

Bone and antler craft

Introduction

Finds of bone and antler working are very common in the Viking Age, this is not just seen in towns and trading places from the time in question. But also on the traditional farms from the Viking Age, bone and antler were used for many different purposes.

The collection of information and photos on this CD-R concerns mainly material from two well investigated and important Viking Age sites in Sweden. One of the places is the town of Birka, situated just west of Stockholm, and being the earliest town in Sweden (other than Scania), dated to about AD 750 - AD 970. The second site is a well investigated Viking Port of Trade on the island of Gotland at a place called Fröjel, along the west coast of Gotland some 30 km south of the main town Visby. Settlement begins here towards the end of the 7th century and goes on well into the end of the 12th century, before it is abandon.

The conditions for preservation of bones are extremely good at these two sites, at Birka because of its wet humid condition and at Fröjel because of its high content of calcium in the soil, meaning for example the existence of extremely well preserved bones and skeletons from as early as the stone age, some 4000 years back.

Besides well identified objects and finished products, these two sites have a huge amount of material in the form of half finished products, raw material and waste from intensive manufacturing. It is often rather difficult to separate this material from normal animal bone and waste.

Most of the raw materials have come from local animals, predominantly pigs, but also including cattle, horses and sheep/goat. Also bone from sea mammals like the seal and whale can sometimes be found to have been used for making these objects, like for example the very famous whalebone ironing board found in Orkney some years ago, and there has also been a similar piece found at Birka.

Antler, mainly from deer and elk, is also a common material at these sites, and in many cases used for some excellent work. This was though not a material found locally on Gotland, where all form of bigger mammals like deer and elk are missing, both now and in the Viking Age. The very common finds of antler on Gotland, must in other words have been imported to the island, mainly from more



wooded areas, like the mainland of Sweden, but also probably from Finland, the Baltic States and Russia.

Another material that we occasionally find objects made from is ivory, probably obtained from walrus of the northern Atlantic region, around Iceland and Northern Norway.

The presentation and categorisation of objects below is concentrated towards objects made of bone and antler, though in some cases it was felt to be necessary to also include comparable objects made from other material, like metal, stone or clay. For example needles, mostly these very thin needles with a small head, used for sewing. They are very common, not only in bone and antler, but also in iron and bronze. The same goes also for spindle whorls, where many were made of stone, clay, lead or even amber.

Many of the objects found on Viking Age or Middle Ages sites have their modern counterpart today, even though we now probably use material other than bone and antler. But, still there are also some objects that are far more difficult to understand. Here we have many opportunities to go on trying to analyse and understand the objects purpose and function.

The catalogues of the objects of bone and antler do not contain combs, even if they were of tremendous importance in the Viking Age. Combs from Viking Age and Middle Ages have been displayed on an earlier CD-R (Viking and Medieval Combs, Gotland, Sweden, ISBN 91-973304-4-2) and will not be dealt with here.

The material displayed on the CD, and below, is divided into a number of different categories and can be viewed as high resolution photos, in many instances taken from different angles to give a good picture of the artefact in question and to be able to see the objects with as much detail as possible. It has however been necessary to limit the number of photos of each object, in order not to make it too difficult to browse through the CD-R.

Textile and leather craft

Needles and pins

One of the most common objects at a harbour site or a farmstead from the Viking Age is the huge number of needles and pins. They are made both of metal and bone, with the bone needles dominating in numbers. The metal needles are made of bronze and iron, and mostly used as sewing needles.

With regard to the bone needles, several closely





related functions are conceivable. They come in many different shapes and forms, and bone needles with slim and more or less streamlined heads were no doubt suitable for sewing and threading. The needles vary greatly in length and thickness. The smallest were evidently sewing needles while the coarser ones may have been used for Naal binding (needle-looping) or even for making nets.



A huge number of the bone needles with a natural shaped heads show few traces of working, apart from the boring of an eye. Fibulae from pigs were mostly used as raw material. It is conceivable that the narrower needles were used for sewing or making nets, while the ones with broader heads were more suitable as loom needles.

Bone pins with large and decorated heads are also difficult to identify a clear function for. They may have been simple tools, hole punches or similar, as well as the undecorated needles, used for example as needles for making cords (Modern name Lucet cords). It is also possible they were used for closing clothing in place of buttons. The only function that would not be possible because of the large head is threading or sewing.

The size of these pins varies considerably, which suggests different areas of use. For them, bone as well as deer and elk antler were used. Sometimes even ivory from walrus. Some of the pins were obviously used as costume pins, mainly all the highly decorated pins.

Many pins have flat heads with the faces carved. Most of them have eyes. Needles like these have stated in variously literature to have functioned as pins, hair pins, or tools. But many of them could have been used as styli. Especially some from Birka, there are several beautifully made examples of this kind of styli.

The styli also come in other shapes, like a square, long and slim pin, decorated all over, and without a marked head.

Spindle whorls

A common object, in the Viking Age, both from the farmsteads and from the harbour sites are spindle whorls. The majority of them are made of bone, but often they also came in other materials like lead, stone, amber or baked clay.

Most of the spindle whorls made of bone are from the head of ox femurs. When cut off straight, they yield hemispherical whorls. The hole for the spindle is slightly conical, widening towards the base. These whorls were threaded on to cylindrical spindles of more perishable materials like wood. Sometimes they are decorated with interlaced pattern.

From Birka, there are several examples of flat cylindrical spindle whorls made of bone, and extremely well decorated. It is not known what type of bone was used for this style of spindle whorls.

Besides being made of bone, many spindle whorls are made of other material, specifically stone, but also metal, clay or amber. They vary greatly in shape and form, being mainly spherical or hemispherical.



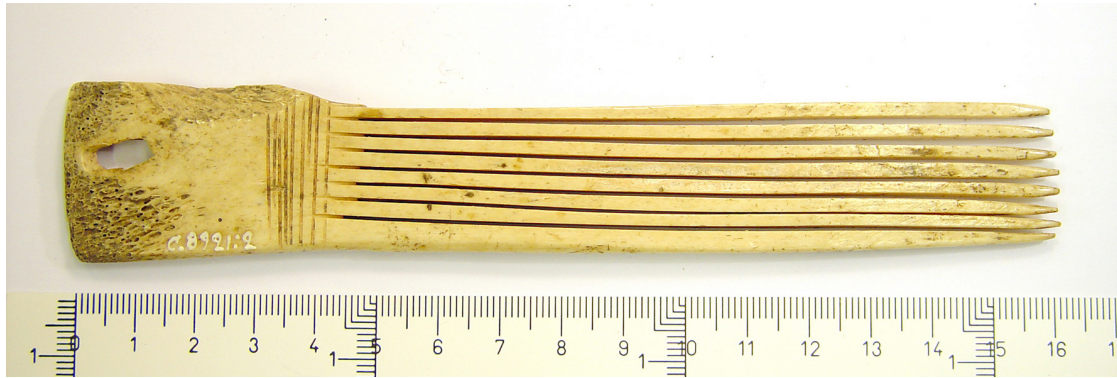
Twinning bones

A rather unusual artefact in the Viking Age and Middle Ages situations are the so called twinning bones, (Lucet) a kind of tool for making coarse yarn and cord. The bone mostly used to make this kind of tool is metatarsus and metacarpus from sheep.

A few centimetres above the broad end, the bone is cut to make two points on which the thread is fastened, while the other side ends with a tongue that is sometimes pointed, sometimes cut straight across. But there are also examples of flat highly decorated cord winders or twinning bones made from antler.

Comb beaters

The function of this tool is uncertain, but it is generally referred to as a comb beater. They are normally made of metatarsus from cattle. After one side of the bone was polished, a rectangular plate about 6 mm thick sawn out and cut to give anything



between five and twelve teeth. The head always has holes, usually just one, for which the natural form of the bone was used, but holes could also be drilled alongside the natural one. The head on either side were decorated with very uniform simple geometric patterns consisting of groups of lines sawn across the bone.

In most of the comb beaters, it is possible to distinguish clear traces of wear on the outermost third of the teeth, like small notches in the corners of the upper side. These traces have been interpreted as having arisen when the teeth of the comb beater were inserted between the warp threads in a loom to press the weft together. This interpretation, however, seems highly uncertain if one envisages a large loom such as the upright type with loom weights of clay. It is doubtful whether beaters with such long teeth would really have been suitable for the purpose. They may possibly have been used for this purpose in smaller types of loom, such as those for tablet weaving.

Weaving Tablets

Not unusual among bone objects from trading places and farmsteads are fragments of tablet for brick banding (Tablet weaving). They consist of a rectangular antler plate, about 2 mm thick and about 30-35 mm in size with four holes regularly spaced. In many cases the tablets are decorated with dotted circles on both sides and lines along the edges.

Tablets have been known in Scandinavia since the Bronze Age, and they were used until well into the Middle Ages.



Needle cases

Needle cases are normally made of bone or a thin metal container, normally of bronze. It holds sewing needles, which would be made of iron or bronze. It is open in both ends and was probably covered with some organic material in the two open ends

possibly wool or similar material.

If not made of metal, they are normally made of various long bones from pig, sheep, and birds. The length of the needle cases varies normally between 50 and 90 mm.



The original shape of the bone stands out in most cases, although there is always a certain degree of surface finishing. In some cases there is some decoration in the form of simple lines.

The needle cases have a loop in the middle, connected to a chain, normally of bronze, and normally hanging from an equipment brooch, or from the belt. It is a typical object in female graves from Viking Age and very common on Gotland.

Bone awls

A very common object at Viking sites are bone awls, a kind of pointed tool made of an animal bone more or less worked into shape. Bones of horse, pig, sheep, cattle, dog, and birds were used for the purpose. Some of them have a small hole at the broader end.

Decorated bone pins/styli

A special group of bone pins, or styli are those made with a flat and decorated head, and sometimes with a special pointed end. The head is sharply defined from the pin itself, often decorated to a high degree, and normally with a hole in the flat end. These pins are made of bone as well as of antler from elk and deer.

Their use is not easy to identify, since they could have been decorative pins as well as styli. From Birka, there are several lovely decorated styli found in the Black Soil, not so many from Fröjel on Gotland. Birka was a central town in Middle Sweden, probably serving a huge surrounding area and obviously the biggest town from Viking Age in middle Sweden. The high number of styli is then perhaps not



surprising as traders would have used wax tablets for record keeping.

Mountings

In all excavations of Viking Sites, there are numerous finds of decorative mountings, made mostly of iron and bronze. It seems as if it was extremely common in the Viking age to have decorations mounted on all kinds of objects, like chests, doors, and different kinds of objects like knife sheaths, horse harness etc.

Mountings of sculptured bones

Even if most of the mountings were of metal, there are some fascinating small bone mountings. They normally are very small, just a few cm, and they have been mounted on belts etc. with a small bronze rivets in the middle of the mounting.

Most of the mountings depict stylised animals; dromedary, lion, dog, hare etc. Most of the mountings are presumed to have been double, mounted on either side of some organic material; probably as said above leather. The two sides and the small size mean that they should probably be regarded as costume ornaments; and the most natural use seems to be as mountings on a leather belt.



Normally these small objects are found in situations where they can be dated to 12th -13th century, meaning very late Viking Age and Early Middle Ages. Our knowledge of similar material elsewhere in Scandinavia is too small to permit any definite hypotheses about where the sculptures were made; their unpretentious material gives us no clue, and their oriental form may be regarded as a general European phenomenon in Europe in the age of the crusades in the 12th and 13th centuries. In these primitive small sculptures, however, we still detect a hint of the Byzantine and oriental sculpture that is their ultimate origin, and it is interesting to notice that most of these figures are found on Gotland and Öland, the island in the Baltic Sea, and less for instance at Birka and further west and south.

Flat bone/antler mountings

Many times in excavations, flat bone/antler mounting are found. The objects are flat discs of bone or antler. They all have rivet holes, in some cases with surviving rivets/nail of iron or bronze.

They are often decorated with small circles with a



central dot. Their purpose is not very well known. In one case from Eketorp on the island of Öland, there was preserved wood attached by rivets to the flat bone mountings, hinting at the bone plate as a kind of decoration on a wooden box or shrine.

Bone shaft, turned bone pipes and toggles

At Birka there are many pieces of bone that must have functioned as tool handles, probably for knives, chisels or other kind of tools of iron. In one of the graves from Fröjel, a female grave, there was an iron knife with a well preserved bone handle.



From Birka, there has also been a find of several pieces of toggles.

This type of object has also been found in the Viking ship of Gokstad, though of a much bigger size. Toggles were of course also made of wood, but wood very seldom survive to our days

Games, cult, leisure and music instrument

Dice

In virtually all Viking and Medieval material, dice make up a frequently occurring group, and Birka and Fröjel are no exception to this. At sometime in the end of the Viking Age or Early Middle ages, the numbering systems changed to the one we have today, which is the same as the Roman system in which the sum of the dots on opposite sides is seven, as opposed the older system in which one is opposite two, three is opposite four, and five is opposite six.



The dice are in many cases extremely small, just about 3-4 mm in a side. Most of the dice are made of antler, and sometimes even from a horse tooth. Even ivory is fairly common among dice.

Gaming counters and pieces

Connected to dice are of course gaming pieces. These small objects were made of many different materials, from bone and antler to stone and glass. Famous are the lovely gaming pieces from Birka made of horse teeth, and also the gaming pieces of glass.



Most common though, are the small gaming pieces of antler. They seem to have been of little different fashions at different sites. At Birka, as well as Eketorp on Öland, the most common seems to be a spherical small bone piece, turned but with very little decoration.



On Gotland, the most common gaming piece is a pointed piece of antler, clearly turned, by looking at the bottom on the piece where still a small hole is preserved. This type of gaming piece could be presumed to have been used for the board game *Hnefatafl* that is mentioned in Icelandic sagas.

Musical instruments

By far the most common musical instrument used in the Viking Age and Early Middle Ages is the bone flute. To all appearances, wood was rarely used for flute instruments in the Viking Age and Middle Ages. Despite the many excavations of layers where organic material is preserved, only one wind instrument of wood has been found in a positive context, presumed to be a bagpipe chanter.

The bone flutes are normally fipple flutes, that is, a wooden block in the mouth-piece makes the air pass through a narrow channel and strike the sharp far edge of an opening, where a note is formed.

There are most often three finger holes, mostly located in the middle of the flute. Flutes of this type commonly occur from the Viking Age, for example, at Birka and Hedeby, until the sixteenth century and haven't changed much during this long period.

The flutes are normally made of sheep's bone, or from long bones from large birds, like swan, goose, or crane, which are all otherwise attested among the animal bones from Eketorp, Sweden.

At Birka, there are a few examples of string instrument having been preserved, belonging to a type of lute obviously.

Whizzers

From Eketorp and other well excavated sites from Viking Age - Middle Ages there are numerous perforated phalanges, all made from pig metapodia. They were obviously used for producing noise, and not used as a button or an amulet as previously supposed but rather as a child's toy.



A thin thread was threaded through the holes. The bone was rotated and kept in motion by rhythmic movements of the hand, creating a whizzing sound.

Ice skate

A piece of a leisure object found at many sites from Viking Age and Middle Ages are so called ice skates. These are made of bones from cows or horses, and were fastened to the foot by strings of leather. Two holes in each end of the object gives an idea how they were fastened to the shoes.



The one depicted in this CD-R comes from Gotland, two were found at Frojel Viking Age Port of Trade, and one complete and one fragmented from the deserted farm Fjåle in the eastern part of Gotland. This type of ice skate was used well into the 16th century possibly for winter travel or sport.

Spoons

A very fascinating object found mainly at Birka are spoons made of antler or bone. They are in some cases beautifully decorated, both on the shaft and on the blade. They vary in size but use to be around 13-15 cm long, made in one piece.



Other objects

Weapons and armours

It is rather uncommon in the Viking Age to find arrow heads made of bone or antler, while iron (steel) of course was far more common in the Viking Age and later periods. From Birka there is a small, very well made, arrowhead made of bone or antler. It is rather narrow and slim, with a tang to be inserted in the arrow.



Even a sword pommel made of antler, as well as a cross guard have been found at Birka.

Unknown objects

As usual concerning prehistoric material, there are some rather strange and unknown objects that are hard to define what they are. On the CD-R, there are 6 objects that are hard to understand what they are, and I would welcome any suggestion as to what they are.



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Further readings about bone and antler work

- **Ambrosiani, K.** 1981. Viking Age Combs, Comb Making and Comb Makers in the Light of Finds from Birka and Ribe. Stockholm Studies in Archaeology 2.
- **MacGregor, Arthur.**: Bone Skates: A Review of the Evidence; in Arch. Journal 133, 1976. pp. 57-74 with illustrations and plate IV. Large bibliography.
- **MacGregor, Arthur:** Barred Combs of Frisian Type in England; in Medieval Archaeology 19, 1975, pp. 195-8 with multi-sided line drawings of six combs.
- **MacGregor, Arthur:** Bone, Antler, Ivory and Horn - The Technology of Skeletal Materials Since the Roman Period; Croom Helm, London and Sydney, Barnes and Noble, Totowa, New Jersey, ISBN (OOP) 0709932421, 1985 TT288.M# / LoC 84-18535, 245pp with illus. Contents: Raw Materials, Bone and Antler as Materials, Availability, Handicraft as Industry, Working Methods and Tools, Artefacts of Skeletal Materials - a typological review, Bibliography, Index.
- **MacGregor, A, A.J. Mainman, and N.S.H. Rogers:** Bone, Antler, Ivory and Horn from Anglo-Scandinavian York; The Archaeology of York, the Small Finds, 17/12 Craft, Industry and Everyday Life; Published by the British Council for Archaeology, Bowes Morrell House, 111 Walmgate, York, YO1 9WA, England, ISBN 1872414990, 936.2 843, Published for the York Archaeological Trust, 1999, 213 pp. with Illustrations.
- **Comb-Making in Medieval Novgorod (950-1450): An Industry in Transition** ISBN-13: 978-1-84171-811-8 ISBN-10: 1-84171-811-4
- **Materials of Manufacture: The choice of materials in the working of bone and antler in northern and central Europe during the first millennium AD** edited by Ian Riddler

The first millennium AD introduced new technologies, such as the lathe, which motivated a resurgence in bone and antler working in Europe. New raw materials also became popular, particularly elk antler. This collection of seven papers, originally prepared for a small conference held at the British Museum in 1997, reflect on these and other changes that marked the transition from the Roman to the medieval world. Subjects include: elk antler finds from the Roman town 'Old Virunum' in southern Austria; the identification of fallow deer remains from Roman Monkton in Kent; workshop debitage and reused objects from Roman Pannonia; antler remains from the Late Antique site of Saint-Clair-sur-Epte; the working of roe deer antler in Anglo-Saxon England; bone working at Middle Saxon *Hamwic* in Southampton; Late Saxon worked antler waste from Holy Rood in Southampton. One paper in French, the rest in English. 75p, b/w figs (*Archaeopress BAR S1193*, 2003)

ISBN-13: 978-1-84171-559-9
ISBN-10: 1-84171-559-X
Paperback. Price US \$65.00

• **Prehistoric Combs of Antler and Bone: Volumes 1 and 2 by Tina Tuohy**

Catalogue and discussion of prehistoric antler and bone combs from Britain and Northern Europe. The author considers manufacture, wear marks, style and decoration, and whether types can be related to any particular locality, and their use in the combing of wool and in the weaving of textiles. *2 vols, text 120p, many b/w figs (BAR 285 1999)*

ISBN-13: 978-1-84171-112-6
ISBN-10: 1-84171-112-8
Paperback. Price US \$125.00

• **From Hooves to Horns, from Mollusc to Mammoth: Manufacture and Use of Bone Artefacts from Prehistoric Times to the Present. Edited by Heidi Luik, Alice M Choyke, Colleen E Batey and Lembi Lougas**

This collection of thirty-five papers from the 4th Meeting of the ICAZ Worked Bone Research Group held at Tallinn, Estonia, in 2003, includes research by archaeologists and zooarchaeologists on the manufacture and use of bone from the Palaeolithic to the present day when souvenirs and some decorative objects are still made from bone. The papers are divided chronologically into the Palaeolithic and Mesolithic, Neolithic, fortified Bronze Age settlements, Iron Age Europe and the eastern and western provinces of the Roman Empire, Viking Age and the Middle Ages. Sections also examine artefacts made from special raw osseous material (shells, bird bone, elk antler, fish bone, Walrus ivory, skeleton of a marine turtle) and their manufacture, and experimental work. Papers in English. *445p, many b/w figs and pls (Muinasaja Teadus 15, 2005)*

• **Bond, J M and O'Connor T P. 1999. Bones from Medieval Deposits at 16-22 Coppergate and Other Sites in York. Report which aims to present an analysis of the post-conquest bones from Coppergate, and to develop a wider synthesis of context to the smaller groups. 125p, b/w figs, tbs, pls (York Archaeological Trust/The Archaeology of York 15, 1999)**

ISBN-13: 978-1-872414-93-5
ISBN-10: 1-872414-93-1

• **Klein, Richard, G. The Analysis of Animal Bones from Archaeological Sites**

ISBN-13: 978-0-226-43958-7
ISBN-10: 0-226-43958-5

• **Ritchie, Carson I. A.: Bone and Horn Carving. A Pictorial History; A S Barnes / Thomas Yoseloff 1975- 4to 28x21 166pp with index. Illustrated in b&w. Cloth. I have it and like it very much. Not hard to find on the web. For some of these books try**

<http://www.abebooks.com/>

- **Gibson, Margaret:** The Liverpool Ivories; "Late Antique and Medieval Ivory and Bone Carving in Liverpool Museum and The Walker Art Gallery"; HMSO, London 1994.
- **Hall, Richard.** 1995. Viking Age Archaeology in Britain and Ireland; Shire Archaeology 60, 1990/1995, 64 pp., ISBN 0747800634, £4.99/ \$10.60. Early Study of the Vikings. Antler combs and bone comb case from York; Borre-style decoration on a bone Knife Handle from Canterbury; Rune incised comb-case, Lincoln; Hunterston (Ayrshire, Strathclyde) runic-inscribed brooch.
- **St. Clair, Archer and Elizabeth Parker McLachlan:** The Carver's Art - Medieval Sculpture in Ivory, Bone and Horn; September 10-November 21, 1989; The Jane Voorhees Zimmerli Art Museum, Rutgers, The State University of New Jersey, New Brunswick, New Jersey, 1989, LoC# 89-84265, 146pp., Illustrated Exhibition Catalog.
- **Roesdahl, Else:** The Vikings in England and in Their Danish Homeland, Exhibition Catalog, (with James Graham-Campbell, Patricia, Connor and Kenneth Pearson) Publ. by Anglo-Danish Viking Project, London 1981, 192 pp. Pb, Color and b&w photos of metalwork, weapons, jewellery, daily items, beads, coinage, houses, ships, costume, combs, maps, bone and antler items, whetstones, dies, Bamberg Casket - Kunegunde's Jewel Box, spoons, frying pan, horn mounts, and sculpture - architectural and memorial, and amber.
- **Timings, Jim:** Bone Carving A New Zealand Guide to Tools, Techniques and Marketing; Shoal Bay Press, 1999 Soft Cover. 8vo - over 7-9" tall. 63pp.
- **Myhre, S.:** Bone Carving, A Skillbase of Techniques & Concepts; 1987, Auckland, NZ, 116 pp, 8vo, pb, illusts., New Zealand bone carving, Soft Cover. ISBN 790000393
- **Wainwright, G.J.:** Gussage All Saints - An Iron Age Settlement in Dorset; Department of the Environment, Archaeological Report Number 10., London, Her Majesty's Stationery Office 1979. ISBN 0 11 670831 X, 202 pages, index plus 87 plates; First Edition.
- **Ward Perkins, J B.:** London Museum Medieval Catalogue 1940; Anglia Publishing, 1993. Catalogue of the wide-ranging collection: weapons, tools, horse furniture, pendants, keys, purses, weights, lighting, household utensils, plate, pottery, tiles, pilgrim souvenirs, buckles, chapes, figures, wood, bone, ivory, glass, pipe clay, whetstones, seals. 322 pp, illustrated boards, profusely illustrated with photos and drawings.
- **Ward Perkins, J.B.:** A Medieval Spoon in the Guildhall Museum, London; The Antiquaries Journal reprint, July 1939, (Vol XIX, No. 3), pp. 313-6. and plates LXI-V and includes illustrations of wooden, metal and bone spoons from other time periods.

- **Waterman, Dudley M.:** Late Saxon, Viking, and Early Medieval Finds from York; in *Archaeologia* 97, 1959, pp. 59-105. Includes bone pins and bodkins, wooden and bone spoons, bone combs and cases, oak casket with bone mounts, ornamental bonework including flutes, worked antler, spindle whorls, stone whetstones.