

# **Arts and Crafts in Medieval Rural Environment**

L'artisanat rural dans le monde médiéval

Handwerk im mittelalterlichen ländlichen Raum

Ruralia VI

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# RURALIA 6

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Cover: Excavation of an early medieval iron production centre in the municipality of Zamárdi (Hungary). Photo Zs. Gallina – A. Hajdú.

## Viking age and medieval craft in Iceland: Adaptation to extraordinary living conditions on the edge of the Old World

Artisanat des périodes viking et médiévale en Islande:  
l'adaptation aux conditions de vie extrêmes des franges de l'Ancien Monde

Wikingerzeitliches und mittelalterliches Handwerk in Island:  
Anpassung an außergewöhnliche Lebensbedingungen am Rand der Alten Welt

Natascha Mehler

With an area of around 100,000 km<sup>2</sup> Iceland is the largest volcanic island in the world. It lies just below the arctic circle on the Mid-Atlantic-Ridge. The south coast is influenced by the Gulf Stream. The interior consists largely of lava desert and glaciers and is uninhabitable. The coastal regions however were colonised in late 9<sup>th</sup> century. The settlement pattern seems to have been extremely stable. Most of the locations still exist today. The extreme climatic and geographic conditions meant that the settlers were confronted with a number of hindrances which had to be surmounted. Many of the raw materials familiar from their lands of origin were not available in the amount or quality to which they were used. That though, did not deter them from settling in Iceland permanently. Soon they were exploiting alternative resources to make artefacts and tools, or imported them from other lands in Northern Europe. Gunnar Karlsson has described the difficult settlement conditions appositely: *From a strictly physical point of view, it seems as if it would have been possible for iron-age pastoralists, such as the early Icelanders, to survive in the country without any trade with the external world* (Karlsson 2000, 48). Viking Age and medieval Icelanders produced the most important foodstuffs, artefacts and tools domestically in their own homesteads. Vigorous trading activity with Norway, Germany or England opened the route to Iceland for goods which bettered the standard of living. The material culture of Iceland and therewith the number of finds on archaeological excavations grew steadily during the Middle Ages. Even so the number of finds is in no way comparable with that of a medieval settlement in Continental Europe. Real assets were valuable, and especially metal was almost completely recycled. Despite the lack of material goods, analysis of skeletons of early Icelanders shows that enough good nutrition was available. The skeletons from Skeljastastir (11/12<sup>th</sup> century) display hardly any symptoms of deficiency and in comparison to many contemporary populations on the Continent, the medieval Icelanders seem to have been healthier (Gestsdóttir 1998).

From an archaeological point of view it is often not possible to distinguish between production for home requirements and tradecraft – i.e. commercial production. Judging from the known finds, specialist workshops with division of labour, known from Mid European towns, seem neither in the Viking Age nor in the Middle Ages to have existed in Iceland. Even so, the swiftly increasing export of Icelandic wares such as fish, textiles, skins and wool show the existence of commercial tradecraft. The inhabitants produced a surplus to sell to foreign merchants. Even so, the organisation and structure of such branches of Viking Age and medieval tradecraft over and above domestic production remain obscure. For a proper scrutiny, more archaeological research must be done. Most of the material groups such as bones, textiles and leather have not yet been finally dealt with. And little is known about the workshops where the work actually took place. Icelandic literature mentions smithies as stand-alone buildings within nearly all medieval homesteads. It should however be remembered, that although the Icelandic word *smiðr* is very similar to the English word *smith* and the German *Schmied*, it can also simply mean “artisan”. The buildings titled *smiðja* were usually multi-functional workshops, where not only iron was worked, but also implements made from other raw material for use within the autonomous homestead (Capelle 1980, 436). The identification of weaving or carving places and the like within a homestead is often only possible by the localisation of finds. The interpretation is however often hampered by the paucity of such finds. The homestead often consists not just of the farm mound, but also possessed some small auxiliary buildings, the purpose of which is often unclear. *Grubenhäuser*, known in many parts of Central Europe and linked to handwork are seldom found in Iceland. How difficult they are to interpret is shown by the small 2.40 × 2 m *Grubenhäuser* in Stóraborg, 0.7 m deep and dated to the 11<sup>th</sup> and 12<sup>th</sup> centuries (Fig. 1; 2; Snæsdóttir 1992). A small hearth was found against its west wall, finds include a knife, a stone loom weight, a whetstone,

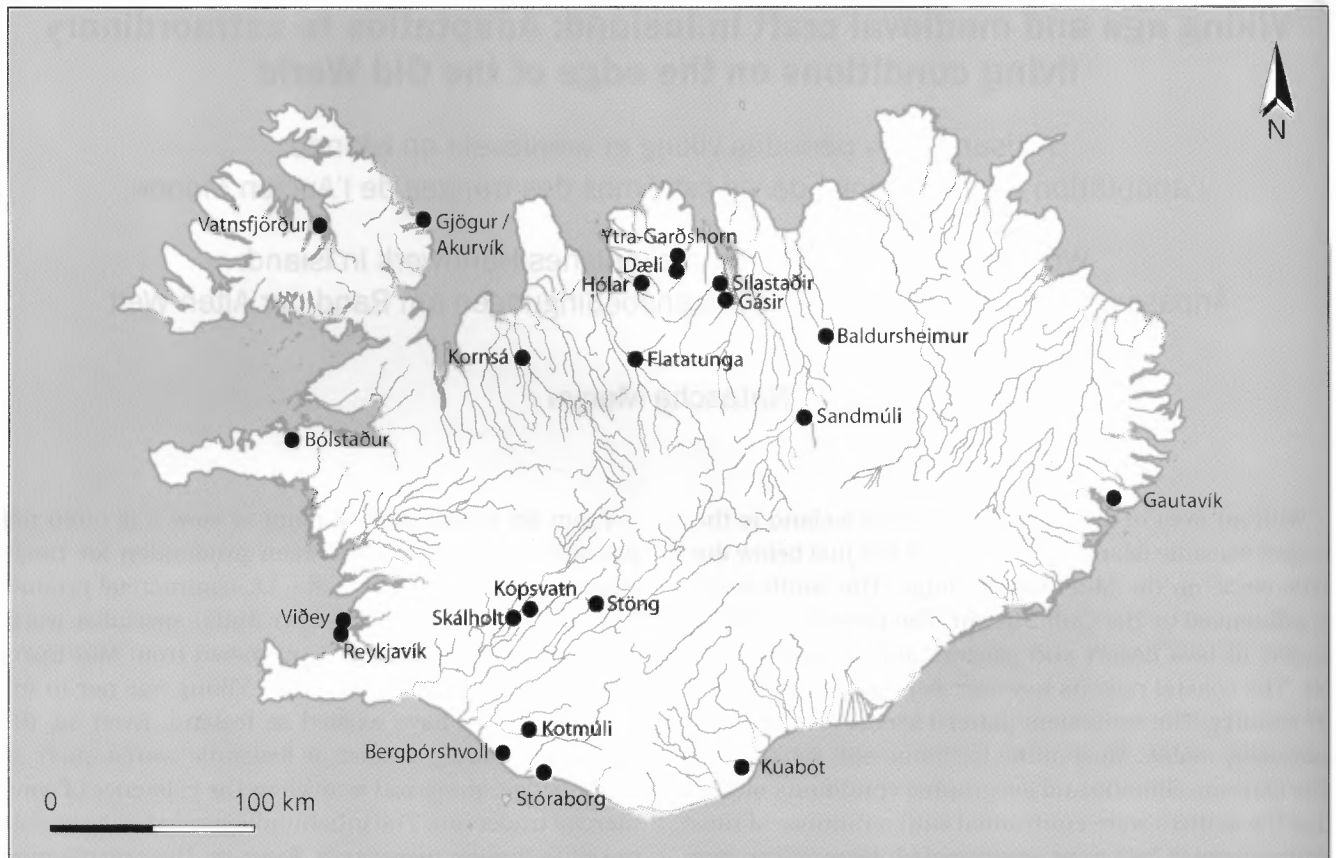


Fig. 1. Map of Iceland with sites mentioned in the text (map by Natascha Mehler and Kristine Ruppel, Römisch-Germanische Kommission).

a whorl and a Viking Age glass bead. It was not possible to allocate this *Grubenhaus* to one particular craft. Rather, it may have been used by a variety.

A glance at the Viking Age and medieval settlement structure provides some clues as to why trades and

crafts developed differently in Iceland in comparison with North and Mid Europe. Basing his estimate amongst other things on Ari Þorgilsson's *Íslendingabók* (Book of the Icelanders) written between 1122 and 1133 Gunnar Karlsson postulates a total medieval population for Iceland of around 40,000 to 50,000 individuals. A household consisted of about eight people: husband and wife, three children, one grandparent and two hands (Karlsson 2000, 11, 44, 50). Until the 18<sup>th</sup> century there were neither towns nor larger villages in Iceland. Most of the Icelanders lived on single homesteads often at great distance from each other. With an average head count in Iceland of only 0.5 per km<sup>2</sup>, it is clear that the homesteads and family groups were largely autarkic and had to be able to produce the necessary foodstuffs and implements by themselves. Their technical skills drew on the experience they brought with them from their original homeland. The basis for the development of particular specialities was hardly present. Few people could live by the execution of one particular skill alone. Most of the settlers were farmers who, according to the season, had also to work as fishermen, smiths, carvers, builders etc. Tradesmanship was often seasonal. It is therefore hardly surprising that craftsmen's guilds in Iceland first appeared in the 19<sup>th</sup> century. Unlike other lands, there were no regularly held town markets in Iceland where the craftsmen could have offered

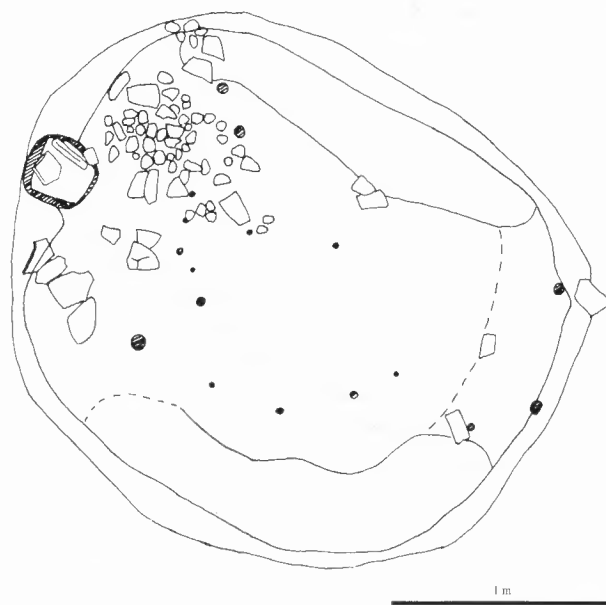


Fig. 2. Stóraborg: Plan of the *Grubenhaus* with fireplace near the western wall and postholes (after Snæsdóttir 1992).

there wares for sale. On the other hand, the many seasonal assemblies offered opportunities for exchange, repairs or servicing, as did the seasonally used trading stations such as Gásir or Gautavík, which were regularly visited by foreign ships.

Three **source-groups** are available for research into the early crafts and trades in Iceland. Various types of **documentary evidence** provide sporadic clues, without giving any detailed descriptions that can add focus to the overall picture. Medieval sagas sometimes indirectly mention craftsmen or their products, though their validity must often be questioned. Information on imported assets can be found in diploma-collections such as *Diplomatarium Islandicum* or the *Diplomatarium Norvegicum*, in the custom and trade registers of North European trading towns or in the correspondence of the *Hamburger Islandfahrerbrüderschaft* (Icelandfarer Brotherhood). The *Grágás*, the Gray Goose Laws, a collection of civil laws and laws governing the Christian church from the Icelandic Commonwealth period dating to the early 12<sup>th</sup> century also offer some indirect information. The documentary evidence suggests that the few medieval tradesmen in existence, moved around and earned their living as itinerant artisans and salesmen (Ebel 1977, 4–8). Wandering smiths are known, and the *Grágás* reports that swordsmiths or sword grinders had permission to move from place to place and work for wages or to occupy a booth at the Althing. They do not seem to have been independent though, as they had to take up abode with a farmer (*Grágás I a 130; II 267*). The *Sturlunga Saga*, writ-

ten around 1300 names Otkell, who in 1324 moved around selling wooden vessels, the wood for which he found on the beach (*Finnbogason 1943a*, 365). The documentary evidence has not yet been systematically appraised with regard to crafts and trades. **Ethnology** and **archaeology** clarify the picture somewhat. The first step from the ethnological side was taken in 1943 by Guðmundur Finnbogason who in his *Iðnsaga Íslands* (Tradecraft History of Iceland) dealt with this subject at length. The basis for his work being the many modern tools in Icelandic museum collections. His information on medieval trades and crafts comes almost exclusively from contemporary (i.e. medieval) documents (*Finnbogason 1943b*). From the archaeological point of view, handicraft has hardly been systematically researched, even though suitable find-complexes have been on hand in Iceland for some time. In extensio alone Torsten Capelle has addressed Viking Age and medieval tradecraft in Iceland, his emphasis 25 years ago being on smithing (*Capelle 1980*). Thanks to the many new finds discovered in Iceland, especially in the last decade, a wider basis is now present for research into trades and crafts. This contribution presents an overview of archaeologically verifiable domestic handicrafts and trade skills in Iceland, the emphasis being distinctly on archaeological methods. Crafts such as sewing or brewing leave little or no traces in the soil, can therefore hardly be archaeologically recognised and are not dealt with here. They were however just as important as the crafts and skills that have – even if only partially – been archaeologically detected.

naturally occurring resources									
clay	wool	skin	ore	wood	stone	horn	bone	tusk	sulphur
				birch driftwood	jaspis rhyolite basalt liparite etc.	cattle sheep	cattle sheep whale seal	walrus	
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
lining	textiles (vaðmal)	clothes ropes parchment book covers vessels	knives weapons tools  building and horse equipment	vessels handles furniture timber tools  personal items	weights tools fire starters lamps figures whorls  gaming pieces	spoons  drinking horns  personal items	pins boards handles  gaming pieces  weaving swords  leg vices	gaming pieces  decoration  raw material for export	raw material for export  preservatives

Fig. 3. Illustration of the naturally occurring resources found on Iceland and the products deriving from them during the Viking and medieval periods (illustration by Natascha Mehler, Römisch-Germanische Kommission).

## The Resources

For the developing society in Iceland access to raw materials was vital and decisive for permanent settlement. The settlers from Norway and England were familiar, with the working of wood, stone, clay, bone and leather in their original homelands, though as we will see (below) the lack of indigenous pottery remains an unsolved problem. The new climatic, and geological conditions as well as the vegetation demanded swift adaptation to the new circumstances. During the colonisation at the end of the 9<sup>th</sup> century the climate was warmer than today and the coastal regions of Iceland were covered by birch and willow trees, grass and moss. However, pollen analysis has shown that due to slashing and burning and felling, the forest areas had more or less disappeared as early as 50 years after the arrival of the first settlers. By the 12<sup>th</sup> century the landscape had developed into one of open grassland. Some small birch forests had survived and were cultivated as illustrated by the sagas and medieval documents (Vésteinsson 2000, 165–167; Vésteinsson – Simpson 2004). With the exception of precious and non-ferrous metals, stone such as schist or soapstone and grain plants such as wheat all the resources present on the Continent were also to be found in Iceland (Fig. 3). Weapons, tools, foodstuffs, jewellery and toiletries were produced for domestic use and in tradecraft. Renewable resources, especially fish, sea mammals and wool abounded, though how they were used and processed to finished products differs in some cases radically from the methods known from Scandinavia and other North European countries. The exploitation of all the raw materials naturally present can be archaeologically verified. The scope and the individual production steps within a tradecraft are only partially known.

## Domestic craft for survival

Access to **fuel** such as peat, wood and charcoal was of existential importance for the survival of the first settlers and the development of the Icelandic society. On the one hand food had to be cooked and houses heated. On the other hand the production and working of iron for tools, weapons and implements was crucial in guaranteeing the permanent settlement of Iceland. In earth kilns good quality charcoal was produced from hard, slow growing birch wood (Jóhannesson 1969, 252). More important as fuel though was peat. Charcoal was only the alternative when peat was not available. A combined micro-morphological and historical analysis, carried out by Ian Simpson and Orri Vésteinsson on fuel residues from medieval farm sites in North-East Iceland, has shown that the few tree populations which still survived in the Middle Ages were

carefully cultivated. The regulations had already been set out accordingly in the *Grágás* (above) as well as in the *Jónsbók* in the 13<sup>th</sup> century: peat should be used as fuel in preference to wood, felling of the forest areas still surviving at that time was forbidden and the production of both fuels should result in the least possible damage to the land (Vésteinsson – Simpson 2004, 183). That these rules were followed is shown by the fact that the birch forests survived longest in those areas where iron production provided an important economic basis (Fridriksson – Hermanns-Audardóttir 1992, 5).

In the Viking Age and the medieval period, conditions for the production of **iron** were extremely favourable. The necessary raw materials were sufficiently available – bog ore of excellent quality is to be found in many parts of Iceland and during the first centuries of settlement, there was no scarcity of charcoal as fuel. It can be assumed that in the first centuries of settlement the Icelanders were self sufficient in iron (Nielsen 1926, 169; Þórðarson 1943, 254). The zenith of local iron smelting lay in a period between 900 and 1400. Iron production only began to recede during the 15<sup>th</sup> century, as the supply of wood and therefore charcoal declined and imported iron became cheaper and better. It was probably the English, who had founded and settled a number of fishing stations, especially in the South-West, who took over the iron trade (Jóhannesson 1943, 58; Fridriksson – Hermanns-Audardóttir 1992, 9; Espelund 2004, 23).

In systematic fieldwork in the 1920s, 1970s and 1980s over a hundred iron-smelting sites belonging in the Viking and Middle Ages were recorded. Of central importance is the Fnjóskadalur. In this valley to the east of Akureyri and near the trading centre Gásir one of the largest forest areas of Iceland has survived until today and, with ample occurrences of bog ore, good conditions prevailed for the development of an early iron industry. The ore was smelted to iron in direct process in shaft furnaces (Nielsen 1926, 144–147, 154, 169; Nordahl 1988, 112; Fridriksson – Hermanns-Audardóttir 1992, 6; Espelund 2004). According to the present state of research, it is assumed that iron was smelted using both indigenous as well as imported ore or raw iron. Provenance studies on the chemical composition of the bog ore have shown that ore from various Icelandic deposits were mixed during the smelting process. Despite a number of studies on Icelandic iron production (Nielsen 1926; Sigurðardóttir 2004, 120) and distribution, it is still unclear as to which iron finds were locally made and which were imported.

In Iceland iron extraction and iron working were closely related. Many smiths produced their own iron. In Icelandic society smithing was of existential importance and highly regarded. And it was of considerable scope, often over and above that of simple

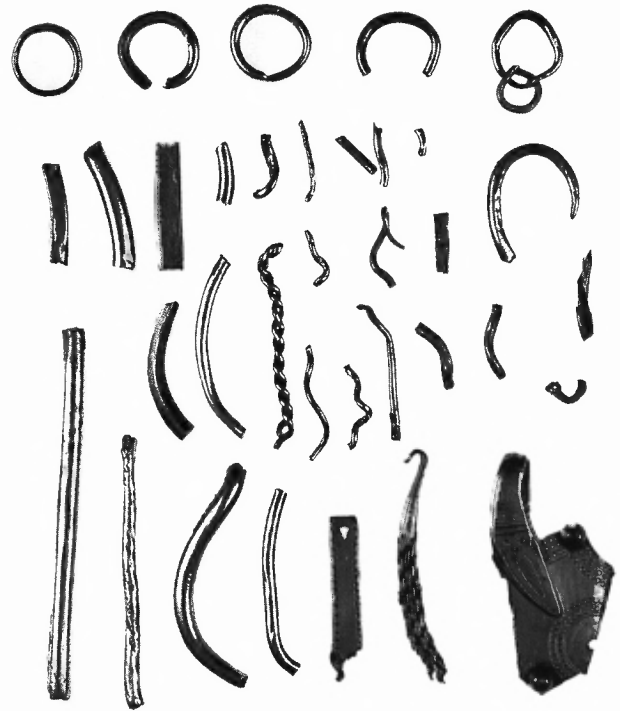




**Fig. 4.** Viking age and medieval leg vices made of bone; length of illustrated example 8 cm in the middle (photographs by Ívar Brynjólfsson, Þjóðminjasafn Íslands).

tradesmanship. Documents such as *Egils Saga* (Egil's Saga) and the *Grettis Saga* (The Saga of Grettir the Strong) emphasize the status of the smith. In the proprietary smithy which was part of most of the Viking and medieval homesteads, raw iron was worked. The smithy at the homestead of Stöng, which was settled until the 13<sup>th</sup> century and deserted due to an outbreak of the Hekla volcano has been archaeologically examined. The interior measured approx. 7.7 m × 3 m and contained a water basin made of tuff for cooling the smithed objects, as well as the base stone for an anvil with a depression for the anvil foot. Smithing tools are known from Viking Age graves. Amongst them are leg vices, which were used up until the modern period by the smith to fix the object he was working (Fig. 4). Tools such as awls, chisels and smithing tongs are also known (Capelle 1980, 426–428, 431 f.; *Eldjárn - Friðriksson 2000*, 407 f.).

Silver, copper and gold do not occur on Iceland. Finds of these metals or their alloys are mostly imports, though silver and goldsmiths were present, who crafted objects from imported raw material. They appear as early as 1200 in documentary sources and were mostly in the service of the church. A goldsmith's workshop is mentioned in the 1541 inventory of the bishop's see of Skálholt (Þórðarson 1943, 305 f.; Magnússon 1996, 32). Silversmith's tools were identified in a Viking Age grave in Silastaðir by Michelle Hayeur-Smith. The smith was buried with his tools – flint and steel, silver wire, a punch and wax, which he carried with him in a bag (*Eldjárn - Friðriksson 2000*, 179 f.; Hayeur-Smith 2001). Hack-silver and reused pieces of jewellery are found in Icelandic silver hoards, illustrating the esteem in which the metal and its working were held in Iceland (Fig. 5).



**Fig. 5.** Silver hoard from Sandmúli with a total weight of 304 g; length of fragment at bottom right ca. 8 cm (photograph by Ívar Brynjólfsson, Þjóðminjasafn Íslands).

In contrast to Viking Age burials, metal finds are relatively rare on settlement-excavations, indicating a high level of recycling of this material. Finds are iron slag and often indefinable iron fragments or nails. Bronze finds such as oval brooches, pendants and ringed pins come mostly from graves (e.g. *Eldjárn - Friðriksson 2000*, 353–363; Mehler 2003). The great majority is probably imported, though it is quite possible that bronze working employing imported raw material took place. The same can be said for copper artefacts, which could have been manufactured on Iceland using foreign raw material (Þórðarson 1943, 276 f. and 287). It is often presumed that the less well made pieces were produced in Iceland. From excavations – for example in Reykjavík – fragments of stone crucibles are known (Nordahl 1988, 145), although no archaeometric examinations have taken place which could provide information on the smelted contents.

Despite the increasing scarcity of wood during the Middle Ages, the Icelanders were familiar with wood-working. For the construction of larger buildings the Icelander fell back on pine, which had been imported as timber from Norway since the 11<sup>th</sup> century (Vésteins-son 2000, 165–170; Vésteinsson - Simpson 2004, 183). Timber for construction was skillfully prepared. Everyday items such as spoons, combs, handles or wooden nails were domestically whittled in every homestead. Especially talented wood carvers specialized in richly decorated furniture. Particularly striking are the Ring-



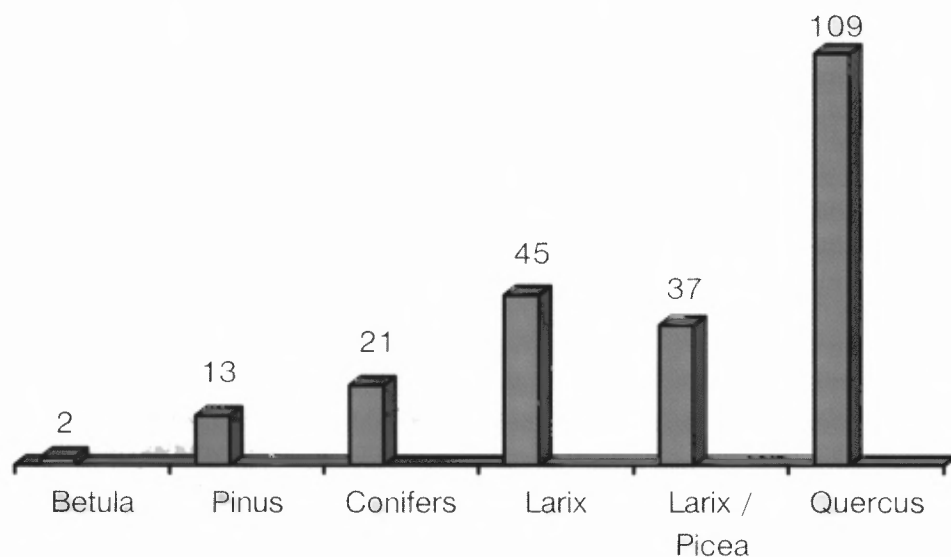
**Fig. 6a.** Examples of late medieval wooden staves and base fragments from Stóraborg. Both bases are made of oak (*quercus*), the smaller staff of pine (*pinus*), the larger staff of larch (*larix*) (photographs by Natascha Mehler, Römisch-Germanische Kommission).

erike-style wall panels from Flatatunga (Eldjárn 1953; Magerøy 2001).

Only a few wooden finds have survived in the soil. Exceptions are the numerous artefacts from the excavations in Stóraborg on the south coast of Iceland, where between 1978 and 1990 one of the first large area excavations in Iceland took place. The homestead comprised of a farm mound and a small church and was continuously inhabited from at least the 11<sup>th</sup> century until around 1840 (Snæsdóttir 1991). Most of wooden finds originate from coopered vessels, which were examined by the present author in 1999. Guðmundur Finnbogason had, some time ago called attention to coopering, which is mentioned in documentary evidence (e.g. *Sturlunga Saga; Búalög*) (Finnbogason 1943a). It may also be assumed that the coopered vessels found in Greenland were made in Greenland, the proof being the use of whale baleen as bonding agent to hold the staves of the vessel together (Nørlund - Stenberger 1934, 120). The finds from Stóraborg form the basis for the first archaeological analysis of this craft as carried out in Iceland. The results will be discussed

at some length here, as they well illustrate how the Icelanders adapted to their extraordinary living conditions.

The 249 fragments of coopered vessels from the 11<sup>th</sup> to the 19<sup>th</sup> century stem from small cylindrical beakers, vats, buckets of varying size, storage tubs and barrels. Ólafur Eggertsson from the Institute for Icelandic Forest Research (*Skógrækt ríkisins*) succeeded in identifying the wood of 227 fragments. Fig. 6 shows that two wood-types dominate the finds material: Oak (*quercus*) with 48% and larch (*larix*) with 20%. It was not always possible to distinguish between larch and spruce (*picea*), their anatomical structure being similar. It is however most probable that the majority of the fragments in the larch/spruce group are larch, increasing the total sum of larch fragments to ca. 80 (36%). Pine amounts to 6% of the total. The conifers-group also contains the species *larix*, *pinus*, and *picea* (9%). Only two fragments of birch (*betula*, 1%) are present. They are the only staves in this complex from an indigenous Icelandic tree. Oak originates mostly from barrels used as containers which, for example, reached



**Fig. 6b.** Graph illustrating the distribution of wood species (N = 227) of the coopered Stóraborg finds (graph by Natascha Mehler, Römisch-Germanische Kommission).

Iceland with Hanseatic merchants. Many fragments clearly show that they had been reworked to smaller vessels and artefacts. Another source of oak is shipwrecks, some of which still lie off the western coastal cliffs or the southern sand shores today. The wood was either washed ashore or collected at the wreck itself. The finds of larch, pine and spruce were driftwood. Large amounts were washed up on Iceland's shores and it was the main source of wood at that time. The trees originate from the boreal forest regions of Russia and Siberia. They arrived via rivers in the Arctic Ocean where they are still today transported to Iceland by the East Greenland Current, trapped in drift ice (Eggertsson 1994, 1). The Icelanders did not have unlimited access to the driftwood. In the Middle Ages most of it was claimed by the church. Beaches where driftwood was washed up were divided between the two bishoprics of Skálholt and Hólar, the monasteries or the churches. The trunks were marked with owners' signs – symbols belonging to the corresponding ecclesiastical institutions – so that they would be recognized if they were washed out to sea again and onto a different beach. The driftwood on the beach near Stóraborg belonged partly to the church and partly to the settlers (Kristjánsson 1980, 197–236).

Coopering in Stóraborg can be substantiated in a number of ways. The use of driftwood clearly shows coopering on site. Some of the staves must be interpreted as half finished products. On most finds the method of woodworking is quite distinctive. Staves are normally split radially out of the inner split in wet and dry coopering (Morris 2000, 2103 and 2227 f.). Amongst the finds from Stóraborg though, more than half of all the dry coopered staves were tangentially split from the full wood – both outer and inner split: i.e. the poorer part of the wood, the outer split, was also used. This can be seen in the grain of the staves. The explanation is self evident: wood was a valuable resource, not always available and only then in the form of driftwood or recycled timber. It was uneconomical to use wood only according to its specific type-characteristics, as practiced in the archaeologically proven case for the finds from Boringholm or Svendborg in Denmark. There most of the wet and dry coopered fragments are of hard supple oak or beech (*fagus*) (Malmros – Daly 2005, 250 f. and 253). The settlers at Stóraborg had no choice but to use all of the wood the tree trunks could offer, including the poorer outer split. In contrast, all the wet coopered oak staves stemming from imported barrels are made of radial inner split. Since the 13<sup>th</sup> century at the latest, coopering was in Stóraborg a specialized handwork and judging by the numerous finds, there was a large demand for such vessels. It is possible that more vessels than needed were produced and sold to homesteads in the interior.

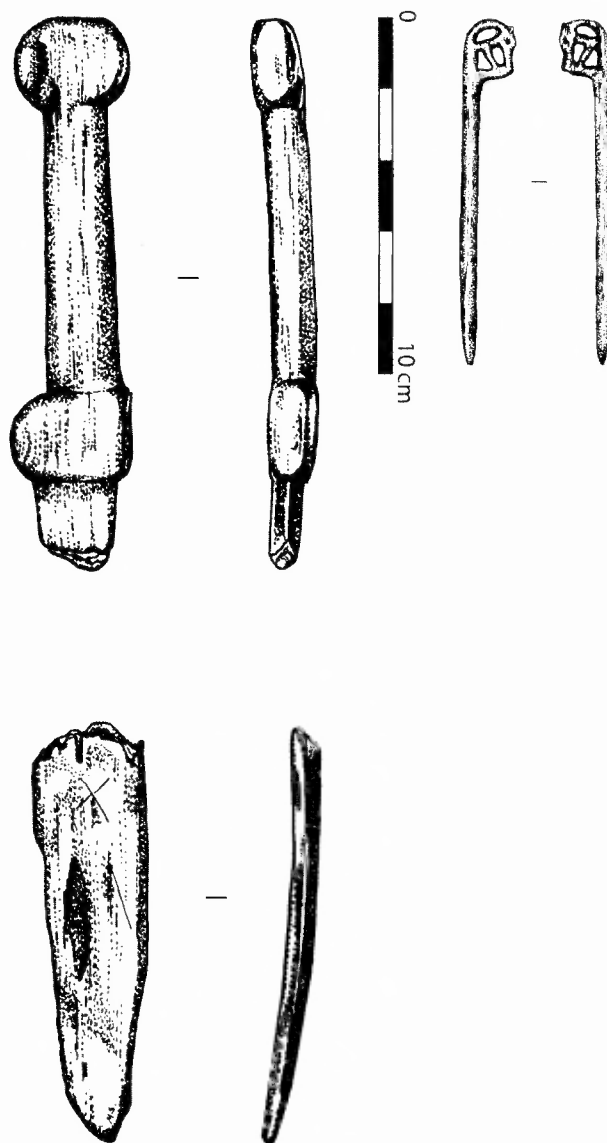


Fig. 7. Viking age artefacts made of whale bone: fragments of a weaving sword found in Kornsó (left); pin with animal head found in Dæli (right) (drawings by Michelle Hayeur-Smith).

Less is known about the production of **bone and horn** artefacts. The Icelandic spectrum of bone-finds encompasses the already mentioned leg vices, as well as weaving sword fragments, gaming tokens and needles (see below and Fig. 7). But the finds are nowhere near as numerous as in other North European lands. A few three-layered, riveted bone combs are known from Viking Age graves and medieval settlements (Fig. 8; Eldjárn – Friðriksson 2000, 396–398). They are probably all imports. There is no evidence whatsoever for comb making on Iceland. Neither is there any evidence of bone-carving workshops. Simple bone artefacts such as needles or handles could have been made domestically. In order to work bone permanently and properly it should be boiled for a number of days to remove the marrow and bone fat. It was probably

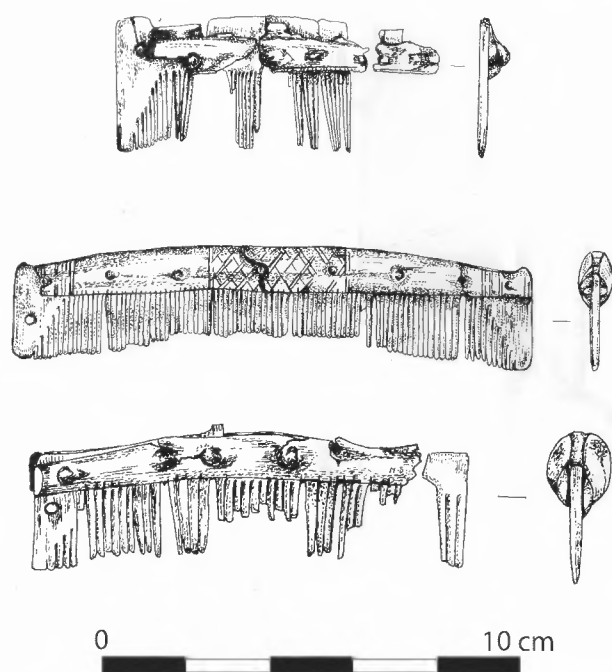


Fig. 8. Examples of three-layered, riveted bone combs from the Viking period (drawings by Michelle Hayeur-Smith).

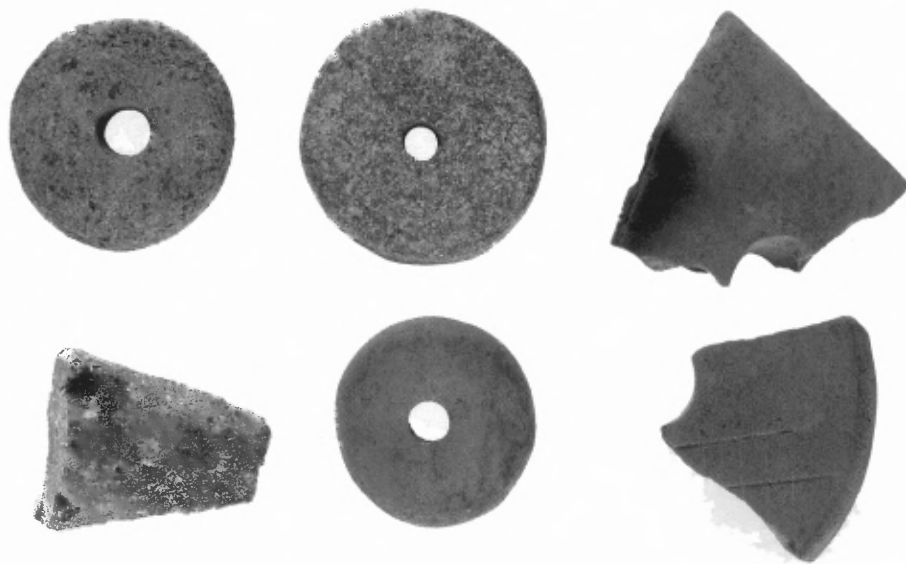
due to the limited amount of fuel, that bone working only took place on a limited scale. The same can be said for horn. Most of the few known finds are early modern spoons carved out of horn. An archaeological analysis of Icelandic bone and horn artefacts has not taken place. It is therefore not known from which animals the bones originate.

In Iceland the skins of sheep and other mammals were tanned to **leather** only on a small scale. Mostly they were directly turned into clothing. The production of tannic acid to tan the skins was difficult. Vegetable tanning agents were not available, though the hair could be removed from the skins by long immersion in urine. An integral part of many medieval Icelandic homesteads were storage rooms in which barrels were let into the floor. In the monastery of Viðey near Reykjavík seven such barrels lying next to each other, for the storage of whey, sour milk and foodstuffs have been documented (Hallgrímsdóttir 1989, 19, 22–26). Urine would also have been collected in such vats for the emersion of skins. There are no remains on Iceland which can be interpreted as a tannery. Neither are there any off cuts which might indicate leatherworking. From the beginning of the colonisation onwards, the Icelanders fell back on imported ware or unworked pieces of leather to satisfy their demand for elaborate clothing, shoes and other leather items – as illustrated by a ship from Ipswich, England, that arrived in Iceland in 1517 carrying ...15 dozen shoes... (DI 16, 103–105). The few shoes found in Iceland reflect the fashion of



Fig. 9. Photograph from the end of the 19<sup>th</sup> century showing an Icelandic fisherman in his skin clothing (photograph Þjóðminjasafn Íslands).

Northern Europe: a number of shoes and shoe soles from the bishop's see of Skálholt and the monastery at Viðey (Eldjárn 1988, 104 f.; Hallgrímsdóttir 1989, 65) conform to the late medieval sole-type from Bergen, Norway (e.g. Larsen Type III und A 3). There were many tanners and shoemakers in Bergen (Larsen 1992) – Iceland's most important medieval trading partner – and it is probable that the Icelanders imported most of their leather from there. As the finds show, only the upper class and the clergy could afford fashionable shoes from Norway or England. The simpler shoe-variation of the farmers was a large untanned piece of skin, which was wrapped around the foot and was known as the "Icelandic skin-shoe". Examples of such shoes were found during the excavations in Skálholt (Eldjárn 1988, 105) and Stóraborg (pers. comm. Mjöll Snæsadóttir). Fig. 9 shows an Icelandic fisher with the usual skin clothing. The clothes are simply fixed to his body with cords. On his feet he wears skin-shoes. Occasionally documentary and archaeological evidence is found indicating that imported, finished leather was worked in Iceland. The *Grágás* (above) notes leatherworking booths in connection with the Althing (*Grágás I a 130; II 267*). Perhaps they were where damaged clothing or shoes were repaired. In the grave goods of a Viking age grave in Ytra-Garðshorn Torsten Capelle



**Fig. 10.** Viking age and medieval stone artefacts found in Reykjavik: rhyolite and soapstone spindle whorls, part of a soapstone vessel (bottom left) and an object of unknown purpose (top right); diameter of soapstone spindle whorl (top middle) 5,1 cm (photograph by Helgi Bragason, Fornleifastofnun Íslands, and Natascha Mehler, Römisch-Germanische Kommission).

identified a punch with four spikes for leather working (Capelle 1980, 428 and fig. 1b; *Eldjárn – Friðriksson 2000*, 153–162).

**Stone** artefacts belong to the most common finds in Iceland, especially in the oldest settlements. The raw material was easily accessible, extremely stable and could be variably utilised according to stone type. Artefacts such as whorls, loom weights or gaming tokens were made from the local stone – rhyolite or liparite – which is relatively easy to work (Fig. 10). Netsinkers and fish hammers were made of basalt for its hardness (see below and Fig. 12). The volcanic product pumice was often used as an abrasive and is so soft that it can be cut with a knife. A bowl and a lamp made of tuff stem from the homesteads in Stöng and Kúabót (Roussell 1943, 96 f.; *Gestsson – Árnadóttir 1987*, 80). Hewing stone with a hammer and chisel requires practice and patience but does not presuppose the existence of a specialised trade. For artefact-production the preferred stone was either that which was easily accessible or easy to work. On excavations stones bearing no traces of human working are often found. They are however foreign to the area in question. They must have been brought there intentionally and are therefore treated as finds. In the Viking Age layers of the excavation Reykjavík, Aðalstræti 14–18 almost 200 stones of varying sizes were found. They had neither traces of working nor were most of them from the immediate area. So far identified from this complex are basalt, jasper, chalcedony, limonite, onyx, opal, pumice, quartz, rhyolite, liparite, sandstone and zeolite. Only basalt and pumice occur in the Reykjavík area. It is still not clear why the other stones were transported to this find spot. They possibly served as gaming tokens or were of significance in popular belief (Mehler 2001, 69 f.; Roberts – Snæsadóttir – Mehler – Vésteinsson 2003, 230).

### Tradecraft for trade: Icelandic market niches

After Iceland had come under Norwegian rule in 1262 and a branch of the Hanse had been founded in Bergen in 1343, Europe became aware of Iceland. Iceland could offer wares and regenerative raw materials that other North European lands did not have or did not have enough of. The rich fishing grounds were a competitive advantage on the North European market and together with other important export goods such as wool and vaðmál – a tightly woven and tough cloth, animal skins and fleeces and sulphur were the basis of a vigorous trade between Icelanders, the English, the Hanse, the Dutch and the Norwegians. Luxury items of walrus-ivory rounded off the repertoire of wares (e.g. Marcus 1957, 408). The representation of Iceland in Olaus Magnus' *Carta Marina* from 1531 clearly shows the economic interests of the North Europeans (Fig. 11). The focus is on the peculiarities – the natural dangers, merchant ships off the south coast and export goods such as fish and sulphur lying near tents, which perhaps depict seasonally used trading posts. Many customs and trade registers in North European coastal towns such as Bergen, Bristol and Hull as well as the correspondence of the Hamburg *Inlandfahrerbrüderschaft* (Icelandfarer Brotherhood) witness the amount of turnover, especially in the later Middle Ages. They clearly show that some of the Icelandic farmers – as a sideline, so to speak – were involved in large scale fishery or textile manufacture. How these trades were organized and how the trading took place is to a large extent still obscure. Clear though, is that they delivered their wares to trading posts along the coasts which were, especially in summer, visited regularly by foreign ships. One such trading post is Gá-

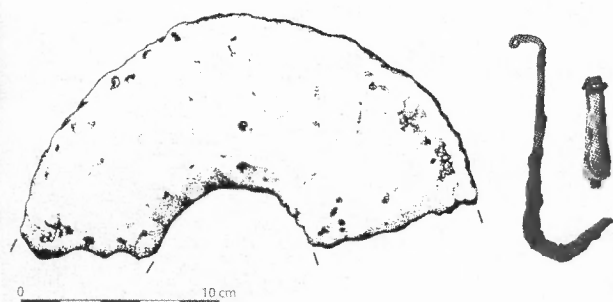


Fig. 11. Detail of Carta Marina by Swedish scholar Olaus Magnus, created in 1539, illustrating Iceland (map from [http://upload.wikimedia.org/wikipedia/commons/e/ea/Carta\\_Marina.jpeg](http://upload.wikimedia.org/wikipedia/commons/e/ea/Carta_Marina.jpeg)).

sir in Eyjafjörður, which remained in existence from the early 12<sup>th</sup> century until the end of the 14<sup>th</sup> century or possibly even later. Excavations yielding many interesting results have been taking place there for a number of years (Roberts 2002; 2004). In the following the attempt will be made to depict the crafts which were important for trading and can also be archaeologically verified. Evidence of the production of other goods such as fish oil, animal skins or butter, also described in the documentary evidence as export articles, have not yet been verified, though their role was no less important.

At the latest during the Middle Ages, fish was Iceland's most important export article and the rich fishing grounds of the North Atlantic were instrumental in strengthening Icelandic society (Karlsson 2000, 106–108). New research is changing the picture of a Viking Age and medieval society based mainly on farmers. The fishing industry became increasingly important during the Middle Ages (Edvardsson 2005, 52). Fish was not sold fresh. It was dried to stockfish at fishing stations or homesteads near the coast and thus conserved, distributed to trading posts, sold to foreign merchants or bartered for other goods. Recent-

ly, Viking Age and medieval settlement-remains in the Westfjords, which were part of this early fishing industry have been examined (Edvardsson 2005). It was possible to tell whether fish had simply been consumed on a find spot, or whether it had been prepared at a greater scale for trade. Commercial fishing stations such as Akurvík usually consisted of a small group of rectangular fishing booths that were used seasonally. Zooarchaeological studies show clearly that the fishers were fishing the offshore grounds and focused on one or two species: i.e. the dominance of certain species in the finds-material counts as an indicator of commercial fishery. Depending on the method of slaughter or preparation, certain types of fish bones in the finds are either absent or excessively abundant (so called body part representation). The fishing station of the 12<sup>th</sup> to 15<sup>th</sup> century in Akurvík served solely for the preparation of fish and marine hunting. The medieval homestead in Gjögur, situated only 3 km from Akurvík processed fish for household use as well as a surplus, which was traded. In the trading post of Gásir there seems to have been less fishing. The results of the analysis show that previously prepared fish was received there (Edvardsson 2005, 53 f., 59–64; Krivogorskaya



**Fig. 12.** Artefacts used for fishing: iron fishing hook and leaden line weight from the Viking age, fragment of a medieval fishhammer made of basalt (drawing after Sveinbjarnardóttir 1992, photograph by Ívar Brynjólfsson, Þjóðminjasafn Íslands).

– *Perdikaris* – McGovern 2005, 36 ff. and 43–45). Small finds are known from excavations of other settlements, indicating fishing and fish preparation. Artefacts such as netsinkers of stone were fixed to the net with the help of a groove around the circumference. Fish hammers made of basalt were used to beat the dried stockfish to tenderise the flesh again. They often broke into two pieces along the hole drilled to take the wooden handle (Fig. 12; Sveinbjarnardóttir 1992, 33 fig. 4). Viking Age grave goods, such as angling hooks or fishing weights indicate fishery (Gestsson – Árnardóttir 1987, 81; Eldjárn – Friðriksson 2000, 409). Finds alone do not allow an interpretation as to whether the fishing was only for personal requirements or whether surplus was being produced for trade. This has only been possible since the results of archaeozoological analysis have been available.

At the time of settlement (and to some extent still today) **sea mammals** such as walrus, whales and seals belonged to the fauna of Iceland. During the first centuries of settlement **walrus** populations inhabited the west and north coasts. From around 1000 until the middle of the 13<sup>th</sup> century their ivory played an important economic role in Northern Europe. Walrus were especially coveted for their tusks. Documents such as the *Króka-Refs Saga* (Saga of Ref the Sly) illustrate how popular richly decorated tusks and artefacts made out of them were at European courts. Ships' ropes were made from their skin (Roesdahl 2001, 33 f.). In Iceland artefacts of walrus ivory are extremely rare. The raw material was too valuable to retain. A carved Madonna from a medieval grave, which could have been worn as a pendant on a neckband, belongs to the few exceptions, as does the crozier of the Bishop of Skálholt, Páll Jónsson, who died in 1211 (Magnússon 1987, 37 and 43). Walrus ivory usually occurs in Iceland in the form of unused raw material, i.e. extracted unworked tusks. The largest find-complex of this type so far occurred in Reykjavík, Adalstræti 14–18. Three complete walrus tusks were found in the floor of a Viking

long house from the first quarter of the 10<sup>th</sup> century. All of them are upper left canines, thus representing three different animals. One of the tusks had marks at the root, which resulted from its expert extraction from the maxillary bone. More fragments of unworked walrus tusks were found during excavation of other settlement-period homesteads in the centre of Reykjavík. The accumulation of these finds shows their importance for the Viking Age settlement of Reykjavík (McGovern 2001; Roberts – Snæsdóttir – Mehler – Vésteinsson 2003, 226–228, 230). Most walrus tusks were probably exported as raw material. The remains of two walrus tusks from Haithabu, one of the most important Viking Age trading centres in Northern Europe, indicate that the imported material was worked at its entrepôt (Reichstein 1991, 65 f.). Using find-material from Greenland Thomas McGovern was able to show walrus tusks were removed from the skull without losing too much material. In order not to damage the large root of the tusk this is best done some weeks after the death of the animal, after decomposition has set in. The root must then be carefully separated from the skull with chisels (e.g. McGovern – Amorosi – Perdikaris – Woollett 1996). It is usually accepted that walrus-tusk extraction was a specialized trade. However, it is suggested here that the term “specialized trade” should be chosen less rigorously. Early Icelandic society consisted largely of autonomous farmers who had to master various supplementary skills to be sure of survival. To the present author it seems to be more probable, that most of them would have been skilled enough to be able to extract walrus tusks without too much material loss, after having hunted the animal.

**Whale** hunting was a pretty risky enterprise. The Icelanders did not undertake it often. Their consumption of whales was mostly limited to stranded animals. The churches and monasteries often claimed the rights on the animals for themselves and in times of bad harvests and famine the butchering of whales was strictly regimented. Fig. 13 from the Laws of *Jónsbók* from the 16<sup>th</sup> century clearly shows such a scene of whale butchering. The whale is tied up to a post on land to stop it drifting out to sea and three men with knives are cutting it up, whilst a fourth man has already loaded his pack horse with a piece of whale meat. The whale bones were also exploited and were popular for their stability and size. Whale bones with identifiable tool marks stemming from the production of objects were found in the Viking Age and medieval homestead in Vatnsfjörður (Edvardsson – McGovern 2005, 27 f.). In the bone material from the excavation in Gásir there was also evidence of whale meat supplies from pilot whale, narwhal and beluga (Harrison – Brewington – Woollett – McGovern 2004, 77 and 85). Whale bones also occur in the find-material from the fishing sites at



Fig. 13. A 16<sup>th</sup> century illustration from *Jónsbók* showing men butchering a whale (after Magnússon 1987).

Gjögur and Akurvík in the Westfjords (*Krivogorskaya - Perdikaris - McGovern 2005*, 35). The gaming tokens from the grave in Baldursheimur, a decorated robe-needle from a grave in Dæli, and the fragment of a weaving sword from a grave in Kornsó (Fig. 7) belong to the few known Viking Age whale bone objects from Iceland (*Eldjárn - Friðriksson 2000*, 125, 201 f., 379 f.).

The importance of seal hunting for the economy of Viking Age and medieval Iceland is also only becoming apparent through modern zooarchaeological analysis. Judging by the amount of bones found, seals, which were then more numerous and still native today, played a more important role than whales. The skin of the young animals was exploited as well as the meat and bones. Seal bones were present in the find-material from Gjögur, Akurvík and Gásir (*Harrison - Brewington - Woollett - McGovern 2004*, 85 f.; *Krivogorskaya - Perdikaris - McGovern 2005*, 35). The numerous Icelandic bone-finds have not so far been analysed as to species. It is therefore unclear which finds were objects made out of whale, walrus or seal bones.

During the late Middle Ages the demand for sulphur in North and Middle Europe increased continuously. Many customs and trade registers name sulphur as an Icelandic export ware (*Baasch 1889*, 78–81; *Helle 1995*, 309 and 811). During the 14<sup>th</sup> century it became increasingly important for the production of black powder. During the 15<sup>th</sup> and 16<sup>th</sup> centuries sulphur production reached its zenith and Iceland provided the whole of Northern Europe with it (*Vestdal 1943*, 64 f.; *Baasch 1889*, 78–81). For the Hanseatic merchants sulphur was of particular relevance as a cleaning and conserving agent. It was needed to sulphurate the many barrels which were used as containers for wine or fish etc. A small amount stabilized wine and prevented further fermentation. Sulphur of volcanic origin is plentiful in Iceland. As Sicily was the only alternative for the medieval European sulphur trade, Iceland was virtually

free from competition in Northern Europe. The importance of sulphur for the Hanse should not be underestimated. Without it many wares would have spoiled and resulted in loss.

Trade with sulphur presupposes brisk collection and distribution. Especially Reykjahlíð in the north and Krisuvík in the south were the main areas for the collection of sulphur. During the 16<sup>th</sup> century sulphur was the second largest export item for hanseatic merchants. Sulphur was collected, prepared and packed in barrels in Iceland and shipped to German Hanse towns such as Lübeck and Hamburg (*Baasch 1889*, 78 ff.). But sulphur trade goes further back in time. One of such barrels was recently found on the Darss Cog, a hanseatic merchant ship built in 1293 (dendrochronologically dated), which sank off the coast of Mecklenburg-Western Pomerania. A barrel containing sulphur belonged to the freight documented by underwater archaeologists (*Förster - Jöns 2003*). It is almost certain that the barrel was packed in Iceland. Further archaeological indication of sulphur trade comes from the excavations in Gásir, where sulphur seems to have been collected (*Roberts 2002; 2004*, 16 f., 27–30; *Adderley - Simpson - Barrett - Roberts - Wess 2004*). The final results are going to be published by Howell M. Roberts, the leader of the excavation, and are eagerly awaited. Even though next to nothing is known about how sulphur was collected and prepared in the middle ages,



Fig. 14. Detail of Iceland's South Coast from the *Carta Marina* with tents of a trading post, a pile of stockfish and a barrel of sulphur (map from [http://upload.wikimedia.org/wikipedia/commons/e/ea/Carta\\_Marina.jpeg](http://upload.wikimedia.org/wikipedia/commons/e/ea/Carta_Marina.jpeg)).



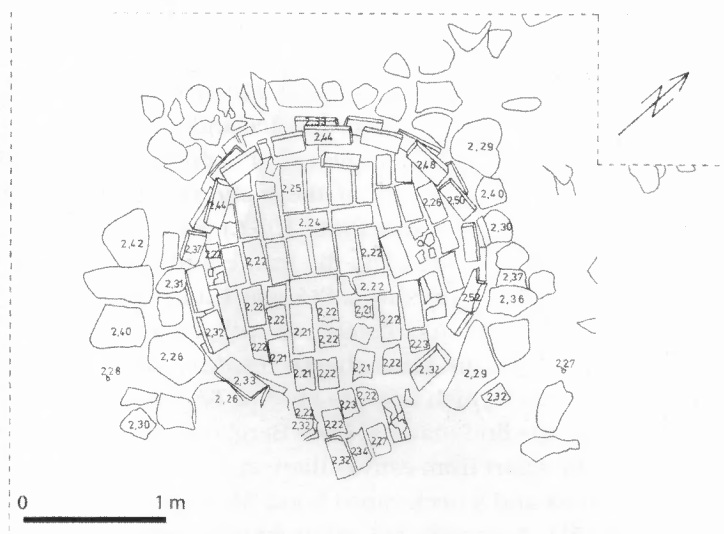


Fig. 15. Photograph and plan drawing of the round brick structure excavated at the late medieval trading site Gásir (after Capelle 1982).

the discoveries in Gásir and on the Darss Cog have, for the first time, called attention to a tradecraft which may be called typically Icelandic.

The Carta Marina of Olaus Magnus shows a barrel labelled as SULVUR standing in the south-west of Iceland (Fig. 14). A pile of stockfish and the tents of a trading post lie nearby. Behind the sulphur barrel four stably built, round structures with frontal annexes can be recognised. The ground plan of these reddish structures is astoundingly similar to a feature recorded over 25 years ago in Gautavík, a late medieval trading post in Eastern Iceland visited mostly by Hanseatic merchants. The excavations uncovered an unique building. Situated in the southern complex was a round structure with a diameter of 2.10 m and a frontal annex, built of imported bricks (Fig. 15). It is dated to a period between 1362 and 1477. Until today no other features of this type are known in Iceland. Torsten Capelle tentatively interpreted the structure as a drying kiln, citing a structure from Gröf, though there the walls were constructed of grass sods (Capelle 1982, 44–60). On the grounds of the discovery in Gásir and the illustration by Olaus Magnus, a new interpretation for the round brick structure in Gautavík is proposed here. Might it be a storage tank for sulphur? The following factors support this postulation: Olaus Magnus has put the four structures next to the barrel of sulphur. The round ground plan with a frontal annex is markedly similar to the structures on the Carta Marina and whitish substance was found between the bricks. This substance was analysed at the University of Münster to see if it was mortar. The result was negative (Capelle 1982, 45 and 52). The fact that it might be sulphur was not then considered and unfortunately no analysis for it took place. No samples of the white

substance survive (pers. comm. Torsten Capelle), so it is no longer possible to answer the question as to what it actually was. A barrel was found in the boat house near the round brick structure. It contained grey to white contents, also unidentified. In front of the entrance area or frontal annex the excavator recorded a soot layer, which was decisive in the interpretation as drying kiln, even though no remains of grain were found in the neighbourhood. Sulphur easily oxidises in damp air. So might a fire immediately on the outside have warmed the inside to dry the sulphur? Despite the fact that there are no sulphur deposits near Gautavík, sulphur could have been brought from other parts of the island and collected there before being sold to Hanseatic merchants calling there.

**Fleece** and **wool** from Icelandic sheep were important export articles up until the 18<sup>th</sup> century. **Vaðmál**, a 2/2 twill tightly weaved and fulled cloth and Icelandic canvas were widely traded in Northern Europe (Baasch 1889, 83 f.; Möller-Wiering 2002, 62 f., 69 f. and 149). A piece of Icelandic *vaðmál* has been identified in the find-material from the English seaport of King's Lynn which had a strong trading relationship with Iceland, especially in the 15<sup>th</sup> century (Clarke – Carter 1977, 449). As with fish and sulphur, there are only a few clues as to the extent and organisation of the crafts of spinning, weaving and sewing. On the basis of the amount of turnover however, it must have been more than just domestic.

Most of the Icelandic **textile** finds are poorly preserved and badly fragmented. Some of them were briefly described shortly after their discovery (e.g. Hald 1950; Eldjárn – Gestsson 1952). Recently Susanne Möller-Wiering has dealt with Icelandic textile production in more detail, her emphasis being on canvas

(Möller-Wiering 2002, 149–176). Small cloth fragments from Viking Age graves (*Eldjárn – Friðriksson 2000*, 134, 217 f., 228 f., 249 f., 323), some of which were imported, belong to the most important Icelandic textile finds (Hoffmann 1965). Several pieces of vaðmál were found during the excavations of the bishop's see of Skálholt in the 1950s (*Eldjárn 1988*, 103 f.). Weaves in 1/1 and 2/2 twill were amongst the textile finds from the excavations in Bergþórshvöll, Stóraborg and Viðey. A z-twist warp was usually combined with an s-spin weft. 2/1 twill, dominant since the 11<sup>th</sup> century on the Continent and the British Isles, is absent. Textiles are represented in the find-material from Bergþórshvöll by 130 fragments. Apart from canvas there are also pieces of sewn mittens and a neck-caped hood (Möller-Wiering 2002, 149–151). A piece of felt, some knitting, strings and yarn are amongst the textile finds from Stóraborg. Together with a large number of whorls, some reels, scissors and around 190 loom weights, the remains of the yarn strongly indicate the production and processing of textiles in Stóraborg (Möller-Wiering 2002, 152). Evidence for wool production, processing, weaving and cloth making is found on other sites in the form of spindles, whorls and loom weights (see Fig. 10), weaving swords and smoothers. Even though remains of Viking Age or medieval looms have not survived, the presence of loom weights and archaeological features show that vaðmál was produced on warp weighted looms (for modern warp weighted looms see Guðjónsson 1994). Wool and cloth working must have been important for the woman inhumated in the Viking grave of Kornská. With her in the grave were the remains of iron scissors as well as pieces of a whale bone weaving sword (*Eldjárn – Friðriksson 2000*, 125 f.; see Fig. 7).

Documents such as in *Diplomatarium Norvegicum* or the *Saga of Bishop Árni* witness the fact that White Falcons (*falco islandicus*) and Gyrfalcons (*falco rusticolus*) from Iceland were popular gifts at the courts of European kings. Emperor Friedrich II also praised Icelandic falcons as the best. Even if falcons were “luxury goods” it is still possible to describe the breeding and training of falcons as a skilful form of tradecraft. It was subject to royal monopoly and regulated by royal officials (Marcus 1957, 409). Alongside the Icelandic falconers, foreign falcon hunters were also present. They had to acquire royal authorisation and pay fees for it. A number of falconers from Hamburg, who dealt in Icelandic falcons, are known by name (Baasch 1889, 81–83). Gyrfalcon could be identified in the bone-material from the medieval trading post of Gásir (Harrison – Brewington – Woollett – McGovern 2004, 74 and 86), thereby archaeologically substantiating trade with falcons. A “white” falcon (FALCO ALBI) is visible in the North on Carta Marina. It is enthroned on a mountain peak at the entrance to Eyjarfjörður, in which Gásir also lies.

## A little used resource

To the peculiarities of Icelandic handwork belongs the fact that clay, a raw material important in all other European lands, was little exploited, even though clay is also present in Iceland. There are a number of occurrences of varying composition, some of which are appropriate for the production of ceramics, especially in the West. And they were experimented with, at least in the 18<sup>th</sup> century (Kjartansson 1971, 3 f. and 11; Sveinbjarnardóttir 1996, 85 f.; Mehler 2000, 28–30). Clay and to a lesser extent fuel – the most important resources for the production of ceramics were therefore in supply, at least at the beginning of colonisation. Even so, from the early settlement up to the later early modern period there was no local pottery production in Iceland. Every archaeological attempt so far to prove the use of clay to produce vessels has failed. Iceland – and probably Greenland – are then the only lands in the European cultural area, where no ceramic vessels were manufactured. Even the Faroe Island produced their own thick walled pottery unlike any other European ware, in the late Viking period (Arge 1997, 32–34). The few sherds found in Iceland all stem from imported vessels (below) (Sveinbjarnardóttir 1996; Mehler 2000, 28–30; 2004, 167).

Even if the settlers did not make pots out of clay, they were seemingly familiar with the attributes of the material. On three excavations clay lined pits were discovered: a round pit was documented in Bergþórshvöll in 1927. It was lined with fired red clay and was interpreted by the excavator in connection with a smithy (*Eldjárn-Gestsson 1952*, 31 f.). Three pits discovered in Bólstaður in 1931 had unfired yellow clay on their walls. The bases were covered with stones. A further pit in Kópavatn, seemingly dating to the settlement period, was lined with light red, unburned clay. What purpose these lined pits served, is unclear. Guðmundur Ólafsson has tentatively interpreted the pits in Kópavatn and Bólstaður as water containers (Ólafsson 1999, 7 f.). The analysis of a clay sample from the pit in Kópavatn showed that it could be fired at 600°C to a light red sherd and is therefore well suited to the manufacture of ceramics. The question as to why the settlers only used this resource as building material, but not for the production of vessels is difficult to answer. Possibly it is because the first settlers who came to Iceland were hardly familiar with pottery in their Norwegian homeland. The present state of research indicates little local pottery there in the Viking Age. In the Middle Ages no pottery was produced and import ware was reverted to. Perhaps at that time it was due to the medieval rules already referred to for the conservation of the local tree population, which made fuel scarce and the firing of pottery hardly possible (Mehler 2000, 27–35).

## Imported resources and goods

Apart from raw materials such as timber, silver and non-ferrous metals (above), there is also archaeological evidence indicating that blocks of soapstone and schist reached Iceland where they were used to make vessels or whetstones. Neither of these resources occur naturally in Iceland. The Icelanders would have survived without them but they were welcome if and when they arrived on board a merchant ship. On the one hand they used imported raw material to craft luxury articles such as jewellery, on the other hand also to produce important implements for everyday use. Cooking and drinking vessels in Iceland during the Viking Age and the Middle Ages were mostly wooden or made of stone, or imported copper cauldrons were used, as reported in the trade registers (e.g. *DI* 16, 103–105).

Soapstone fragments can be found on many archaeological excavations. Especially during the Viking Age soapstone was an important import good – maybe because of the lack of ceramics then. In the Middle Ages the number of soapstone finds lessens as the number of fragments of imported pottery increases. At that time the North European soapstone trade was dominated by Norway though Greenland and the Shetland Islands, where this soft stone was also quarried. Both come into question as soapstone suppliers. The first analysis of soapstone found in Icelandic was made by Kristján Eldjárn (*Eldjárn* 1950). Amanda Förster dealt with soapstone in more detail a few years ago and examined around 100 finds from Iceland. Her study showed that identifiable fragments from vessels and hanging lamps correspond to the types known from Norway and the Shetland Islands. In most cases however, it is not possible to say whether the vessels were produced in their land of origin, or whether they were made in Iceland out of imported raw material (Förster 2004). Such raw material did reach Iceland, as a soapstone block which was to be worked locally, from Köt múli shows (Fig. 16). If a vessel broke, the pieces were often reworked. Some Icelandic soapstone whorls are identifiable as previously being pieces of a vessel: one whorl from Reykjavík has a slightly curved profile, corresponding to the bend of the wall of the original vessel (Mehler 2001, 69).

Some of the most common finds on Iceland are schist whetstones, although the stone is not native to Iceland. They were already being imported during the Viking Age, or arrived as raw material. The largest Icelandic example of a whetstone measures 78 cm and was probably used for sharpening swords (e.g. *Eldjárn* – *Friðriksson* 2000, 351 f.). As with soapstone, almost all of the whetstones found in Iceland are likely to have originated in Norway. Helge Askvik's preliminary analysis of whetstones from Iceland shows them to



Fig. 16. Soapstone block from Köt múli, total height 21,5 cm (photograph by Ívar Brynjólfsson, Þjóðminjasafn Íslands).

be of light grey schist, typical for the quarries around Eidsborg, Norway (unpublished). Whetstones from Eidsborg had been traded throughout Northern Europe since the Viking Age and are found in large numbers in the important trading centres of Kaupang and Haithabu (Askvik 1990). The whetstone-trade remained vigorous in the Middle Ages. In the wreck of the *Darss Cog* (above) whetstones from Eidsborg were found alongside the barrel of sulphur (Förster – Jöns 2003).

The oldest imported ceramic finds date to the 10<sup>th</sup> century. Even so, few pottery vessels were brought to Iceland during the Viking Age and the medieval period. They were subject to a thorough analysis by the present author some years ago. According to the study, the amount of imported pottery rose steadily throughout the Middle Ages. Whilst types from England are present from the 12<sup>th</sup> to the middle of the 14<sup>th</sup> centuries, the late medieval emphasis is on stoneware from the Rhineland and Lower Saxony. Cooking pots are hardly represented. There is a preponderance of drinking vessels and jugs. The vessels are likely to have reached Iceland via the Hanseatic base at Bergen, where all of the ceramic types found on Iceland are present in large numbers (Mehler 2000; 2004). The situation for glass, all of which was imported to Iceland, is similar. Neither in the Viking Age nor in the Middle Ages was glass made in Iceland, because the necessary raw materials – quartz sand, sodium carbonate or

potassium carbonate (soda or potash) and fuel – were not readily available in the amounts required. The fact that up until 2002 only 17 medieval glass sherds have been found in all of Iceland leads to the interpretation of glass as luxury goods. Most of the sherds stem from late medieval or early modern drinking glasses which, as to be expected, originate from the Hanseatic trading area. The first window glass appears in the late Middle Ages (Mehler 2002).

## Conclusion

This account of archaeologically verifiable tradecraft in Iceland has shown how local resources and imported raw materials were exploited during the Viking Age and the medieval period. It shows how successfully the settlers adapted to their new environment. They compensated for the lack of trees by using driftwood and quickly began to care for the surviving tree population. As fuel, wood and peat were of existential importance. Without them, smelting and metal and bone working would not have been possible. The regulation of access to wood as fuel evidently negatively influenced the development of some trades. Ceramics, glass and elaborate bone objects were not or hardly produced in Iceland. Metal objects were for the most part recycled. The close connection between tradecraft and mercantile trading also becomes apparent. Thanks to their rich renewable resources – fish, skins, wool, sulphur – the role played by the Icelanders in North European Trade is not to be underestimated. Such occupations as hunting and training falcons and sulphur-marketing can be described as typically Icelandic, almost unparalleled in the rest of Europe. In the opposite direction raw materials such as soapstone, slate and timber were imported to counterbalance natural deficits. It is known from fishing sites such as Akurvík that skilled tradecraft did take place there. In Stóraborg vessels were coopered probably in numbers over and above those needed for on site use. This summary of results is just the beginning of an archaeological examination of Icelandic skills and trades. For a number of years extensive settlement-excavations have been taking place and uncovering many new finds, as yet unpublished. They offer a new chance to continue pursuing research into tradecraft in Viking Age and medieval Iceland.

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