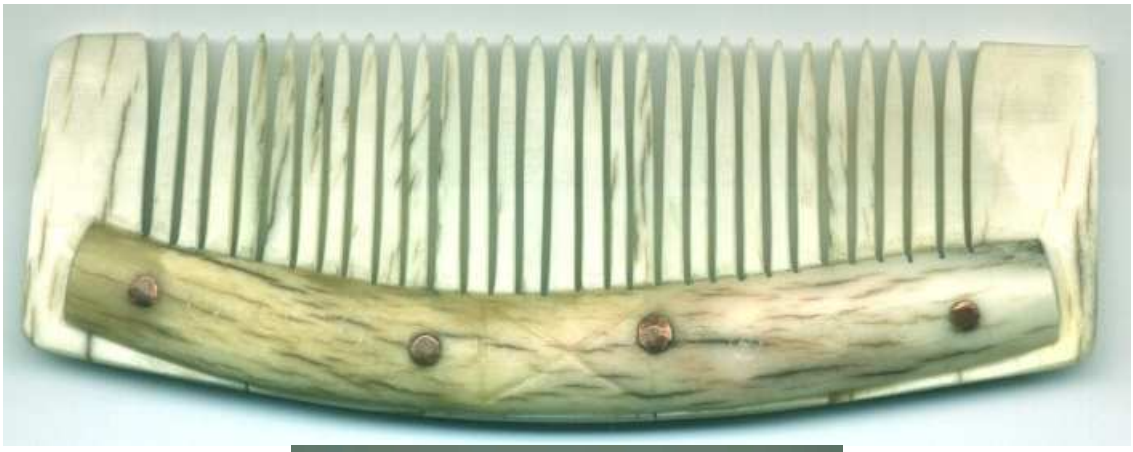
10th Century Norse Comb



by Danr Bjornson,

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Summary

Norse hair combs have been found dating from the 9th to 15th century all over Scandinavia. The primary material for combs was antler, due to its strength. The tools used have much in common with carpentry and blacksmithing, though the saws and files must be much finer. The manufacturing and artistic style of these combs are very similar all over the Norse world.

My primary sources are archaeological artifacts from the Coppergate site in York, various digs on Gotland, and artifacts I saw in various museums in Denmark.

A Norse composite-construction comb consists of two side plates, between which are sandwiched the tooth plates, held by rivets. The teeth are then cut into the tooth plates. This composite construction balances strength and weight. Because antler has a spongy, marrow-like center, these plates must be cut from the hard outer layers of the antler.

I learned a few things from my errors in making this comb. I cut some tooth plates too close to the center of the antler, resulting in some porosity on one side. When the teeth were cut, hidden stress in the tooth plates caused some of the teeth to bend up to 1/2 mm out of alignment. Finally, I did not measure carefully when placing the decoration. I hope to correct those errors the next time.

Historical Documentation

There are many archaeological finds of combs in the Viking world. In the Norse culture, a comb was an everyday object that can be found in the graves of both men and women. The comb was usually placed near the belt area of the body, and combs only rarely having holes to hang them by, suggesting they were usually carried in pouches or purses (Carlsson 2).

The majority of combs were made of antler, usually red deer (MacGregor 1907). Archeologists theorize that the antler from which combs were made was harvested, i.e. picked up after the deer shed their antlers naturally. Such antler would have been an item to trade to the comb-maker in exchange for finished items such as needles, buttons, and of course combs.

Page 1924 of MacGregor, shown below, illustrates an assortment of combs from the 10th , 11th , and 12th century layers of the Coppergate site in York. MacGregor has many more drawings and photos of combs, but this picture shows the common characteristics of the majority of the combs and fragments found on that site. They are all single-sided (teeth on one side), and consist of narrow tooth plates sandwiched between side plates of semi-circular cross-section and held by rivets. The spaces between the teeth are nearly uniform but not perfect, just as the tooth plates vary slightly in width. A few saw marks show that the teeth were cut after the comb was riveted

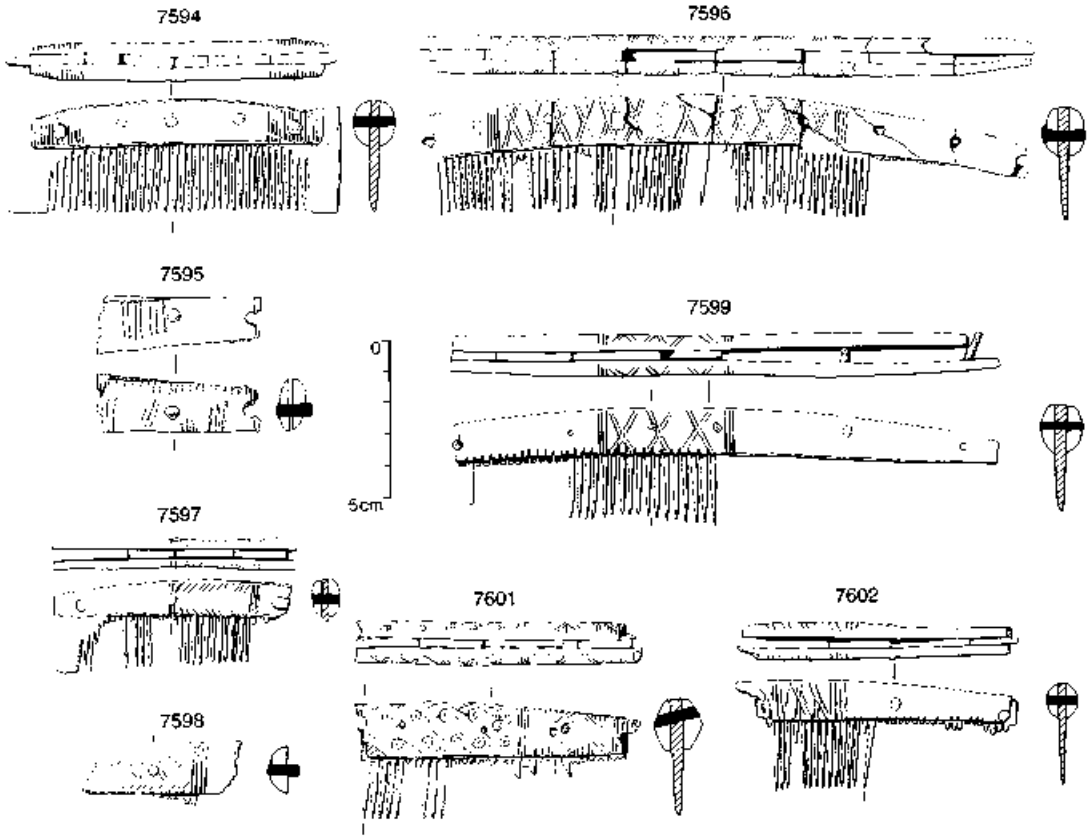


Fig.888 Single-sided composite antler combs from 16–22 Coppergate, Period 4/5 (7594–5), Period 5Cf (7596) and Period 5Cr (7597–9, 7601–2). Scale 1:2

together. The teeth are usually not cut all the way to the ends, presumably for greater strength. The rivets are usually on the joins between tooth plates, even on alternating joints, but through the end plates (1931). The backs of the combs have a curved shape, but the inside along the teeth may be curved or straight. Some faces of the comb have decorations made by saw cuts, usually in a variety of geometric patterns, or a ring-and-dot pattern made by an unknown tool. In most cases the decoration shows no regard for the placement of rivets, suggesting the side plates were decorated before the rivets were installed.

MacGregor also goes into great detail as to the frequency of different styles, materials, and decoration among the many finds. The average comb was single-sided, decorated with saw cuts in a pattern of lines, and had a curved back.

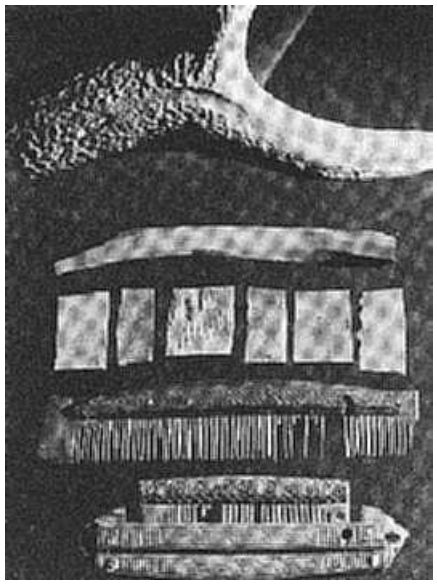
Carlsson illustrates combs from more recent digs on Gotland. This photo, numbered C.10221-130-2, shows a complex double ring-and-dot decorative pattern, as well as the spacing and tapering of the teeth.

This photo from Carlsson, numbered C.10221-130-3, shows the back of a comb, showing the tooth plates sandwiched between the side plates. Again, their width varies.

This photo from Carlsson, numbered F18423-5, shows a cross-section where a comb broke, reveals several things. The tapered shape and rounded edges of the teeth are clearly visible. Furthermore, the tooth plates do not taper where they are sandwiched between the side plates, suggesting that the tooth taper was filed after the comb was assembled. The semi-circular cross-section of the side plates is also obvious in the photo. Finally, the saw cut that created the teeth also penetrates into the side plates along a straight line, providing strong evidence that the comb was riveted together before the teeth were cut.

This photo from Carlsson, numbered F18423-4, shows an example of how the tooth plates on the ends were wide, with no teeth on the far edges, to help protect the teeth from damage. It also shows how the tooth plates are not all of equal width.

Sawyer shows a nice photo of combs, antlers, tooth plates, and other raw materials on page 107, which is shown to the right. These items date to 12th-century Dublin. The raw materials shown here look very similar to the raw materials left from making my comb.



Sawyer also quotes from an Irish poem, in which the taxes due the church were listed. These taxes included, "a comb from every comb-maker," (107). If the craft was important enough to be taxed by the church and mentioned in the poem, it is likely that comb-making was a skilled and respected trade.

Comb-making requires a thin, finely made saw similar to a modern hacksaw. Such a tool is difficult to make, and using it effectively would take great skill. Comb-making also requires a drill, hammer, and very thin files. Due to the need for special saws and files, combs were probably expensive items to buy or trade.

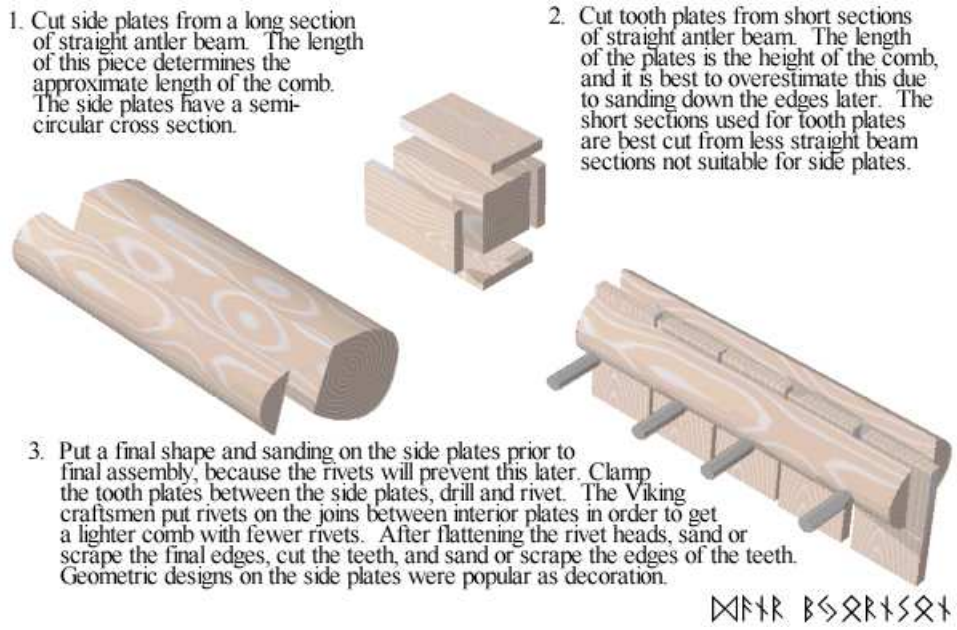
I saw some of these tools in the Danish National Museum in Copenhagen, shown in this photo taken by my lady. I also saw many combs in several different museums during our visit to Denmark.

Process and Materials

I selected a piece of elk antler because it is similar to the red deer antler available to the Norse craftsmen. Like my predecessors, I used harvested antler. The harvested antler has color variations in it due to the action of weather and sunlight, as well as tooth marks from small animals. For the rivets, I chose 16-guage copper wire because it is easier to work than iron.

I made all cuts on a band saw, drilled holes with a drill press, and did the rough sanding on a belt sander. The Viking craftsmen used hand saws, hand drills, and files, of which a few survive. I did not wish to waste antler, and so chose the greater degree of control available with the power tools. Use of the power tools also made the project much quicker to accomplish. I did the decoration, final shaping, sanding, and finishing by hand.

The drawing below, which I made years ago when I did my first comb, shows the basics of the process:



First, I cut a long piece of antler beam. Choosing the straightest side, I cut the side plates from opposite sides of the beam. These pieces began 1/4 of an inch thick and nearly 3/4 inch wide, but sanding them to uniform size reduced their width and thickness. I clamped them together and then sanded them, which made it easier to get a uniform size and shape. I also rounded the edges to get the semi-circular cross-section seen in period examples.

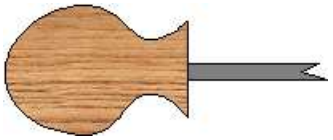
Next, I cut some antler into shorter sections suitable for tooth plates. These plates were about 1 and 1/2 inches long, to account for the curved back of the comb and ensure all the plates would be long enough. I cut the tooth plates about 1/8 inch thick. Then I sanded each one to take off the outer edges (curved from sawing out of a circular cross-section) to make their edges parallel. When cutting the tooth plates, I had to avoid the soft inner core of the antler. The scrap left over from the project, which is part of the display, illustrates how soft this core material is.

When all the plates were cut, I laid them out to find the longest ones that were free of flaws and would fit well between the side plates. I chose 5 of the 7 plates I had cut. I sanded them to uniform thickness, about 3/32 inches. I was measuring "by eye" and "by feel" as experienced Norse craftsmen probably did, though I lack their experience. When choosing how to sand each plate, I sanded either the side that was too close to the surface, because they had too many cracks from the antler surface, or the side that was cut too close to the center, because they had too much porosity.

Having chosen the tooth plates I wanted, I put the widest ones on the outside. The end tooth plates are important because they have to withstand a rivet through their center, as contrasted with the other plates, which generally get rivets through their edges. These plates would also lock all the other plates between them and be subject to stress where they protrude beyond the side plates. The tooth plates are not uniform in width, just like the period examples.

The next step was to decorate the side plates. The decorative saw cuts commonly found on Norse combs are much easier to do before assembling the comb. I made some saw cuts in the shape of my signature rune, decided I did not like them, and used a triangular file to widen them.

My research has not found any tools positively identified as a ring-and-dot maker, so I invented my own. I fashioned a tool shown in the diagram to the right. I took a nail, pounded the head flat, and filed it to a forked shape, with one leg slightly longer than the other. I made the handle on a lathe,



consisting of a bead (sphere shape) that fits my palm and a cove (spool shape) for my finger and thumb. I heat-set the tool into the handle, by heating it red-hot and then shoving it into the wood. This caused the wood's resin to melt and "glue" the tool to the handle. This tool is used to bore a tiny hole into the comb with the longer leg. Then, by rotating the longer leg in this hole, I dragged the short leg along the surface to create a ring-and-dot pattern. I put a couple of ring and dot patterns on the side plates, centered between the saw cuts and the ends.

I clamped the tooth plates between the side plates. This was tricky because I wanted to line up the tooth edge of the plates, which is more visible than the back edge hidden between the side plates. First, I used melted beeswax as temporary glue to hold everything together. I drilled the holes on the drill press, because of the finer degree of control than with a hand drill which the Norse craftsmen would have used. I used clamps to hold the assembly together while drilling. After I drilled each hole, I riveted it and re-tightened all the plates prior to drilling the next hole. This ensured that nothing had a chance to slip or loosen while I was moving clamps around, because even with the beeswax the plates had a tendency to slip.

For the rivets, I used 10-guage copper wire because it is softer and easier to work than the iron used by the Norse. I cut the wire about 1/16 inch longer than the thickness of the comb and filed the ends flat. After slipping a piece of wire through the hole, I tapped the ends into a mushroom shape with the hammer. I alternated between beating the center, to make the rivet shorter and fatter, and beating the sides of the rivet head, to make a rounded dome shape. This technique shapes the rivet head and tightens it into the hole.

When all the rivets were in, I sanded the edges of the back and teeth to shape. This included rounding the back where the tooth plates protruded, giving a nice shape to the end plates, and making a smooth straight surface where the teeth would be cut. I also tapered the tooth plates by carefully sanding them along the length of the comb.

Now that the rivets were placed, I added more ring-and-dot patterns. The patterns are not well spaced because I had to fit them between the rivets and the ring-and-dots that I had previously made, but the comb looked too bare with only two ring-and-dot patterns on each side. In retrospect, a more period approach would have been to ignore the rivets when decorating.

Next, I marked where the teeth would be cut. I had to take into account the width of each tooth plate, the thickness of the saw blade, and the desired uniformity of appearance. Such care is vital, because the joins between tooth plates become spaces between teeth. Because the tooth plates are slightly different widths, the spacing of the teeth is about 1/8 inch but not exactly the same for each plate. The tooth spacing I achieved was close enough to fool the eye and is superior to most of the artifact combs I have seen. I marked the teeth positions both on the top and bottom of the tooth plates to ensure the teeth were parallel. I cut the teeth on the band saw.

Next, I tapered and smoothed the teeth. This was the most time-consuming portion of the construction, because of the delicacy of the teeth and their number. The Viking craftsmen are believed to have used small files for this work, but sandpaper is what I could afford to buy. I tapered the teeth and rounded the edges with 200-grit sandpaper, then smoothed the edges with a linen strip coated with beeswax and antler dust.

Finally, I put a finish on the comb. Because the harvested antler was very dry and more brittle than "raw" antler, I wanted to give the antler a bit of moisture and protect it. I rubbed hot beeswax on the comb, then polished it to a shiny smoothness with a linen cloth. While I cannot document the beeswax finish, it is a material that would have been available to a Norse comb-maker, and it makes the teeth glide nicely through your hair.

This comb took three hours for cutting and riveting, and about five hours to sand and finish. I made it for my lady, and it will add a great deal of authenticity to her costume.

Bibliography

Carlsson, Dan, Viking and Medieval Combs from the Island of Gotland, Sweden,

ArkeoDok, Sweden, 2002. ISBN 91-973304-4-2, order from www.arkeodok.com. This CD, like the others in the series, offers high-quality artifact photos in an easy-to-use gallery and a good research paper to explain the subject matter.

MacGregor, A. et. al., Bone, Antler, Ivory, and Horn from Anglo-Scandinavian and Medieval York, York Archaeological Trust for Excavation and Research, 1999. ISBN 1-872414-99-0. This series of books is good for Dark Ages craftsmen seeking authenticity and the technical details that authenticity requires.

Sawyer, Peter, The Oxford Illustrated History of the Vikings, Oxford University Press, Oxford, 1997. This book is like other "generic Viking" books, but is more scholarly than most. The book draws on the entire body of evidence, including the recent finds in the early 1990s.

Various museums in Denmark. In the summer of 2000, my lady and I traveled to Denmark and visited the National Museum in Copenhagen, the Viking Ship Museum in Roskilde, the Viking Museum in Ribe, and the research/reconstruction sites at Fyrkat, Trelleborg, Jelling, and Lehre. We took many photos, saw many artifacts, and spoke to an archeologist or two. This trip gave us ideas and research for years of arts and sciences projects. Our only complaint is that we had to take our own photos, which did not always come out well when taken through the glass. None of the museums sold information or photos of individual artifacts.

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