsterdam Archaeological Centre

heirlooms. The date at which the longbone combs first make their appearance is somewhat uncertain, but seems to happen between the 9th and 11th century and they are most numerous in contexts dating between the 13th and 15th centuries. The ivory double sided combs that seem to supersede these longbone combs, appear from the late 16th century, when the Dutch ivory trade commenced (Rijkelijkhuizen 2009).

Composite combs are spread throughout northern Europe. In the Netherlands they have been found in the Frisian terp mounds (Roes 1963), at Dorestad (Roes 1965), Maastricht (Dijkman, Ervynck 1998), Oost-Souburg (Lauwerier, van Heeringen 1995) and Kerk-Avezaath (Verhagen, Esser 2001). Recently a 7th century example was found at Oegstgeest (Rijkelijkhuizen, in press), in Zutphen a total of four were exacavated (Rijkelijkhuizen 2011) and the remain of 26 combs have been found so far at Deventer. The earliest yet discovered is a 4th century comb from Zutphen.

A 14th/15th century composite comb from Amsterdam, made in bone rather than antler, seems a late exception. This comb consists of three bone toothplates fixed together with two bone connecting plates (Fig. 9).

Beyond the Netherlands, long bone combs are found throughout northern Europe, with the notable exception of England (MacGregor 1985:190). They are common finds in Dutch cities; in Amsterdam, for example, a total of 38 long bone combs were found (Rijkelijkhuizen 2004), and they are also known at Zutphen (Rijkelijkhuizen 2011), Deventer and many other cities (for example Roes 1963; Van Vilsteren 1987; Verhagen, Esser 2001; Van Wijngaarden-Bakker 1980). It seems likely that the production of long bone combs took place in every city.

Function – Ritual, decorative or utilitarian?

Early composite combs are often found in rich cremation graves, such as the two combs from Zutphen (Bouwmeester 2000; Rijkelijkhuizen 2011). One is dated to the 4th century (Fig. 10), the other to the 4th or 5th century. Both were burnt and buried with the remains of the bodies. The combs in these late-Roman and early medieval cremations may have had, a ritual function. Williams (2003) suggests that these combs could be used to prepare the body for the cremation pyre and had a symbolic role in the transformation of the body in both life and death. Sometimes, miniature combs were especially made for inclusion in cremations (MacGregor 1985:75).

In other cases, one could question the practical use of the very large composite combs, which can be up to 23 cm long (Fig. 11). Most composite combs, however, show intensive traces of use wear which indicates that these combs were used for a very long time, perhaps by several generations, were repaired (Luik 2008) or continued in use with broken teeth. Modern evidence for the use of combs by different family members and generations has already been de-

scribed by Choyke and Kovats (in press). Human lice have also been found between the teeth of composite combs (Schelvis 1992) but evidence for utilitarian use does not exclude a decorative or ritual functions. The variations in style, shape and size of these combs could relate to different uses or cultural influences, changes in fashion or regional differences.

Longbone combs were initially interpreted as wool combs for preparing wool fibres for spinning. However they are unsuitable for such a use, while the absence of wear traces (MacGregor 1985: 190) and the presence of human lice between the teeth of some examples (Schelvis 1992) also stand against this theory. Now it is more commonly accepted that these are simply hair combs. They are unlikely to be intended for fixing a head-dress, because combs used in this way are usually more decorated and would show different use wear. Use wear is only present at the tip of the teeth (MacGregor 1985:190; also visible on a longbone comb from Deventer); which indicates that the hair was combed with the tip of the teeth.

The apparently strange shape of these combs, compared with the antler composite combs, can all be explained in terms of the shape and properties of the raw material. As detailed above, the teeth are cut in the longitudinal direction as this produces the toughest, most durable teeth. However bone is stiffer than antler and breaks more easily (MacGregor, Currey 1983) so bone comb teeth have to be thicker than antler comb teeth cut for the same purpose. To further strengthen the bone teeth, they are sawn obliquely from one side only, making the teeth longer at the front than on the reverse of the comb. This method ensured large toothbases, meaning that a greater area of each tooth lay in contact with the main body of the comb, and maximising their strength and security. In addition, the teeth were not all sawn to the same depth and this avoids producing a line of weakness across the bone at the base of the teeth. However, thickening the teeth also makes them stiffer so to improve the flexibility of the teeth they are cut longer than in the antler combs. Sadly, making the teeth longer makes them more vulnerable to breakage and the longbone combs never show much use wear, indicating that, compared to the composite combs, they were quickly discarded. This short life expectancy would explain why time was not invested in decorating them. The question is, however, was the longbone comb born out of a shortage of antler or does its adoption reflect also changes in the medieval society?

Fig. 10. Comb from 4th century cremation grave, excavated in Zutphen. Collection: Municipal Department of Zutphen, photo: Marloes Rijkelijkhuizen

Fig. 11. Antler composite comb from Deventer. Collection: Municipal Archaeological Department of Deventer, photo: Marloes Rijkelijkhuizen

Raw material selection – scarcity or choice?

As discussed, antler is preferentially used in the production of composite combs because the physical properties of antler make it more suitable than bone for comb making. MacGregor's survey of combs shows this preference for antler in northern Europe through the 8th to the 11th centuries (MacGregor 1989:113). Although the tradition of composite combs persists, later examples seem to have been made partially or wholly in bone (MacGregor 1989: 110). This early preference for antler is not only clear in the Dutch combs but also across other objects types in the collections. In Dorestad both bone

and antler were used for the production of objects from the 8th century onwards and this included the composite combs, but antler predominated (Prummel 1983; Clason 1980; Rijkelijkhuizen ongoing research). Similarly in Amsterdam, as time passes, the use of bone begins to predominate and antler objects represent only 3% of the total number of excavated bone, antler, ivory and keratinous objects from the 12th to 18th centuries. This does seem to indicates a growing scarcity of antler as a raw material. One problem however, in quantifying this change, is making the correct identification of the raw material of these composite combs. Bone and antler can appear very similar when worked to this extent (Ashby 2005), however, where the evidence is clear, most composite combs do seem to be made of antler.

The reason why antler becomes less commonly available for the manufacture of objects through the medieval period is widely debated. MacGregor suggests that this was caused by changes in the legislation that controlled hunting (MacGregor 1989), whilst Ambrosiani suggests that it was due to the increasing demands of a growing population (Ambrosiani 1981). The decrease of deer in the vicinity of these developing settlements could also be a factor (van Vilsteren 1987:18-19). To address these changes in the Netherlands, evidence for the decline of deer and the disappearance of elk in the medieval period needs be studied more thoroughly. As the provenance of the raw material used to produce antler combs is also unknown, other factors, such as changing trading routes, could be of influence too (Ashby in prep).

Trade & Craft – Travelling craftsmen, sedentary craft or long distance trade?

According to Ambrosiani and MacGregor craftsmen working these materials were itinerant, as evidenced by the absence of identifiable, long-term production sites (Ambrosinai 1981; MacGregor 1989:109). But should we expect the workshops of antler or bone craftsmen to be easily recognisable? It

Fig. 12. Antler waste fragments from sieving samples. Photo: Joyce van Dijk (Archeoplan Eco)

is difficult to locate such craft centres because antler workshops probably did not produce much waste, except for the burr, the tips of the tines and small chips of antler, which are probably not always recognised or recovered at the excavation site. For example, 92% of all antler waste fragments from a 6th-8th century settlement 'Leidsche Rijn' near Utrecht (Fig. 12) were discovered by the zooarchaeologists through the sieving of soil samples (Esser 2008). Waste fragments need to be studied more thoroughly to obtain valuable information on the organisation of this craft.

In the Netherlands, clear evidence for comb making has been detected at a couple of sites. The early medieval settlement near Utrecht (Esser 2008) produced three skull fragments with sawn off antlers, five burrs, a few semi-manufactured tooth plates and fragments of finished combs, in addition to the small antler chips mentioned above. 10th century Oost-Souburg has produced a diversity of composite combs as well as semi-manufactured tooth plates (Lauwerier, Van Heeringen 1995). At Dorestad and Deventer (Clason 1980; Prummel 1983; Rijkelijkhuizen ongoing research), a great number of composite combs have been excavated, along with fragments from bone and antler working. At both these important trading sites comb-making probably took place because the waste fragments and raw material were characteristic for comb making.

Almost all crafts are sedentary by nature and an antler craftsman would need perhaps water for soaking the antler, his tools and a supply of raw material, which are not as convenient to transport over long distances as the finished combs would be. It seems more likely that the combs were distributed by travelling merchants than itinerant craftsmen. These, or other merchants, might also have kept the craftsman supplied with antlers. Gift exchange is another possible factor in the distribution of combs and could be an explanation for some of the early or elaborate examples. Such gifts or traded combs could bring in new styles from distant regions that could be copied by local craftsmen, and this might explain the apparent uniformity of composite combs across northern Europe. Ashby (2005; in press) has stated that the previous assumed homogeneity is questionable, and that different stylistic characteristics can be detected, which perhaps speaks against travelling comb makers, and should at least lead us to question the widespread applicability of the model in its original, unmodified form. Indeed, regional differences in comb-making could also occur, and it is possible that some comb makers were travelling on a small scale (Ashby in press). These subtle differences probably reflect cultural influences, as the diffusion of knowledge and trading networks combined to spread composite comb throughout northern Europe.

Longbone combs seem unlikely to be goods traded over long distances because of the ready availability of the raw material and their simple and undecorated nature. Yet, except for the British Isles, longbone combs are spread throughout northern Europe. The similar appearance of all these combs probably reflects directly the properties of the raw material and their strictly utilitarian use for combing hair. The production of these combs probably took place in almost every town and their use would have been spread by diffusion of knowledge as the antler became increasingly scarce.

Conclusions

Throughout the medieval period in the Netherlands, the use of antler in the production of combs is gradually replaced by bone, a less suitable material for comb making. Composite combs with bone elements or entirely in bone are found in deposits from the 8th century onwards, but by the 13th century only single piece, longbone combs are being produced. This change is due to an increasing scarcity of antler as a raw material. This theory is supported by a general reduction over time in antler as a raw material for objects generally. There is increasing evidence that the skilled craftsmen who produced these composite combs were not itinerant but that it was the finished combs that sometimes were traded, perhaps over great distances and then copied by local craftsmen.

The variations in style, decoration and size of composite combs was probably influenced by cultural differences, local traditions, diffusion of knowledge and trading networks. Their primary function was grooming human hair, but the combs could also have been decorative or used in rituals. Many examples of composite combs exhibit evidence of long use, indicating their value, perhaps both in terms of replacement costs and as valued heirlooms. There is also much to be learnt from considering the findspots of these objects. In particular, we can see a change in context for composite combs: early medieval combs are found in rich cremation burials, whilst later finds are found in settlements and towns.

A shift from antler composite combs to composite combs partially made of bone shows the prelude of a transition towards the fully-fledged use of bone as a raw material, wherein long bone combs seem to replace their composite predecessors. In contrast,

the longbone combs that succeeded the composite combs were simply used for combing hair and were quickly and locally made from a cheap and readily available material. The uniformity in their shape was, to a great extent, dictated by the properties of the bone used, and their lack of decoration reflects their low cost, utilitarian nature and short life expectancy.

However, although many of these longbone combs had broken teeth when discarded, they were still serviceable. This, perhaps, is an indicator of the far reaching transformation produced by the increasing urbanisation of medieval society in the Netherlands. Changing social and political factors, new cultural influences and trading routes, and the development of a market economy could have transformed traditions, and even attitudes towards craftmanship. Did the adoption of these simple longbone combs mark the decline of craftmanship or the beginning of a throw away mentality?

The regional differences in antler and bone combs and changes through time have been discussed for many years and more research still needs to be done to understand the significance of these seemingly simple and common-place objects. Provenancing of the antler and identifying trading routes and craft workshops are key to this goal. The synthetic survey of combs and combmaking debris in the Netherlands has shed some new light on the production, function and cultural significance of medieval combs and has also helped to define the most pressing research questions.

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