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Icelandic mittens from archaeological contexts

Abstract

Protecting the hands from cold and damp conditions has been essential in northern Europe from prehistory to the present. Due to preservation, few examples of gloves and mittens have been recovered from archaeological contexts. Nonetheless, existing finds still reveal important information about everyday life in the past. Starting with three Icelandic finds we will discuss how mittens were produced with different techniques and how they were used and repaired from the 10th to the 17th centuries in the Nordic countries. A pair of well-preserved children's mittens from Heynes (Pjms. 1960-77), located in Hvalfjörður in western Iceland, sewn from woven cloth was recently AMS radiocarbon dated to 925–1030 CE. Another woven mitten (Pjms. 1940) from Garðar, near Akranes in western Iceland, was dated to 1310–1388 CE, whereas a mitten in nalbinding from the site of Arnheiðarstaðir in Fljótisdalur in eastern Iceland (Pjms. 3405) was dated to 1480–1640 CE. Other finds from Scandinavia and northern Europe are included, all showing different ways of making hand protections in a time before knitting became the dominant technique used for handwear.

Key words: Viking Age, nalbinding, Medieval, North Atlantic, weaving, wool, clothing, children's clothing

Introduction

The cold and wet climate of the Nordic countries means that protecting the hands with gloves or mittens has been essential since prehistory. Due to preservation conditions, archaeological remains of gloves and mittens are limited, but the existing finds provide important information about everyday life in the past.

Today, the difference between mittens and gloves is defined by shape. Mittens are hand coverings with a single section for the four fingers and a separate thumb section. As opposed to this, gloves are fitted hand coverings with individual sections for each finger (Willemsen 2015a, 2). Enclosing the fingers is however not void of problems and the thumb must also be covered while maintaining the prehensile functions of the hand. The 'thumb problem' has been solved in numerous different ways across different time periods. Woven fabric or leather must be cut into shape and the thumb sewn on separately, whereas

when using the nalbinding technique it is easier to immediately create a three-dimensional shape.



Fig. 1: Map of Iceland indicating the locations of the sites the mittens discussed in this article, with reference to Reykjavík. Iceland Map by vemaps.com (<https://vemaps.com/iceland/is-03>)

| Timeline | European Periods | Timeline | Icelandic Periods | Timeline | Danish Periods |
|--------------|-------------------|--------------|-----------------------------|--------------|-----------------------------------|
| 500-1050 CE | Early Middle Ages | 870-930 CE | Settlement Period | 800-1050 CE | Viking Age |
| 1050-1300 CE | High Middle Ages | 930-1262 CE | Commonwealth Period | 1050-1340 CE | High Middle Ages |
| 1300-1500 CE | Late Middle Ages | 1262-1550 CE | Foreign Rule to Reformation | 1340-1536 CE | Late Middle Ages |
| 1500-1750 CE | Early Modern Era | 1602-1787 CE | Danish Trade Monopoly | 1536-1660 CE | Renaissance |
| 1750-Present | Modern Era | 1788-1918 CE | Independence Movement | 1661-1914 CE | Absolute Monarchy to Nation State |

Table 1: Overview of time periods in Europe, Iceland and Denmark

From Iceland, three archaeological mittens from different sites have been recovered that demonstrate the importance of covering the hands for both children and adults (fig. 1). Meteorological evidence shows that Iceland’s annual temperature has risen 0.7°C per century over the last two hundred years (Jónsson 2008). Today, the average annual temperature in Iceland ranges between -2° and 9°C in inhabited regions under 400 metres of elevation (Björnsson 2003). Thus, considering the annually cool temperatures, mittens were likely essential for performing everyday outdoor tasks (e.g. fishing and farming) prior to the 20th century in Iceland, especially during the winters, which were often cold and stormy. The mittens discussed in this article, each dating to different periods, emphasise the continuity in handwear usage from the Settlement period in Iceland (870–930 CE), which overlaps with the Viking Age in Denmark (800–1050 CE), well into Early Modern times (table 1). It is believed that Iceland was fully settled by the mid-10th century. *The Book of Settlements (Landnámabók)* mentions 1,500 place names and over 3,500 people among the settlers (Eldjárn 2016). The Icelandic free state or Commonwealth period was established between 930 and 1262 CE, with the

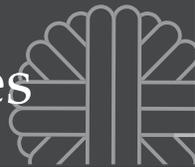
creation of the Icelandic Parliament. Iceland then fell into a long period of foreign rule, first by Norway and then by Denmark. The Danish Trade Monopoly ended in 1787, which was followed by the reintroduction of the Icelandic Parliament in 1843. Iceland remained part of the Danish empire following the adoption of the constitutional monarchy in Denmark in 1848. Then in 1918, Iceland became a sovereign state in union with Denmark. Foreign rule finally ended in 1944 with a referendum for the Independent Republic of Iceland (Europa Publications 2003).

The Heynes child mittens (Þjms. 1960-77)

In 1960 a pair of children’s mittens were found on a farm in Heynes, Hvalfjarðarsveit in the county of Borgarfjarðarsýsla in western Iceland (fig. 2). The farmer discovered the mittens deep in the earth while building a new house. Thus, it was assumed that they were from the Viking Age as the site had been settled since the early 10th century (Guðjónsson 1994). In the previous summer, a piece of 2/2 wool twill was recovered from the same area (Þjms. 1959-123) but was estimated to be younger than the mittens based on the local stratigraphy (Guðjónsson 1992, 23, 26–27).



Fig. 2: The two child’s mittens from Heynes in Iceland, dated to 925–1030 CE. a – Palmar side. b – Back side (Images: Ívar Brynjólfsson)



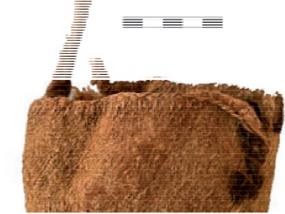
| ID no. and size | Technique | Fibre & yarn diameter | Twist direction and angle | Threads/cm | Stitches | Photo |
|---|--|---|------------------------------------|------------|---|--|
| <p>Þjms. 1960-77 Heynes mitten A, left hand Length: 17.5 cm Width shaft: 11 cm Width wrist: 9 cm Thumb length: 8.2 cm Thumb width: 3.2 cm</p> | 2/2 twill + herringbone twill on shaft | Wool, light brown Warp: 0.5–0.7 mm Weft: 0.9–1.0 mm | Warp: z, 27–30° Weft: s, 20–25° | 11–12/8–10 | Stitches at thumb and buttonhole stitches sewn with 1.3 mm thick wool thread, S2z. Buttonhole stitches: circa 12 stitches/5 cm Slit is closed with four whip stitches of dark brown wool, circa 2.3 mm thick Z2s plied. The stitches are circa 1–1.2 cm long, some only 0.4 cm though. The sewn area measures 3.2 x 1.5 cm |   |
| <p>Þjms. 1960-77 Heynes mitten A, braided cord Length (incl. knot): 8.5 cm Width: 0.7 cm</p> | Braided with 3 strands | Wool, light brown Braid: 0.7 mm Small strands: 2-3 mm | | | |  |
| <p>Þjms. 1960-77 Heynes mitten B, right hand Length: 19 cm (edge) or 18 cm (middle) Width shaft: 11.5 cm Width wrist: 9.7 cm Thumb length: 9.2 cm Thumb width: 3.5 cm</p> | 2/2 twill | Wool, light brown Warp: 0.6–0.7 mm Weft: 1–1.1 mm | Warp: z, 30–35° Weft: s, 20–25° | 12–14/8–10 | Slit is closed with four whip stitches of dark brown wool, circa 2.3 mm thick Z2s plied. The stitches are circa 1–1.2 cm long, some only 0.4 cm though. The sewn area measures 3 x 1.4 cm |   |

Table 2: Technical details of the mittens from Heynes (Þjms. 1960-77), the Garðar mitten (Þjms. 1940) and the Arnheiðarstaðir mitten (Þjms. 3405)



| | | | | | | |
|--|------------------------|--|--|--------|---|--|
| <p>Pjms. 1960-77 Heynes mitten B, repair patch Covering hole of 4 x 4 cm</p> | 2/2 twill | <p>Wool, light brown</p> <p>Warp: 0.5–0.6 mm Weft: 1.6 mm</p> | <p>Warp: z, 30–40° Weft: s, circa 20°</p> | 12/6–8 | <p>Random stitches with wool yarn, 1.7 mm wide, S2z plied.</p> | |
| <p>Pjms. 1960-77 Heynes mitten B, braided cord Length (sewn on): 47 cm Width: 0.7 cm</p> | Braided with 3 strands | <p>Wool, light brown</p> <p>Braid: 0.7 mm</p> <p>Small strands: 2–3 mm</p> | | | | |
| <p>Pjms. 1940 Garðar mitten</p> <p>Length: 30 cm Width shaft: 19 cm Width palm: 11 cm Thumb length: 13 cm Thumb width: 5 cm</p> <p>Gusset: circa 9 x 8 cm</p> | 2/2 twill | <p>Wool, light brown</p> <p>Warp: 0.7–0.8 mm Weft: 1.8–2.0 mm</p> | <p>Warp: z, 40–45° Weft: s, 30–35°</p> | 9/4 | (not visible from the outside) | |
| <p>Pjms. 3405 Arnheiðarstaðir mitten</p> <p>Length: 27 cm Width shaft: 14 cm Width palm: 12.5 cm Thumb length: 10 cm Thumb width: 7 cm</p> <p>Height per row circa 1 cm</p> | Nalbinding | <p>Wool, red-brown Plied yarn: 1.8 mm (small threads 1.4 mm)</p> | Z2s | - | <p>Hald: Ila</p> <p>Norland: 4/12</p> <p>Hansen: UO/UOO</p> <p>Common name: Oslo stitch</p> | |

Table 2 (continued): Technical details of the mittens from Heynes (Pjms. 1960-77), the Garðar mitten (Pjms. 1940) and the Arnheiðarstaðir mitten (Pjms. 3405)



Fig. 3: a – Schematic construction pattern of mitten A from Heynes in Iceland. b – Schematic construction pattern of mitten B (Drawing: Charlotte Rimstad/Mads Lou Bendtsen)

The two mittens (A and B) are made of a 2/2 wool twill textile and measure 17.5 x 11 cm and 19 x 11.5 cm respectively (table 2). The weave is relatively balanced, although the warp is thinner and more tightly spun than the weft. The fabric type is known as *vaðmál*, a woven textile that was used as a currency in Iceland up until the Early Modern period (Andersson and Granlund 1980, 409–416; Þorláksson 1988; 1991; Guðjónsson 1992, 14; Róbertsdóttir, 2008; Hayeur Smith 2018). The upright loom, for example, was used until the 19th century in Iceland (Hoffmann 1969, 288). The mittens are a pair but constructed in slightly different ways. The left-hand mitten (A) consists of four pieces: one palmar side, one backside and two smaller pieces forming the thumb (fig. 3a). The cuff measures circa 6 cm in length and unlike the rest of the mitten it is made in a herringbone twill weave. The 2/2 twill and the herringbone twill are part of the same fabric, and the herringbone pattern is likely to derive from the selvages of the fabric, where the heddles were set-up in a different way. The herringbone pattern is most clearly visible on the palmar side of the mitten and was probably used deliberately as a subtle decoration to mark the cuff area. The right-hand mitten (B) consists of one large piece, folded lengthwise, and two smaller pieces sewn together for the thumb (fig. 3b). This mitten was repaired on the backside with a patch covering a 4 x 4 cm square hole (see table 2). The patch is also made of a 2/2 twill weave and could be from the same textile. It is unusual to find wear on the backside of a mitten, as the palmar side is more often worn than the backside, and thus the hole in the mitten is more likely to have

occurred by accident rather than by long term wear. The cuff edge on both mittens is reinforced with blanket stitches, about 0.5–0.6 cm long, which are made to prevent the fabric from unravelling. On the little finger side, each mitten has a small cuff slit measuring 4–4.7 cm, which has been laced together with three to four whip stitches with a black or dark brown thread. Both thumbs are inserted into a hole, cut in the fabric, with a point facing towards the cuff. The palm size of the mittens, about 7 cm wide, leaves no doubt that they were worn by a child, but the age of the child is difficult to determine. Children have different hand sizes, even at the same age, but based on modern standards, the mittens would fit a 4 to 6-year-old child.

Parts of a 0.7 cm wide braided cord are attached to the two mittens, most likely used to connect them. As the cord is broken in two pieces, the original length is uncertain. About 8.5 cm of the cord is attached to mitten A with a knot going through a hole in the cuff edge, while a 47 cm long cord is attached to mitten B with the same black thread as in the slit. The cord consists of three strands, each 0.2–0.3 cm in diameter. It most likely functioned as a way of preventing the mittens from becoming separated while also enabling the owner to hang-dry them when not in use. Keeping mittens together with a stay-lace is still known today, passing through one sleeve of a jacket and out the other to prevent their loss. The current length of the cord on the Icelandic children's mittens is however too short for such a purpose, though it is unknown if parts of the cord are missing (Guðjónsson 1992, 27; Coatsworth and Owen-Crocker 2018, 397). Another possibility is

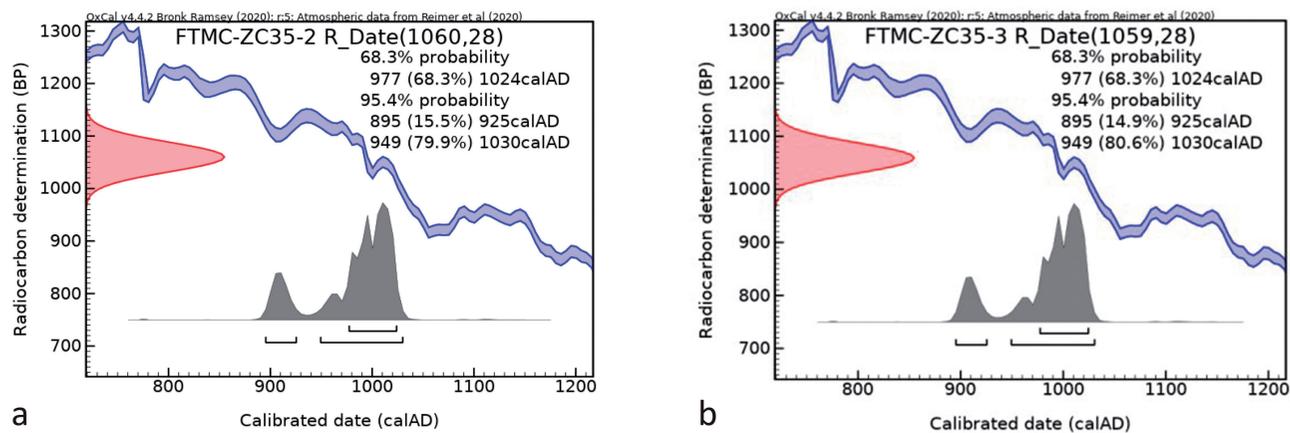


Fig. 4: a – AMS Radiocarbon results derived from the sampled mitten (Pjms. 1960-77). b – AMS radiocarbon results derived from the sampled braided cord (Pjms 1960-77). Both samples provided a date range of 925–1030 calCE

| Museum Number | Site Name | Type | AMS Date (calCE) | Radiocarbon age (BP) | Lab ID |
|---------------|-----------------|------------------------|------------------|----------------------|-----------------------------------|
| Pjms. 1960-77 | Heynes | Child mittens (band) | 925-1030 calCE | 1059±28 BP | Vilnius Radiocarbon (FTMC-ZC35-3) |
| Pjms. 1960-77 | Heynes | Child mittens (mitten) | 925-1030 calCE | 1060±28 BP | Vilnius Radiocarbon (FTMC-ZC35-2) |
| Pjms. 1940 | Garðar | Vaðmál mitten | 1310-1388 calCE | 695±27 BP | Vilnius Radiocarbon (FTMC-ZC35-1) |
| Pjms. 3405 | Arnheiðarstaðir | Nalbinding | 1480-1640 calCE | 330±30 BP | Beta Analytic (Beta-605821) |

Table 3. The AMS-dating of the mittens

that the braided cord was used to bind the mittens to the wearer’s wrists, similar to a pair of Icelandic men’s trousers with braided bands which were used to bind them at the ankles (National Museum of Iceland, Collection Registry nr. Pjms. 1163).

For the AMS radiocarbon dating analysis (Vilnius Radiocarbon, Certificate no. 2022-05-10-FTMC-ZC35, no. 2 and 3), samples were taken from one of the mittens and the braided cord. The sample from the mitten was prepared from six loose threads (each 1.5 cm in length and 14 mg in all) that were cut from two locations on mitten A. The sample provided an AMS date of 925–1030 CE (table 3 and fig. 4a). The sample from the cord (21 mg and 2.3 cm in length) was cut from a single fibre bundle close to the attachment site between the cord and the mitten. This sample resulted in an AMS date of 925–1030 CE (fig. 4b). Both samples provided the same date, confirming the Viking Age origin of the mittens. Children’s mittens are indeed rare discoveries in Scandinavian archaeological contexts and the fact that this pair of mittens dates to the Viking Age makes the find unique.

The Garðar mitten (Pjms. 1940)

In 1881, a single mitten was found at Garðar near Akranes in western Iceland (fig. 5). This area was known as “Jörundarholt” in the Settlement period and has been inhabited since its founding. At the site,

the ruins of houses built upon earlier structures were discovered in a farm mound and the mitten was found at ground level, under these ruins, about 3.5 metres deep (Pálsson 1895, 34-35).

It is a left-hand mitten, constructed of three pieces of 2/2 twill wool fabric, which like the child mittens from Heynes could also be termed *vaðmál* (table 2). The mitten measures 30 x 19 cm and the fabric is z/s spun with a hard z-twisted warp and a softly s-twisted weft. The mitten is constructed from a piece of textile, which was cut in a curved M-shape and folded lengthwise (fig. 6). It was sewn together at the little finger side and has a curved seam matching the outline of the hand. Near the cuff end on the little finger side, a small triangular gusset was inserted, enabling the cuff to become slightly flared on this side. As there is no hem edge preserved along the cuff edge, the mitten may have been longer (Pálsson 1895, 35). A hole was cut for the thumb piece, which was sewn on from the inside. The Icelandic textile researcher Elsa Guðjónsson noted in 1992 that this mitten had some 2–4 mm long loops made of lightly z-twisted wool that were tightly sewn into the fabric and trimmed to form a hairy surface or tight pile (Guðjónsson 1992, 19). The presence of this feature is not evident today, but it is clear that the fibres inside the mitten have formed a smooth woolly surface (fig. 7).



Fig. 5. The single mitten from Garðar in Iceland. a – Palmar side. b – Back side (Image: Ívar Brynjólfsson)

A sample for radiocarbon dating measuring 2 cm in length and 21 mg in weight was cut from the damaged area on the palmar side of the mitten. The sample provided an AMS date of 1310–1388 CE (Vilnius Radiocarbon, Certificate no. 2022-05-10-FTMC-ZC35, no. 1) (table 3 and fig. 8).

The Arnheiðarstaðir nalbinding mitten (Þjms. 3405)

A single, left-hand nalbinding mitten was found deep in the earth during construction in 1889 at the site of Arnheiðarstaðir in Fljótisdalur in eastern Iceland (fig. 9). The mitten measures 27 x 14 cm and it is rounded at the fingertips and has a narrow wrist and flared cuff.

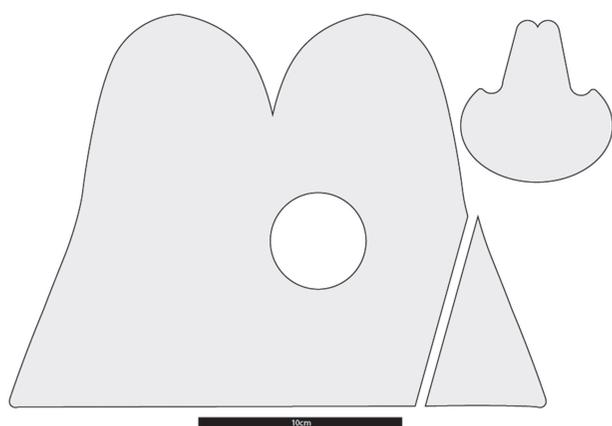


Fig. 6: Schematic construction pattern of the mitten from Garðar in Iceland (Drawing: Charlotte Rimstad/Mads Lou Bendtsen)



Fig. 7: The inside of the Garðar mitten has a filled surface, but no obvious loops or pile (Image: Freyja H. Ó. Sesseljudóttir)

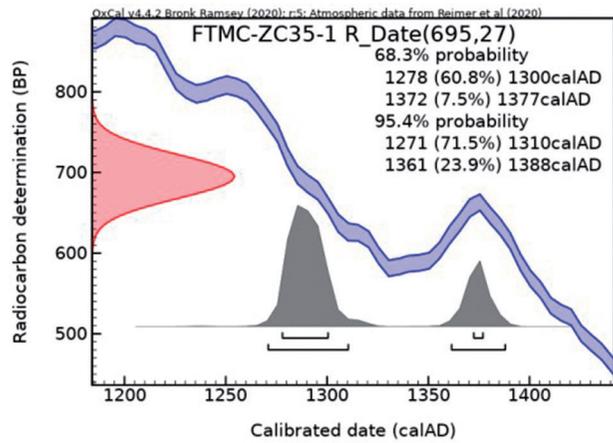


Fig. 8: AMS Radiocarbon results derived from the sampled mitten (Pjms. 1940), providing a date of 1310–1388 CE

The thumb is quite large, 10 x 7 cm, suggesting that it was either worn by a large hand or meant to be worn on top of another kind of handwear. The nalbinding mitten is made of a Z2s plied yarn, which is spun unevenly ranging from 1.4 mm to 1.8 mm in diameter. One of the two threads in the ply has a darker colour than the other, but no dye or wool fibre analyses have been carried out yet (see table 2). When analysing the mitten in 1950, the Danish textile researcher

Margrethe Hald identified the technique as “vantesom or nalebinding” and defined the stitch as Type IIa (1950, 308; 1980, 304; 1951). Today this stitch is more commonly known as the Oslo stitch (Classen-Büttner 2015, 47) (fig. 10). The nalbinding technique requires a needle and a single thread of limited length which can be connected using different stitches. The technique resembles sewing or knotting techniques, where the whole thread is pulled through the previous loops. For radiocarbon dating, a sample weighing 15 mg and measuring 1 cm in length was cut from a damaged area on the side of the mitten, where a loose end of the plied wool threads was present. The sample provided an AMS date range of 1480–1640 CE (Beta Analytic: Beta-605821) (table 3 and fig. 11).

A comparison of other archaeological mittens

The first archaeological handwear finds from northern Europe are dated to around 700–800 CE and come from the Netherlands and Germany (Willemsen 2015a, 2-4). However, handwear was known and used long before that, as was mentioned by classical writers and depicted on early art from southern Europe (Willemsen 2015a, 4). Written sources confirm that handwear was known in the north at least since the eighth century, as the monster Grendel’s glove is referenced in the poem



Fig. 9: The nalbound mitten from Arnheiðarstaðir in Iceland (Pjms. 3405) a – Palmar side. b – Back side (Image: Ívar Brynjólfsson)

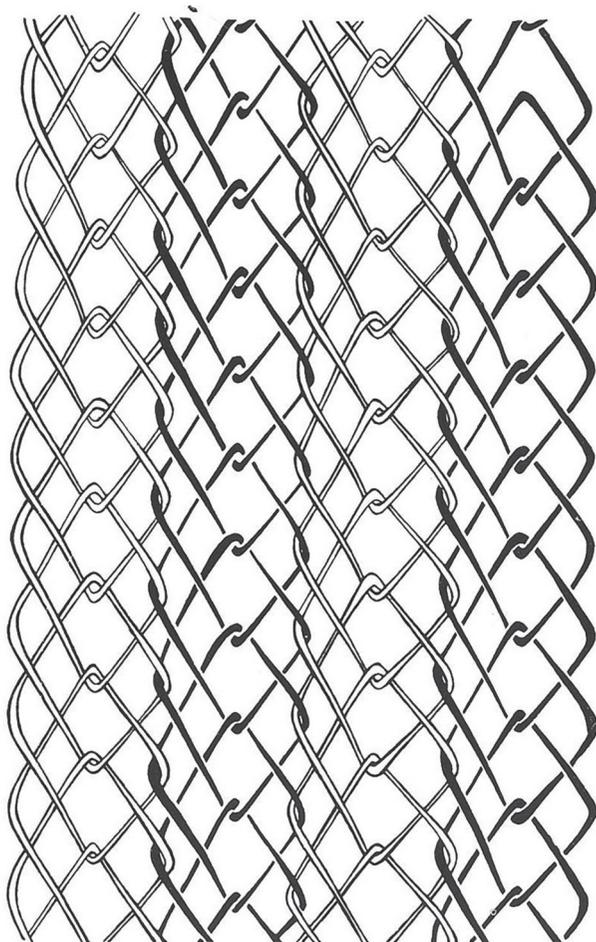


Fig. 10: Schematic drawing of the Oslo stitch in the Arnheiðarstaðir mitten (After Margrethe Hald 1980, fig. 353)

of Beowulf (Beowulf 2085–2100 in Osborn 1983; Lerer 1984). Also mentioned in northern mythology, as noted by the Icelandic writer Snorri Sturluson, the god Thor requires an iron glove called *Járngreipr* to use the hammer *Mjöllnir*. In another passage it is mentioned that Thor, on his way to *Útgarða-Loki*, sleeps in the giant *Skrýmir's* glove (*Gylfaginning*, verse 20; Jónsson 1929, 44). Handwear is also mentioned in an Icelandic context in *Saga af Þorsteini bæjarmagni*, in which a child puts on handwear before going to play (Egilsson and Guðmundsson 1827, 176). The handwear mentioned in that passage is called *bandvettlingar*, an old Icelandic word that has been associated with mittens made in nalbinding (Eldjárn 1994). Prehistoric and historic archaeological examples of skin and textile handwear indicate that woven cloth and nalbinding were mostly used in the Viking Age and Medieval times, while knitted gloves and mittens became dominant in the 16th and 17th centuries (Ringgaard 2010; Vajanto 2014; Willemsen 2015a; Rimstad 2017b).

Woven fabric mittens

Few contemporary comparisons to the woven fabric mittens from Heynes and Garðar in Iceland have been found in the Nordic countries. The first example to mention is a woven fabric mitten, dated to 780–890 CE, that was recently found preserved in the now melting glacier (C57874/24) in the area of Lendbreen in Norway (Vedeler pers. com) (fig. 12). It is a left-hand mitten, measuring approximately 18 x 11 cm, and it is made of 2/2 twill, with a thin z-twisted warp and a much thicker and less hard s-twisted weft. It is constructed of one large textile piece for the palmar side and three smaller pieces for the backside, sewn together with overcast stitches in S2z plied linen thread. The thumb is shaped from a separate, but similar piece of fabric. It is likely that the mitten was composed of pieces from a larger, reused garment. From Sct. Pederstræde in Viborg in Denmark, a right-hand mitten made of a 2/2 wool twill fabric, dated to 1050–1200 (fig. 13) resembles the child's mittens from Heynes. Similarly, a medieval right-hand mitten of 2/2 twill from Lödöse in Sweden, shows comparably tightly twisted warp and loosely twisted weft threads (Oksen 2014, 23). Lastly, in four burials excavated from Uvdal Church in Norway, dated to the 12th or 13th century, red mittens of twill-woven fabric were found on the hands of the bodies (Vedeler 2007, 118–131).

It is striking, although not unusual, that all the mittens are sewn from twill. Twill fabrics, such as various qualities of *vaðmál*, were used for numerous purposes, for clothing, bedwear, and sails (Andersson and Granlund 1980, XIX, 412) and twill textiles are known to be more dense, flexible and stretchier than tabby textiles, for example (Andersson Strand et al. 2017, 61). These are qualities perfectly fit for handwear, which must continuously follow the movements of the hand. *Vaðmál* fabric is likewise mentioned in the accounts

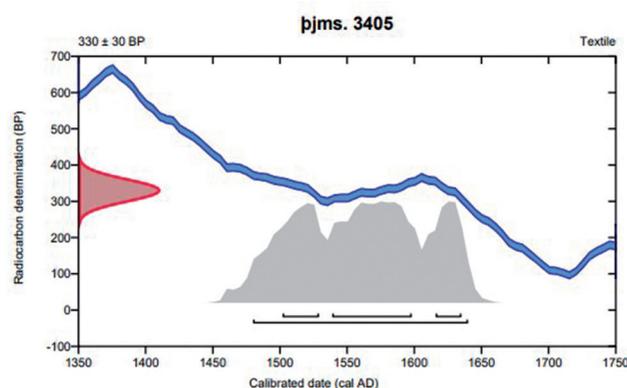


Fig. 11: AMS Radiocarbon results derived from the sampled mitten (Pjms. 3405), providing a date range of 1480–1640 CE



Fig. 12: Mitten in 2/2 twill from Lendbreen in Norway (C7874/24) dated to 780-890 CE. (Image: Maria Jensen, KHM, Oslo)



Fig. 13: Mitten from Sct. Pederstræde in Viborg in Denmark, dated to 1050–1200 CE (Image: Viborg Museum)



Fig. 14: Mitten, checked tabby fabric from Kongens Nytorv in Copenhagen, Denmark. Early Modern period (Image: Charlotte Rimstad)



Fig. 15: The nalbound mitten from Oslo, Norway (Image: Maria Jensen, KHM, Oslo)



Fig. 16: The nalbound mitten from Ribe in Denmark (Image: Sydvestjyske Museer)



Fig. 17: The nalbound mitten from Åsle in Sweden (Image: Ola Myrin, Statens Historiska Museer, Stockholm)



Fig. 18: A nalbound mitten from Rådhuspladsen (D48/1985) in Copenhagen in Denmark (Image: Charlotte Rimstad)

of Bergen Castle from the Late Medieval period as suitable for mittens, especially for people working in the forest (Andersson and Granlund 1980, XIX, 411, 498). However, as seen in an Early Modern checked mitten from Kgs. Nytorv in Copenhagen in Denmark (D46/1985) (fig. 14), examples of tabby-woven mittens do exist, showing that mittens could in fact be made of whatever fabric was available. Moreover, the different thumb solutions, with thumbs of one or two pieces inserted in slits, indicate that there were apparently no fixed rules about how to construct a mitten, such as is seen with leather gloves and mittens in later periods (Cumming 1982, 16).

All the above-mentioned comparative mittens were made for adult hands, and children's mittens are extremely rare. A 15th century knitted mitten from the London Museum and another one from Norwich Castle Museum & Art Gallery are among the few known examples (Hugget et al. 2013).

Mittens in nalbinding

At present, the mitten from Arnheiðarstaðir is the only nalbinding mitten found in Iceland from this time period. While the nalbinding technique itself is ancient, with the first example coming from the

Mesolithic settlement Tybrind Vig in Denmark, dated to c. 4200 BCE (Bender Jørgensen 1990, 1–4; Classen-Büttner 2015, 30–31; Mannering 2018), the oldest preserved nalbinding mittens from Scandinavia only date back to the Early Medieval period. An early example could be the find from Eura Luistari in Finland, dated to the 11th century, though its function as a mitten was recently questioned and it may rather be some sort of pouch (Vajanto 2003, 29–30; Vajanto 2014). The technique itself was also used in the Viking Age, for instance in the nalbound gold and silver parts in the pendants from Bjerringhøj, Denmark, known as the Mammen stitch (Hansen 1991; Mannering and Rimstad 2023, 59–61) or in the sock from York in York stitch, dated to 970 CE (Walton 1989, 341–245). But no mittens in nalbinding date to this period so far.

A mitten found in 1926 in the Sørenga area in Oslo in Norway (C28155) was AMS radiocarbon dated to 1025–1125 CE (Søvsø and Heel 2015, 60; Classen-Büttner 2015, 45; pers. com. Vedeler 2023) (fig. 15). The so-called Oslo stitch or the UO/UOO stitch, was named after this mitten. However, later analyses have shown that the Oslo mitten is in fact not produced in this stitch, but rather in the Ribe stitch, described below. It is a small detail but considering that the stitch was named after the find, it might be worth re-investigating the original find.

A medieval mitten from Lund in Sweden was also made in nalbinding (Hald 1945). Another nalbound mitten found in Grønnegade in Ribe in Denmark, dated to 1150–1250 CE, was made in the UOOO/UOOO stitch, thus named the Ribe stitch, though sometimes also referred to as the Finnish stitch (Søvsø and Heel 2015) (fig. 16). As opposed to the Arnheiðarstaðir mitten, the above-mentioned older mittens do not have narrow wrists and flared cuffs, but apart from that, these mittens are quite similar in terms of shape. A nalbound mitten from the aforementioned Lödöse in Sweden is dated to the 13th century and made in two different stitches, one being the Åsle stitch and the other unidentified (Öhrling and Josefsson 2024, 199). It is hard to pinpoint the exact provenance of the medieval nalbound mittens. Fragments from Gdansk in Poland, Riga in Latvia and Schleswig in Germany show that this was a rather common technique used for mittens in northern Europe in this period (Classen-Büttner 2003, 47). Perhaps, future strontium isotope analyses of the wool could shed further light on the provenance of the different medieval mittens.

The mitten from Åsle bog in Sweden (fig. 17) was long thought to be the oldest nalbinding object in Scandinavia, as it was initially dated to the first centuries CE (Hald 1950, 305) but a recent radiocarbon

analysis revealed that it is much younger, dating to 1510–1640 CE (Nockert and Possnert 2002), which is fairly similar to the Arnheiðarstaðir mitten. The two mittens are similar, but the Åsle mitten is made in stitch type IIIc, also known as the Åsle stitch (Hald 1950, 308; Classen-Büttner 2003, 51). Nalbinding mittens have also been found in several places in Copenhagen in Denmark, and while many of them unfortunately lack precise dates, some have been recovered from 17th century layers especially. A nalbinding mitten from Rådhuspladsen in Copenhagen in Denmark (D48/1985), made in the Oslo stitch, differs from the others in that it lacks a finger section, while still having a large thumb (fig. 18) (Rimstad 2017a, 237). It must have been used for a special purpose requiring exposed fingers or as an outer mitten. As the mitten still has remnants of tar on it, it may have been used in the maritime sectors of society.

Indeed, the question of why some mittens in the 16th and 17th century were made with nalbinding, even though knitting was invented by this time, still remains. Rather than being chronological, the explanation seems to be functional, as nalbinding mittens were more durable and the stitches would not unravel as they do in knitwear (Søvsø and Heel 2015, 56). The often large size and big thumbs imply that many of the nalbinding mittens would have been worn over other kinds of handwear as regular working mittens. They could, however, also have been used as linings in leather mittens, such as was seen in a find from the late 17th century Dutch shipwreck *Rede van Texel* (Willemsen 2015b, 55). This is emphasised by the fact that the nalbinding mittens rarely have any decorations, such as is often seen on knitted mittens and gloves from the same time periods (Rimstad 2017a, 237). Guðjónsson mentions that nalbinding mittens were especially well-suited for manual labour, compared to knitted ones, because of their sturdiness (1992, 28).

Archaeological fragments of nalbinding textiles were also discovered on Viðey, an island off the coast of Reykjavík in Iceland, occupied since the Settlement period/Viking Age. While they have not yet been radiocarbon dated, archaeological research indicates that these fragments are from the 15th or 16th century (Gunnarsson 1988). In Iceland, the nalbinding technique was likewise used to produce milk sieves from cow tail hair, at least in the 19th century, and in Finland, horsehair was used for the same purpose (Eldjárn 1960; Kaukonen 1960, 46–49). Furthermore, the technique seems to have adopted a more decorative purpose in the 18th and 19th centuries when nalbinding mittens were elaborately



embroidered with geometrical or floral patterns as can be seen in the collection of the Nordiska Museet in Sweden.

Conclusion

The different dating results of the three Icelandic mittens underline a continuity in use of handwear from the Viking Age and into Early Modern times in Iceland. Future analyses of the wool fibres and potential dyestuff of the mittens are intended, which will increase knowledge about how the different kinds of handwear were produced.

The comparative material shows that the Icelandic mittens fit in very well with the general handwear development in other Nordic countries. It seems that most woven fabric mittens were likely made from left-over fabric from the production of larger garments or other items of *vaðmál* and this twill weave had both the tightness and flexibility required for handwear. The thumb was covered in various ways, probably depending on the fabric available and the skills of the craftsperson.

Nalbinding mittens may have existed in the Viking Age, as the technique was surely known, though no identified mitten finds come from this period. It is not until the 12th century that more convincing examples of nalbound mittens are found in northern Europe. The new AMS-date likewise proved the Icelandic mitten (Pjms. 3405) to be from the Late Medieval or Early Modern Period. It is suggested that mittens of this specific technique were especially suitable for manual labour.

As opposed to gloves – and especially leather gloves – which became a significant symbol of status and dignity in the 17th and 18th centuries, mittens were seemingly more related to solving practical issues, such as protecting the hands from cold, pain or heat.

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