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Handicraft production in Estonian villages in the 12th–14th centuries

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ABSTRACT

The article examines the types of crafts practised in Estonian villages during the 12th–14th centuries and whether village crafts were affected by the conquest and Christianisation of Estonia by German and Danish crusaders in the first half of the 13th century. The study is based on craft-related finds (tools, semi-finished products, and production waste) collected from twelve village sites dating to the period in question. In order to place these village finds into a broader context, they are compared with corresponding material recovered from four contemporaneous strongholds, as well as from the occupational layers of Tallinn, Tartu, and Viljandi towns dating to the 13th–14th centuries. More than ten times as many craft-related finds were retrieved from strongholds of the 12th century and the first half of the 13th century than from village sites of the 12th–14th centuries. The assemblages from the strongholds are also more diverse than those from the villages. Likewise, the finds from urban contexts contain a markedly greater quantity and variety of craft-related material than those from rural settlements. Finds from village sites in Estonia dating between 1100 and 1400 indicate that villages functioned primarily as units of agricultural production. The archaeological evidence points only to household-level craft production intended for self-sufficiency. Prior to the conquest, strongholds served as the principal centres of craft production in the Estonian territory, while following the conquest the bulk of craft output was produced in towns.

KEYWORDS

archaeology, Middle Ages, handicraft production, Baltic crusades, medieval Livonia.

Introduction

The aim of this article is to examine handicraft production in Estonian villages during the period of approximately 1100–1400, using archaeological source material. During this time, Estonia – along with its neighbouring regions to the north and south – underwent significant political and cultural changes. In the course of the Baltic crusades in the 13th century, the territory of Estonia was conquered by German and Danish crusaders, and the indigenous population was Christianised.

In medieval Livonia, which includes the area of modern Estonia and Latvia, a craftsman was an apprenticed master whose occupation provided his livelihood and who, at the end of the Middle Ages, usually belonged to a craft guild. In archaeology, craftsmanship is generally understood as non-agrarian manufacturing as a whole (Tvauri 2022, 261). Craftsmanship can be divided into three categories based on the producer–consumer relationship, with different purposes and required skills, quality requirements, and production volumes: home craft in one's household for personal use; customer production on direct orders; and market production (Christophersen 1980, 14–16).

Handicrafts in Iron Age Estonia have been studied since the 1930s, when archaeologist Harri Moora concluded that before the German and Danish conquest, it was not possible to make a living solely from handicraft production. The rural population produced everything they needed themselves, including weapons (Moora 1937, 26). Moora also wrote a special study on stone casting moulds dating from the end of the Iron Age, in which he concluded that they were mostly used to produce small tin ornaments (Moora 1963). Later, he also believed that although the peoples of the Baltic region made notable progress in handicraft at the beginning of the second millennium AD, this field of work in Estonia remained at the level of home craft in the 12th–13th centuries (Moora 1966, 127). In his view, the most important and advanced branch of handicraft was blacksmithing, primarily weapon making (Moora 1937, 26; 1966, 123–125). A similar view is held by the authors of the general treatment of Estonian prehistory published in 1982. According to them, the overall level of handicraft development in Estonia at the end of the Iron Age did not rise above the level of home or village craft. Only weapon forging – and possibly the production of silver jewellery – may have risen somewhat above the standard village craft level (Jaanits et al. 1982, 394).

Since the 1980s, archaeologists' assessments of the development of handicraft at the end of the Iron Age in Estonia have changed. Studies of iron-smelting sites, which began already in the 1960s (Aaloe & Kustin 1966), and especially those conducted from the mid-1980s onwards (e.g. Lavi & Peets 1985; Peets 1988; 1991; 1995; Lavi 1999), have shown that in Estonia during the 12th–14th centuries, two large iron-producing regions emerged, where total iron production may have reached several thousand tonnes. One of these was located in Virumaa[1] and northern Tartumaa, and the other in northern Saaremaa (Peets 2003, 135–136). According to the general treatment of Estonian prehistory published in 2020, ironworking and the production of metal ornaments may already have been specialised branches of handicraft, and the overall level of blacksmithing in the region was comparable to that of other Baltic Sea countries. Weapon forging was at a highly developed level (Kriiska et al. 2020, 386–387).

1 In describing the territory of Estonia, I use the historical division of the country into counties that had developed by the end of the 19th century (Fig. 1).

Regarding medieval rural handicrafts, ethnologist Ferdinand Linnus believed that the situation, where most everyday items were made by the users themselves, largely continued during that time. Based on the few written sources, by the 15th and early 16th centuries, there were quite a number of more or less professional craftsmen among the Estonian rural population, most of whom were blacksmiths (Linnus 1937, 259).

Research on handicraft in the Final Iron Age (1050–1227) and the first couple of centuries of the Middle Ages in Estonia has primarily focused on metalwork and textile production. Studies have been conducted on iron spearheads (Antejn 1962; Selirand 1974; 1975; 1982; Creutz 1995; 2003), silver jewellery (Tamla 1998; Tamla & Kallavus 1998; Tamla et al. 2002), copper-alloy objects (Hummel et al. 2024), textiles and clothing (e.g. Peets 1992; 1993; 1998; Vedru 1999; Kaarma et al. 2000; Laul 2004; Matsin 2013; Rammo 2014; 2018; Rammo & Matsin 2015; Kaljus 2017; Ellam 2022), as well as the technology of making tin plaques used for clothing decoration (Keeman 2017) and spiral tubes made of copper alloy used as decorative elements on garments (Rammo & Ratas 2015). Based on various archaeological sources, iron production, blacksmithing, and iron trade during the 12th–14th centuries have been studied (e.g. Sepp 1987; Peets 1991; 2003; Saage et al. 2018; Saage 2020; Jegorov 2023; Oks 2025). The production of bone and horn items (Luik 2005), tools used for casting objects from non-ferrous metals (Moora 1963; Saage & Wärmländer 2018), and textile technical devices in Estonia have also been studied (Matsin 2002).

I have previously compared the Final Iron Age find assemblages from the Lõhavere stronghold in Viljandimaa, which was in use at the end of the 12th century and the first quarter of the 13th century, with those from the nearby Mustivere and Uderna II village sites in Tartumaa. It turned out that handicraft-related finds are present in the stronghold, whereas the find material from the villages refers only to agricultural production and domestic handicraft (Tvauri 2002). I have also compiled a comprehensive overview of the advancement of craftsmanship and manufacturing in medieval Livonia (Tvauri 2022), in which I addressed both written sources and archaeological finds dating from the 13th–14th centuries. To summarise the research history presented above, it should be emphasised that the entire field of handicraft, and mostly finished products, have been studied as source material. Handicraft production in Estonian villages during the period 1100–1400 has not been specifically researched before.

In this study, I aim to answer two main research questions. First: what types of handicraft, and at what level, were produced in Estonian villages during the period under review? The second question concerns changes over time: did village handicrafts undergo any changes as a result of the German and Danish conquest and the Christianisation of the land, and if so, what were they?

Materials and methods

There are almost no written records about handicrafts in villages from the period 1100–1400 in the area of contemporary Estonia (see Linnus 1992, 159). Therefore, research on this topic can rely only on archaeological sources, such as manufacturing sites, manufacturing equipment, artisan tools, production waste, and defective products found in villages. In this study, I do not use the products themselves as sources, because it is usually impossible to determine their place of manufacture. Instead, I rely solely on finds dated to the period under review that were obtained from village sites. I do not address iron production and charcoal-burning sites located outside villages, which are also known from the 12th–14th centuries (e.g. Lavi 1999, 42; Peets 2003, 181–188, 352; Oks 2025, 66–67; Saage et al. 2025).

The study of handicrafts is complicated by the fact that many handicraft branches do not require a special workshop, equipment, or specialised tools. Production sites are found only in those crafts where stationary equipment was used (e.g. blacksmithing, pottery making, tanning). The most easily identifiable crafts are those whose production processes involved pits or devices dug into the ground, such as firing kilns, clay pits, or casting moulds recessed into the earth for large metal objects. Even in these cases, the exact origin of the remains is not always clearly determinable. Handicraft tools are very rare even in medieval towns, whose inhabitants largely lived by handicrafts, within the occupational layer. Mostly only small tools have survived, which are more easily lost, less valuable, or broken (Verhaeghe 2017, 303–304).

It is not possible to determine the exact number of known village sites in Estonia from the period approximately 1100–1400. Since most villages were continuously inhabited from the 11th century (Kriiska et al. 2020, 360–361) until the 19th century, the majority of village sites contain finds from the Final Iron Age, the Middle Ages, and the modern period. Finds dating from 1000–1800 have been collected from about 500 Estonian village sites through archaeological excavations, monitoring of construction works, fieldwalking, or metal-detector surveys, with most of the material originating from the 16th–18th centuries. Archaeological excavations or monitoring of construction works have been conducted at around 70 settlement sites. In this article, I analyse handicraft-related finds from twelve settlement sites (Table 1). These are monuments that have been excavated extensively and were primarily in use during the period 1100–1400 (Fig. 1). Additionally, I use individual handicraft-related finds from other settlement sites that can be dated to the period under review.

The occupational layer at the **Suurküla village site** in Harjumaa has been identified over an area of approximately 6.8 ha. In 2020 and 2021, an area of 940 m^2 was excavated, where the undisturbed occupational layer preserved beneath the mixed plough horizon was investigated (Bernotas & Läänemägi 2024).

TABLE 1. Finds related to handicrafts from Estonian village sites, strongholds, and towns

No.	Village site	Dating	No. of find numbers	Metalworking	Textileworking	Woodworking	Boneworking	Tools of multiple usage	No. of finds related to handicrafts
1	Suurküla	11th–16th c.	72	0	0	0	0	0	0
2	Angerja	10th–13th c.	76	0	0	0	2	0	0
3	Linnaaluste II	11th–15th c.	242	0	0	0	0	0	0
4	Ilumäe I	13th–14th c.	393	0	0	0	0	1	1
5	Kaaruka	12th–14th c.	63	0	0	0	0	0	0
6	Raatvere	10th–15th c.	79	0	0	0	0	0	0
7	Vorbuse Jänese	13th–18th c.	89	0	0	0	0	0	0
8	Reola	10th–14th c.	939	0	0	0	0	0	0
9	Tamsa	13th–14th c.	34	0	0	0	0	0	0
10	Uderna II (2012–2013)	13th–14th c.	613	0	2	0	0	1	3
11	Olustvere	10th–17th c.	6690	10	6	1	0	4	20
12	Mustivere	10th–13th c.	1533	0	5	1	0	1	7
			10 823	**10**	**13**	**2**	**2**	**7**	**32**
	Stronghold								
13	Keava	12th c. – 1224	1111	13	2	0	0	0	15
14	Lõhavere	12th c. – 1223	7700	102	44	3	2	20	182
15	Soontagana	12th–13th c.	3636	64	35	2	4	11	128
16	Valjala	11th–13th c.	888	12	11	1	0	11	35
			13 335	**191**	**92**	**6**	**6**	**42**	**360**
	Town, excavation site								
17	Tallinn, Sauna Street 10	13th–14th c.	6660	18	23	2	15	1	59
18	Tartu, Town Hall Square	13th–14th c.	1243	3	4	0	1	1	9
19	Tartu, University of Tartu Botanical Garden	1230–1260	1792	13	16	0	0	1	44
20	Viljandi, Pikk Street	13th–14th c.	9544	2	5	0	1	2	10
			19 239	**36**	**48**	**2**	**17**	**5**	**122**

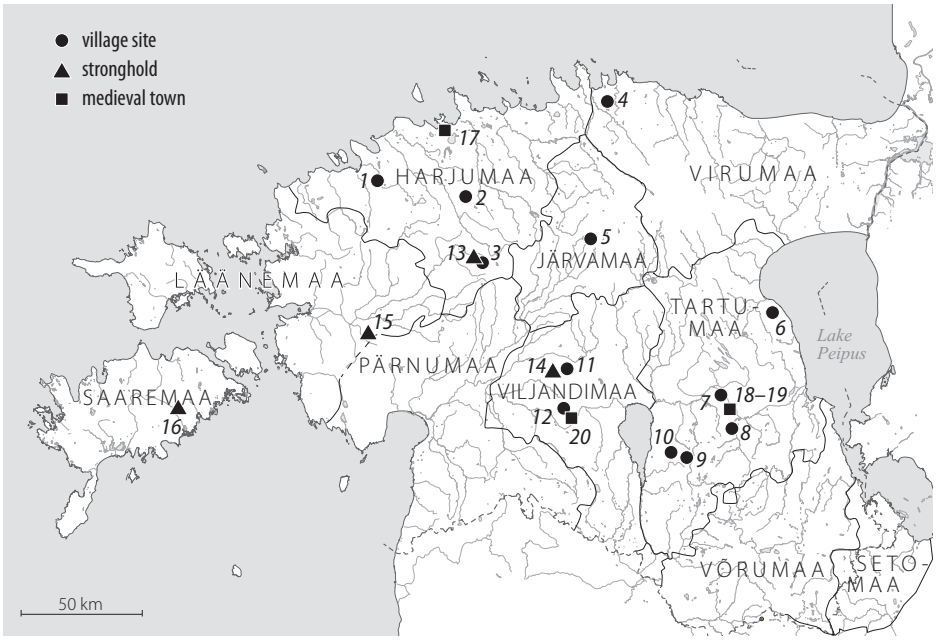

FIG. 1. Locations of craft-related finds. Village sites: 1 – Suurküla, 2 – Angerja, 3 – Linnaaluste II, 4 – Ilumäe I, 5 – Kaaruka, 6 – Raatvere, 7 – Vorbuse Jänese, 8 – Reola, 9 – Tamsa, 10 – Uderna II, 11 – Olustvere, 12 – Mustivere; strongholds: 13 – Keava, 14 – Lõhavere, 15 – Soontagana, 16 – Valjala; excavation sites in towns: 17 – Tallinn, Sauna Street 10, 18 – Tartu, Town Hall Square, 19 – Tartu, University of Tartu Botanical Garden, 20 – Viljandi, Pikk Street. Draft by Jaana Ratas.

Excluding finds from the Stone Age and the 20th–21st centuries, the collected material (AI 8673: 1–167) consists of 72 finds, most of which date to the 11th–16th centuries.

The **Angerja village site** in Harjumaa covers 2–3 ha, of which 200 m^2 was excavated in 1986. Originally, the occupational layer was 30–40 cm thick, but due to illegal removal prior to archaeological investigations, only a 10–20 cm thick layer remained in some places (Tamla & Valk 1987; Lavi 1997, 94). The finds (Al 5368: 1–76) date from the 10th to the 13th centuries. Additionally, three hoards consisting of silver jewellery and coins dating from the late 12th century or the first quarter of the 13th century have been found at the site (Tamla & Kallavus 1998; Kiudsoo & Leimus 2008, 223–224).

The **Linnaaluste II village site** in the southern part of Harjumaa covers approximately 4 ha. In 2003, a 13 m^2 area was excavated, where the occupational layer was 40–50 cm thick. The collected finds (TÜ 1228: 1–242) date from the 11th to the 15th centuries (Lang et al. 2004, 67–68; Konsa & Kivi 2012, 82–85).

The **Ilumäe I village site** in Virumaa was investigated in 1996. A 60 m^2 excavation trench was opened within the approximately 1-ha settlement area, where an undisturbed occupational layer, 15–25 cm thick, was preserved beneath the plough soil. The collected finds (AI 6105: 1–406) mainly date to the 13th–

14th centuries. Before the settlement was established, there was an iron-smelting site in or near the village area during the 11th–12th centuries, as indicated by finds such as slag pieces, bloom iron, ore, and fragments of tuyere tubes made of burnt clay (Lang 1997; Peets 2003, 85–86). Excluding the findings related to iron smelting, 393 find numbers remain, which were deposited during the 13th–14th centuries.

At the **Kaaruka village site**, covering approximately 4.6 ha, in Järvamaa, an area of about 120 m² was archaeologically investigated during the installation of lighting posts and cables. An occupational layer 10–40 cm thick was preserved (Randoja 2019). The finds (AI 8173: 1–63) mostly date from the 12th to the 14th centuries.

The **Raatvere village site** in Tartumaa was investigated in 1981. A 32 m^2 excavation trench was opened in the central part of the approximately 3-ha settlement area (Lavi 1981). Based on the finds (AI 5169: 1–79), the site was inhabited no later than the 10th century, with the most recent finds dating to the 15th century.

At the **Vorbuse Jänese village site** on the southern bank of the River Emajõgi, 38 m^2 was archaeologically excavated in 2006 (Tvauri & Bernotas 2007, 175–177). The finds (TÜ 1520: 1–89), mainly sherds of earthenware pots, mostly date to the 13th–15th centuries, with a smaller number from the 16th–18th centuries.

The **Reola village site** in Tartumaa was archaeologically investigated in 2014 (Vissak 2015). A 155 m^2 area was excavated within the approximately 2.7-ha settlement site. The finds collected during the excavation (TÜ 2300: 1–939) date to the 10th–14th centuries.

At the **Tamsa village site** in Tartumaa, the occupational layer has been identified over an area of approximately 2.8 ha. In 2015, archaeological monitoring of construction works was carried out across an area of about 525 m^2. Finds were mostly collected from patches of the occupational layer located below the plough soil, in the natural subsoil (Jonuks 2015). The finds (TÜ 2558: 1–34) predominantly date to the 13th–14th centuries.

Archaeological investigations at the **Uderna II village site** in Tartumaa were carried out in 1987–1990 (Lang & Ligi 1988; 1990). However, the material from those excavations (AI 5456) mostly dates from the period after the 14th century. In 2012–2013, new excavations were conducted approximately 160 m east of the area investigated in 1987–1990. The report from these investigations has not yet been published. The finds (TÜ 2223: 1–613), which date to the 13th–14th centuries, have been included as source material in this study.

The **Olustvere village site** in Viljandimaa was excavated between 1978–1985. The occupational layer of the village has been identified over an area of 2.5 ha, of which 16 000 m^2 was excavated (Laul et al. 1979; Lavi & Sokolovskij 1980; Lavi et al. 1981a; 1981b; 1983; Lang & Sokolovskij 1984; Sokolovskij 1985; 1986). A total of 6690 find numbers were collected (AI 4998). In addition, two coin hoards have been found at the site – one from the late 11th century and the other

from the third quarter of the 14th century (Molvygin & Sokolovskij 1979, 393–394; Sokolovskij 1979, 395). Before the area was settled, iron was smelted on the site of the later village core during the second half of the first millennium AD, as evidenced by two clay bases of iron-smelting furnaces and charcoal charring pits found there (Peets 2003, 40, 63–64). The majority of the settlement's find material dates to the 11th–17th centuries.

The **Mustivere village site** in Viljandimaa was partly investigated in 1948 and 1949. The size of the excavated area is not specified in the excavation report (Kustin & Moora 1949). The find material from the site (AI 3993: 1–1533) mostly dates to the 10th–13th centuries, with only a minimal number of finds from the historical period.

In addition, archaeological excavations have also been carried out at other rural settlement sites dating from the second millennium AD. I do not examine the finds from these sites in Table 1, as the vast majority of the material recovered from them dates from after the 14th century – for example, the Lehmja settlement site in Harjumaa (see Lavi & Niinre 1990; Lavi 1997; 2012) – or they have been investigated only on a very limited scale, such as the Savastvere settlement site in Tartumaa (see Saadre 1937).

Although all of the village sites introduced above were ordinary villages, the scope of the investigations carried out at these sites, as well as the level and methods of documentation, vary significantly. Therefore, they cannot be quantitatively compared with each other. Nevertheless, the finds from these sites (Table 1) as a whole represent the archaeological material collected from village sites in Estonia dating to the 12th–14th centuries.

In order to address the research questions posed above, I provide an overview of the evidence for production sites and craft-related finds identified at the twelve village sites presented earlier. As this material is relatively limited, I also examine craft-related finds dated to the 12th–14th centuries from other village sites. To place the data collected from village sites into a broader context, I compare them with corresponding finds from 12th–13th-century strongholds and 13th–14th-century occupational layers of towns in Estonia. In addition to towns, craftsmen likely also worked in manorial estates during the medieval period. However, since 13th–14th-century manors have not yet been archaeologically investigated in Estonia, nothing is currently known about craft production in these contexts.

I have compiled a summary of the craft-related finds from the selected sites in Table 1, where I examine the distribution of objects by craft category. Items related to metalworking are considered to include crucibles, casting moulds, production waste, unfinished products, and metal bars, along with their fragments. Pieces of iron slag are not included in this table, as they were often not collected or only a small portion of the slag found has been preserved. Items related to textilework include loom weights, spindle whorls, sewing needles, and scissors. For woodworking, I have taken into account chisels, drawknives, auger

bits, and spoon knives. Knives and axes, which were also used in woodworking, are not included, as they also served as general household tools. Evidence of boneworking is represented solely by production waste from bone and antler objects. I have included iron and bone awls under tools of multiple function, as they may have been used in bark, leather, or textile work, for example. Although whetstones and copper-alloy tweezers could also have served as craft tools, they are classified as artefacts of multiple function and are therefore not included in Table 1.

I have excluded from the table those crafts that are not represented in the material from the village sites. These include finds related to the production of ceramic vessels and bricks, primarily consisting of fragments of deformed and bloated (ceramsite-like) items resulting from the firing process. Although numerous traces of leatherworking have been recovered from the 13th–14th-century layers of Estonian towns, such finds are not included in the table, as the preservation conditions for leather are lacking at village and stronghold sites.

The number of finds presented in Table 1 is only very generally comparable between different sites. Usually, each object find is assigned its own sub-number, but there are often multiple ceramic sherds grouped under a single sub-number (e.g. Linnaaluste II, Tamsa, and Uderna II). However, there are also sites where each individual ceramic sherd has been assigned its own find number (e.g. Reola, Suurküla, and Vorbuse Jänese).

Manufacturing sites in the villages

Of the medieval village smithies, only the Käku smithy site in Saaremaa has been investigated. Based on radiocarbon dating and finds, it was in use from the 14th to the 17th century. Excavations revealed the positions of at least four superimposed smithy buildings, identifiable by the remains of the lower wall logs and foundation stones. The oldest smithy, dating to the 14th century, measured 8 × 5.4 m and had a floor paved with limestone slabs. Within the building, a rectangular stone-built forge base and clay patches – likely the remains of pit forges – were identified (Saage 2013; Saage et al. 2015, 193).

Only a small amount of slag resulting from iron production and working has been collected from the Suurküla (AI 8673: 12), Linnaaluste II (e.g. TÜ 1228: 64, 142, 148), Reola (TÜ 2300: 614), Tamsa (TÜ 2558: 9), and Mustivere (e.g. AI 3993: 741, 1020, 1029) village sites. As these pieces have not been analysed, it is unclear whether they are residues of iron smelting or smithing.

The slag found at the Ilumäe II and Olustvere village sites was likely left behind by iron-smelting activities that took place at those locations prior to habitation. Only the chemical analyses of slag from the Raatvere village site have shown that the material includes slag resulting from both smithing and iron smelting (Lavi 1997, 100). Approximately 550 m from the excavation at the Raatvere

village site, iron-smelting furnaces dating to the 10th century have also been investigated (see Lavi 1999, 44; Peets 2003, 72).

The only investigated Final Iron Age production site for non-ferrous metal objects in Estonia, dating from the 12th century or the beginning of the 13th century, is a hearth discovered at the Savastvere village site in northern Tartumaa (Saage 2020, 79). The hearth contained intact and fragmented crucibles, burnt clay, domestic ceramics, a knife, and both burnt and unburnt animal bones (Saadre 1937). The latter indicate that the hearth was also used for food preparation (Saage 2020, 29). Approximately 7 m from the hearth, a hoard of 145 objects or fragments – mostly copper-alloy ornaments and fragments of ornaments – was uncovered. Based on its composition, it was likely deposited in the late 12th or 13th century (Tvauri 2025, 12–13) and may have represented a jeweller's stockpile of raw materials.

The only archaeological evidence of pottery production after the German and Danish conquest outside urban areas has been uncovered in Tartumaa, near St. Jacob's Church in Võnnu, during water and sewage pipe trenching. The earliest building of Võnnu church was probably constructed between 1232 and 1236. At some point before the church was built, a pit measuring 130 cm in diameter and 90 cm in depth had been dug. A total of 106 fragments of Pskov-style wheel-thrown earthenware pots were recovered from the depression. Based on rim fragments, these originated from at least six different vessels. Almost all sherds were bloated from heat, distorted, or cracked – characteristics typical of pottery production waste caused by firing temperatures rising too rapidly. The pit where the pottery fragments were found was most likely a waste pit. The pottery kiln was probably in use at the end of the 12th or the beginning of the 13th century. The products are identical to the wheel-thrown pottery of Pskov. It remains unclear whether the potter had immigrated from Pskov or was a local craftsman who had learned the craft there (Jonuks & Tvauri 2020). Similar Pskov-style earthenware was produced in Viljandi and Tartu in the mid-13th century (see Tvauri 2000).

Branches of handicrafts represented in the finds from villages

METALWORKING

Of the sites listed in Table 1, only the Olustvere village site has yielded finds related to metalworking – just nine among the 6690 numbered finds or find groups. Among the metalworking devices are fragments of smelting crucibles (AI 4998: 1079, 1172, 1731, 3261, 3378, 3507, and an unnumbered crucible). All of these are cylindrical in shape, made from local clay, and resemble the smelting crucibles found at Savastvere. A clue as to what metal was being smelted in these crucibles is provided by a limestone casting mould half (AI 4998: 706) found at Olustvere, which was intended for casting a pendant and two tin plaques

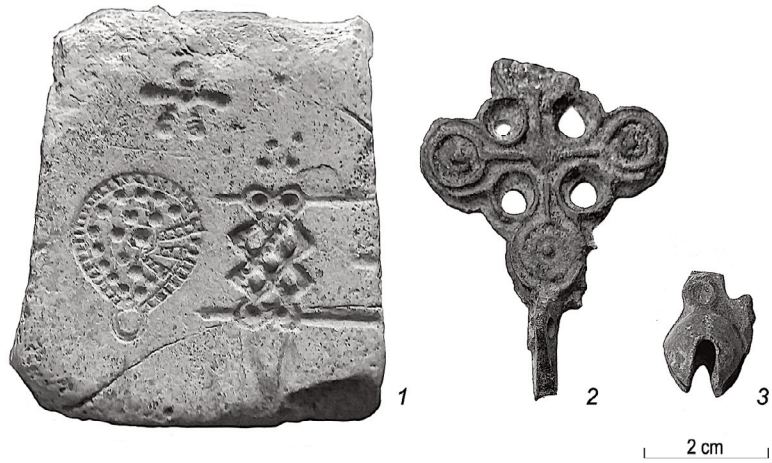

FIG. 2. Finds related to metalwork from Estonian village sites. 1 – stone casting mould from the Olustvere village site (AI 4998: 706), 2 – dress pin semi-product from the Haapsipea II settlement site (TÜ 2553: 1), 3 – semi-product copper-alloy rumbler bell (SM 10869: 57 A). Photos by Andres Tvauri (1, 2) and Monika Reppo (3).

used for clothing decoration (Fig. 2: 1). Another casting mould half from Olustvere (Lang & Sokolovskij 1984, plate XXII: 7) was designed for making a single tin plaque.

As stray finds, two copper-alloy jewellery semi-products from the observed period have been recovered from rural areas of Estonia. From the Haapsipea II settlement site in northern Tartumaa, a semi-product for casting a cruciform-headed dress pin with connected terminals has been found (Fig. 2: 2), which still retains casting residue and has an upper terminal that did not fill properly. Such pins were worn in Estonia in the 13th century (Tvauri 2025, 12). A copper-alloy rumbler bell with a four-petal blank (Fig. 2: 3) has been found using a metal detector in Saaremaa, either in Jööri or Liivanõmme village (Reppo 2019). Two semi-products of this type of rumbler bell have been found in different locations in Tallinn (AI 5777: 85; 6332: 680). Such rumbler bells were widespread peasant decorations in Estonia from the 13th to the 17th century.

The semi-product of a spiral finger ring made of a flat copper-alloy band (AI 4998: 743) has been found at the Olustvere settlement site. Finished rings of this type, decorated with punched ornamentation, have also been discovered at the Olustvere site (AI 4998: 2195, 6334). Such rings were widely used in Estonia during the 12th–15th centuries (Valk 1991, 185).

TEXTILEWORKING

The most common textilework-related finds at Estonian rural settlement sites are spindle whorls (see Vedru 1999). Stone spinning whorls have been found at the Uderna II (TÜ 2223: 500; Fig. 3: 1), Olustvere (AI 4998: 5638, whorl without number), and Mustivere (AI 3993: 364, 469, 486, 717) village sites. Spindle whorls

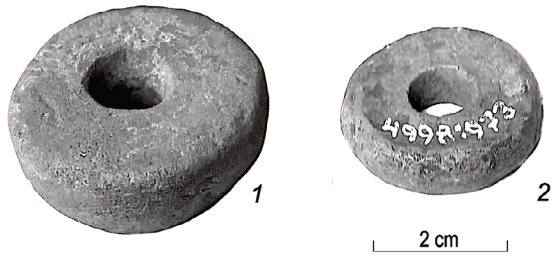

FIG. 3. Finds related to textilework from Estonian village sites. 1 – spindle whorl made of stone from the Uderna II village site (TÜ 2223: 112), 2 – spindle whorl made of lead from the Olustvere village site (AI 4998: 973). Photos by Andres Tvauri.

made from cattle femur heads have been found at the Olustvere (AI 4998: 3011) and Mustivere (AI 3993: 1238) village sites. A spindle whorl made of lead (Fig. 3: 2) has also been also found at the Olustvere settlement site. Only five lead spindle whorls are known to me from elsewhere in Estonia. The first of these (TM A 43: A396) was found within an occupational layer dated to approximately 1230–1250 on the grounds of the University of Tartu Bortanical Garden, the second was found in the southern part of medieval Tartu (Aun 1998, plate II: 2), and the third in the southern suburb of Tartu (TM A 126: 1731). Two such items have been discovered at Tarvastu Castle in Viljandimaa (Valk et al. 2022, fig. 14: 7, 8). No parallels for this object have been identified in western regions. However, similar examples have been found in Russia, for instance in layers dating from the 10th to the 15th century in Novgorod (Sedova 1981, 156–157) and Pskov (Sergina 1983, fig. 18: 6–12). Spindle whorls constitute the most numerous find category among textile-manufacturing equipment in Estonia (Rammo 2015, 57) because they were made of stone, clay, bone, and metal, which preserve well in the ground.

Only a few other finds related to textile production or clothing manufacture have been recovered from the rural settlement sites under study. A copper-alloy sewing needle (AI 3993: 1341) and bone needles with eyes (AI 3993: 289, 759) have been found at Mustivere. Fragments of scissors have been found at the Olustvere (AI 4998: 935, 6589) and Mustivere (AI 3993: 849) village sites. Although scissors have been an indispensable tool in clothing manufacture, they cannot be associated exclusively with this craft. Scissors were also used in leatherworking and in everyday household activities, such as cutting hair and beards, mending clothes, or – when spring scissors were involved – even for shearing sheep.

WOODWORKING

From the twelve rural settlement sites under study, only two tools specifically intended for woodworking have been found. A spoon carving tool has been recovered from the Olustvere village site (AI 4998: 5541), and a scorp (AI 3993: 560) from Mustivere.

FIG. 4. Knife from the Uderna II village site (TÜ 2223: 511). Photo by Andres Tvauri.

Woodworking tools are very rarely found, as they were often reused or reworked. The vast majority of woodworking implements – such as axes, knives, saws, and drill bits – were multipurpose. They were also used in everyday life, and it is generally not possible to determine from archaeological finds whether such tools were used by professional craftsmen or by others.

BONEWORKING

There is only very little and uncertain archaeological evidence of boneworking found at village sites. Worked bone fragments (AI 5368: 11) and an animal tusk (AI 5368: 22) have been found at the Angerja settlement site, which are likely not the remnants of professional craftsmanship.

TOOLS OF MULTIPLE USAGE

Iron awls have been found at the Ilumäe I (AI 6105: 380) and Olustvere (AI 4998: 937, 986, 1063, 1172) village sites. A bone point (AI 3993: 489) has been discovered at Mustivere. Various points made of bone and antler are interpreted as awls, possibly used as tools for beating the weft when weaving on vertical loom, as basketry pins, or as tools for weaving bast shoes, etc. (Luik & Maldre 2005, 10).

Among the finds from the Uderna II village site is a knife of unusual shape (Fig. 4), which is likely a hand tool that may have been used for activities such as woodworking or leatherworking.

Comparison with the finds from prehistoric strongholds and towns

STRONGHOLDS

Before the conquest, the centres of craft production in Estonia were strongholds, where at least pottery, weapons, ornaments, and clothing were produced. These sites also employed professional artisans, whose activities were organised and whose products were commissioned by local elites (Tvauri 2002, 286).

For comparison with the twelve village sites discussed above, I selected the finds from four strongholds with permanent settlement. These are sufficiently studied hillforts, with finds (or the majority of them) dating to the 12th–13th centuries.

The **Keava stronghold** in Harjumaa was excavated in 2001–2005, with a total area of 88 m^2 investigated across two trenches (Lang 2012). The finds (TÜ 1026: 1–893; 1260: 1–218) date from the 10th to the 13th centuries; however, the majority of them were deposited in the late 12th to early 13th century, prior to the year 1224, when the stronghold was captured by the German crusaders (Tvauri 2012, 62).

The **Lõhavere stronghold** in Viljandimaa was captured by the German crusaders in 1215 and was burnt down in 1223 (HCL XVIII, 7; XXVI, 13). The majority of the site was archaeologically excavated in 1937–1941 and 1956–1962, covering a total area of 1900 m^2. Although it has been suggested that an initial, lightly fortified stronghold may have been established here as early as the 11th century, both the 7700 numbered finds (AI 3578; 4133; 4297) recovered and two ^{14}C dates (see Tõnisson 2008, 271–273) indicate that the majority of the occupational layer was deposited only in the first two decades of the 13th century.

The **Soontagana stronghold** was the largest stronghold in Läänemaa and was taken by the Germans in 1216 (HCL XIX, 8). By 1219, the fort was still held by local nobles loyal to the Germans (HCL XXII, 9). In the courtyard of the stronghold, an excavation area of 400 m^2 was investigated in 1965–1971 (Tõnisson 2008, 268). Most of the finds (PäM 2765; 2766; 2767; Soontagana 1971[2]) date to the 12th century and the early 13th century (Tõnisson 2008, 269).

The **Valjala stronghold** in Saaremaa was excavated over an area of 405 m^2 in 1962 and 1964. According to the *Chronicle of Henry of Livonia*, the defenders of the stronghold surrendered to the German crusaders and accepted Christianity in 1227 (HCL XXX, 5). The finds collected at the Valjala stronghold have been dated to the 11th–13th centuries (Tõnisson 2008, 245; Mägi et al. 2023, 80). The majority of the ^{14}C dates from the stronghold fall within this period (see Mägi et al. 2023, fig. 3; Mägi 2024, fig. 14). The vast majority of the finds collected from the 1962 and 1964 excavations (AI 4300: 1–888) are characteristic mainly of the late 12th century and the first half of the 13th century.

Examining the finds collected from these strongholds, totalling 13 335 find numbers, it is evident that the most numerous among them are artifacts and debris connected with metalworking (195 find numbers). This can be explained by the fact that metalworking produces a large amount of waste, which preserves well in the soil.

Traces of **ironworking** have been found in all of Estonia's permanently inhabited 12th–13th-century strongholds that have been studied in any depth. Remains of a smithy were discovered at the inner foot of the eastern rampart of the Varbola stronghold in Harjumaa. Here, the remains of a timber building were found lying on a 30–40 cm thick layer rich in charcoal. From this structure, 28 kg of slag was collected (Selirand & Tynisson 1978, 92). Unfortunately, the existing

2 The finds do not have main numbers. The finds from the Soontagana stronghold are housed in the Archaeological Research Collection of Tallinn University.

documentation of the Varbola stronghold excavation does not allow for a more precise dating of this smithy. The majority of finds from Varbola date to the 12th–13th centuries (Tõnisson 2008, 198), while the younger finds belong to the second half of the 14th century (Tõnisson & Tamla 1986, 595). A piece of slag and hammer scale found at the Purtse Tarakallas stronghold in Virumaa provides evidence that a smithy once operated in the courtyard of the stronghold. The finds and radiocarbon dates from the Purtse Tarakallas stronghold originate from two periods – the 7th to the 11th centuries and the 13th century (Siig et. al 2025, 127, 135).

Iron bars or fragments thereof have been found at the Lõhavere (e.g. AI 3578: 1630; 4133: 1437, 3657), Soontagana (Soontagana 1971: 619), and Valjala (AI 4300: 874) strongholds. Slag pieces have been collected from the Keava (e.g. TÜ 1026: 513, 684, 723), Lõhavere (e.g. AI 4133: 1502, 1550, 1751), Naanu (AI 4062: 5, 218), and Soontagana (e.g. PäM 2766: 152, 433; 3765: 288) strongholds.

Evidence of **non-ferrous metalworking** from the 12th century and the first half of the 13th century is even more abundant than that associated with ironworking. Crucibles or fragments thereof have been discovered at the Lõhavere (e.g. AI 4133: 195, 1850, 2270) and Soontagana (e.g. PäM 2764: 48; 2765: 248, 473) strongholds. Elsewhere in Estonia, such finds have been recovered from the Varbola stronghold in Harjumaa (Laid 1939, 195, fig. 139), Peatskivi (AI 4067: 1b; 4473: 522) in Tartumaa, Tilleoru Kantsimägi (TÜ 1431: 502) in Võrumaa, and Naanu (AI 4062: 33) in Viljandimaa. Fragments of crucibles have also been found at the Tartu and Otepää (AI 5287 W: 609, 1264) strongholds, although it is uncertain whether they date to the Viking Age or the Final Iron Age.

Fragments of stone casting moulds have been found at the Otepää and Lõhavere strongholds (e.g. AI 4133: 1778, 1779, 1843), with at least 11 such fragments having been from the latter. There is evidence of iron weight brazing with leaded gunmetal from the Soontagana stronghold (Saage 2020, 86). A fragment of an iron wire-drawing tool, dated to the 13th–14th centuries, was found at the Varbola stronghold (Peets 2003, 168, fig. 77: 3). An iron hammer, 43 mm in length (AI 4133: 3832), likely used as a jeweller's tool, was found at the Lõhavere stronghold. An iron centre punch (AI 4133: 2981) was also recovered from Lõhavere, and a cold chisel was found at the Valjala stronghold (AI 4300: 245). Small copper-alloy sheet fragments and strips bearing cut marks – likely production waste – have been found in large numbers at the Lõhavere (e.g. AI 3578: 1087, 1118, 1306), Naanu (AI 4062: 57), and Soontagana (e.g. PäM 2766: 106, 112, 290) strongholds. A small copper-alloy bar (AI 3578: 1477) and a piece of a lead or tin ingot (AI 4133: 3245) have also been found at the Lõhavere stronghold.

Firing waste from **pottery production** – heat-bloated pottery sherds, which can be dated to the 12th–13th centuries based on vessel shape – has been found at

the Varbola (e.g. AI 3720: 115; 3722: 137), Otepää (e.g. AI 3371: 115, 194; 4036 II: 885), Lõhavere (e.g. AI 3578: 1508, 1514, 1568), and Soontagana (e.g. PäM 2767: 1264, 1293; Soontagana 1971: 595) strongholds.

A fairly large number of finds related to **textile processing** have been discovered at the strongholds. From the Lõhavere stronghold, a craft box[3] has been found, made of birch bark. The craft box contained scales, band-weaving tablets made of timber, a wooden object identified as the handle of a small weaving sword (Laul & Tamla 2014, 41, fig. 31; Rammo & Ratas 2018, 137), neck rings, bracelets, pendants, finger rings, silk and brocade bands, and openwork bands ornamented with copper-alloy spiral tubes. Raw materials, including woollen yarn, seed beads, unused 140 mm long spiral tubes made of copper-alloy wire, and ready-made rolled openwork bands made of woollen yarn and ornaments made of copper-alloy spiral tubes, have also been found. The craft box was buried in 1215 or 1223, when the fort was burnt during the crusades. It cannot be determined with certainty whether the contents of the craft box represent home textile handicraft performed by a skilled woman of higher status, or whether they belonged to an artisan working at the stronghold, who manufactured textile items for others (Laul & Tamla 2014; Rammo & Ratas 2018). Long spiral tubes made of copper-alloy wire, which were used to create spiral ornaments decorating clothing, have also been found elsewhere in the occupational layer of the Lõhavere stronghold (AI 4133: 2092).

Spindle whorls have been found at the Lõhavere (e.g. AI 4133: 376, 1389, 2034), Soontagana (e.g. PäM 2766: 347, 608, 1051), and Valjala (e.g. AI 4300: 181, 240, 516) strongholds. From both Lõhavere and Soontagana, at least nine spindle whorls made of bone or stone have been recovered, and five have been found at Valjala.

Perforated stones have been discovered at the Lõhavere stronghold (e.g. AI 3578: 1008, 1189; 4297: 1250), and two perforated discs made of fired clay have been found at Soontagana (PäM 2767: 675, 863), most likely used as weights for an upright loom. A fragment of a ceramic loom weight (TÜ 1026: 311) has been found at the Keava stronghold. Three iron scissors have been found at the Soontagana stronghold (PäM 2767: 14, 793; Soontagana 1971: 219).

Sewing needles made of iron or copper alloy have been found at the Pada II (AI 4960: 8), Lõhavere (e.g. AI 3578: 1671, 1873; 4133: 3613), Soontagana (e.g. PäM 2766: 72, 103, 208), and Valjala (e.g. AI 4300: 280, 632, 703) strongholds. Most of these are made of iron – for example, at least 11 iron sewing needles have been found at Soontagana. Bone needles with eyes have been recovered from Lõhavere (e.g. AI 3578: 1048; 4133: 301, 478), Soontagana (e.g. PäM 2765: 418; 2766: 348), and Valjala (AI 4300: 223) strongholds, with the largest number coming from Lõhavere, where 19 such needles have been

3 In Table 1, this craft box, which contains 110 numbered finds, is listed as a single find (AI 4133: 2274).

found (Luik 2005, table 1). Spindle whorls, mostly made of bone and more rarely of stone, have been found at the Purtse (AI 5038: 8), Lõhavere (e.g. AI 3578: 1836, 1863; 4133: 376), Naanu (AI 4062: 262), Soontagana (e.g. PäM 2766: 32, 347, 608), and Valjala (e.g. AI 4300: 181, 240, 285) strongholds.

Finds related to **woodworking** are scarce at strongholds. A drawknife has been found at the Soontagana stronghold (PäM 2766: 867), and scorps have been discovered at the foot of the Roela stronghold in Tartumaa (AI 4068: 2) and at the Lõhavere stronghold (AI 4297: 409). An iron spoon carving tool has been found at the Soontagana stronghold (PäM Soontagana 1971: 600). A chisel has been discovered at the Lõhavere (AI 4133: 2070) and Valjala (AI 4300: 77) strongholds. Auger bits have been recovered from the Purtse Tarakalda (AI 4052: 8) and Lõhavere (AI 3578: 868) strongholds. Axes and knives, found in large numbers at strongholds, were probably the primary woodworking tools.

During the **manufacture of objects from antler**, fragments bearing cut marks may have been produced; such pieces have been found at the Soontagana (PäM 2766: 333, 741) and Lõhavere (AI 4133: 1488, 1897) strongholds.

Among the **multi-purpose hand tools**, awls are the most commonly found items at strongholds. Iron awls have been found at the Pada I (AI 5249: 21), Peatskivi (AI 4720: 328, 339), Lõhavere (e.g. AI 3578: 1690; 4113: 123, 208), Sinialliku (AI 4407: 353), Soontagana (e.g. PäM 2766: 808; 2767: 709, 771), and Valjala (AI 4300: 433) strongholds. The largest number of these has been found at Lõhavere, where at least 15 iron awls have been discovered. Bone awls have also been found at Lõhavere (e.g. AI 4133: 387, 1052, 1136).

TOWNS

First towns were established in the territory of Estonia after the crusaders in the 13th century (see Pärn 2004a). From Estonia's larger and more thoroughly archaeologically investigated medieval towns (Tallinn, Tartu, New Pärnu, Viljandi, and Haapsalu), numerous finds related to craftsmanship dating from the 13th and 14th centuries have been recovered. Compared to similar material from villages, the finds from towns are notably more diverse.

Table 1 summarises the data from the following four assemblages of finds recovered from towns.

In the courtyard at **Sauna Street 10 in Tallinn**, an area of approximately 480 m² was excavated in 1998 and 1999. From a layer deposited in the 13th–14th centuries, the remains of at least four small log buildings with furnaces and stones for the accumulation of heat were discovered. The excavation finds (AI 6332) consist of 8503 objects or fragments, of which 6660 were recovered from the 13th–14th-century layer. In addition, nearly 10 000 leather finds and fragments were collected, although these have not been preserved (Tiko 2014).

In 1981 and 1982, during archaeological rescue excavations at **Tartu Town Hall Square**, an area of approximately 120 m^2 was investigated in connection

with the construction of a heating pipeline (Metsallik 1982; 1992, 124–125; Metsallik & Tiirmaa 1982). From a roughly 1 m thick occupational layer dating to the 13th–14th centuries, uncovered at a depth of about 1.3 m below the current ground level, a total of 1243 artefacts were collected (TM A 26: 1–10, 21–96, 106–139, 150–368, 398–601, 701–751; 31: 1–638). In addition, at least 247 fragments of leather objects and leatherworking waste were gathered (TM A 28), which are not included in Table 1.

In **Tartu, in the area of the University of Tartu Botanical Garden** (Lai Street 30 plot), an excavation of approximately 630 m² was carried out in 1988–1991. At the northern edge of the trench, a medieval town wall had been preserved in the ground, with a 3-m-wide cobblestone-paved street running along its inner side. On the town-facing side of the street, the remains of a medieval brick building were found, and another building remnant was discovered at the southern edge of the excavation. According to the excavation director, Ain Mäesalu, the buildings were likely destroyed in the fire of 1329 (Malve & Mäesalu 2014, 130). Beneath the burnt layer and street paving, at a depth of 3–3.4 m from the modern ground level, there was a roughly 40 cm thick deposit containing numerous finds of Rus' origin dating from 1230–1260 (Malve & Mäesalu 2014, 129). The assemblage from this layer (TM A 43: A683–A2475) comprises 1792 catalogued finds.

Archaeological rescue investigations at **Pikk Street in Viljandi**, carried out in 1991 due to the construction of a heating pipeline, covered an area of approximately 175 m^2. A total of 9544 finds from layers deposited between 1230 and 1400 are listed in the excavation inventory (Valk 1992, 2–13, 26–36; VM Pikk 4 1991[4]: 1–39, 41–62, 139–184, 186–201). Since the trench passed through the area of a pottery workshop active sometime between 1230 and 1250 (see Tvauri 2000), the majority of the finds consist of earthenware sherds broken during firing. Unlike the assemblages from Tallinn and Tartu dating to the 13th–14th centuries, the material from the Pikk Street pipeline trench does not include objects made of wood, leather, or textiles.

The richest category of finds from towns is related to **blacksmithing**. Smithy sites dated to the 14th century have been discovered in Tallinn (Mänd 2019, 242), in its medieval suburb (Saage & Russow 2020, 335), in Tartu (Metsallik 1992, 153–160; Saage 2020, 100–101), and in Haapsalu (Pärn 2004b, 275; Pärn & Russow 2006, 490–491; Saage 2020, 101). Iron slag from 13th–14th-century layers has also been found in Tallinn (Mäll & Russow 2003, 181; Tiko 2014, 40), Tartu (Metsallik 1992, 125), and Haapsalu (Pärn 2004b, 275). Analysis of slag from a metalworking site discovered on Lossi Street in Tartu indicated that both smelting and forging of iron took place there (Blehner et al. 2023).

4 The finds do not have main numbers. They are housed in the Archaeological Collection of the University of Tartu.

Tools used in blacksmithing have also been recovered from the earlier medieval layers of Estonian towns. For instance, remains of a smithy uncovered in Haapsalu yielded tongs, a chisel, a drawplate or nail iron, and various hammers (Pärn & Russow 2006, fig. 9). A fragment of an iron bar was found in the 13th–14th-century layer of the Pikk Street 4 heating pipeline trench in Viljandi (VM Pikk 4 1991: 178/8).

Crafting of non-ferrous metal objects has also been practised in Estonian towns since their founding. In the area of medieval Tallinn's suburb, a foundry for copper-alloy tripods, possibly dating to the 14th century, was identified through the discovery of clay mould fragments (Saage & Russow 2020, 335). Remains of a copper-smelting furnace have also been found in this area and were radiocarbon dated to between 1297 and 1430 (Lavi 1998, 223). In Tartu, remains of at least five furnaces used for working non-ferrous metals dating from the 13th to the 15th centuries have been discovered (Metsallik 1992, 134–137, 158; Trummal 1992, 9–10; Saage 2020, 108–109).

Among the 13th–14th-century finds from Estonian towns, fragments of crucibles are also abundant. These have been discovered in Tallinn (e.g. AI 6332: 545, 685, 1448, 1455) and Tartu (e.g. TM A 26: 105; 43: A77, A172), along with fragments of stone casting moulds used for producing small jewellery items or dress accessories, found in Tallinn (e.g. AI 6332: 483), Tartu (Saage & Russow 2020, fig. 5: 1, 4), and Viljandi (VM Pikk 4 1991: 190/3). Semi-finished copper-alloy spiral rings (TM A 115: 951/1–3) were found in a 14th-century cesspit in Tartu and in a rubbish dump near the town (Haak 2007, fig. 5). Metalworking waste is also commonly represented in the material culture of towns from this period. One notable find from a 14th-century latrine pit in Tartu consists of around five hundred pieces: lead-tin badges, blanks, and waste material left from cutting them out of tinplate (TM A 45: 3944/8; Vissak 1994, 76, plate XXX; Haak 2007, fig. 4). Lumps of molten copper alloy, likely remnants of metal-working, were found in the 13th–14th-century occupational layer of Tartu Town Hall Square (TM A 31: 633, 634).

Textilework is most clearly reflected in the 13th–14th-century layers of Estonian towns through the presence of bone, ceramic, and stone spindle whorls, which have been found in Tallinn (Russow 2020, 200–204), Tartu (TM A 26: 111), and Viljandi (VM Pikk 4 1991: 42/3, 61/7). A loom weight made of limestone has also been recovered from Viljandi (VM Pikk 4 1991: 27/3). Sewing needles from this period have been found in Tallinn (Russow 2020, 200–204). Scissors have been discovered in Tallinn (Russow 2020, 200–204), Tartu (TM A 26: 107, 473), and Viljandi (VM Pikk 4 1991: 41/3, 162/5). From Tartu Town Hall Square, a 50 cm long and 2 mm thick spiral tube made of copper-alloy wire was recovered (TM A 26: 110), likely intended for the production of spiral decorations on garments. Similar prefabricated spirals were also found in the craft box from the Lõhavere stronghold (see above).

Textile tools that have not been found in Estonian rural settlements or strongholds have also been recovered from the 13th–14th-century layers of towns. Long wool carding combs, made from cattle metapodials, which were used widely in medieval Flanders (Schelvis 1998), and in German and Circum-Baltic towns, have been found in Tallinn, Tartu, New Pärnu, as well as in the small market town of Lihula (Luik 1998, 123–134). In the second half or at the end of the 13th century, the double-cone spindle whorl, decorated with concentric grooves and made on the ceramic potter's wheel, became the main whorl type in Estonian towns. Among the medieval and early modern period whorls from Tartu, their proportion is 55%. Large numbers of such whorls have also been found in German towns (Rammo 2018, 26–28). These items are characteristic of German-style urban culture, as they are not found in rural settlements.

A larger quantity of woollen textile fragments has been found in 14th-century latrines in Tartu. Among these are numerous pieces made from similar fabrics with straight-cut edges, which may represent tailoring waste, leftovers from the sewing or alteration of garments (Rammo 2015, 37).

Woodworking tools have been discovered in Haapsalu in a 14th-century context, namely a hammer, a saw, two auger pits, and a chisel (Pärn & Russow 2006, 492, fig. 10).

Production waste has also been found in towns, including from craft areas, traces of which have not been found in rural settlements. For example, waste resulting from the **production of bone and horn items** has been found in various locations in Tallinn in 13th–15th-century layers (e.g. AI 6331: 36; 6332: 1108, 1117, 1732; 6426: 48, 49, 64). Numerous remains from the production of bone and horn items have been recovered from 13th–14th-century layers in Tartu (Piirits 1995, 9–20). Horn-working waste has also been found in Viljandi in the 13th–14th-century layer of the Pikk Street excavation (VM Pikk 4 1991: 191/2).

Archaeological evidence of the **production of earthenware pottery** in the Pskov-style in the 13th century has been found in Tartu and Viljandi. In Viljandi, a potter's workshop was discovered (Tvauri 2000), where the bases of two potter's kilns and a waste pit containing a large quantity of sherds from vessels broken during firing were identified. A rare find from the occupational layer of the workshop is a bone templet used in pottery-making (Tvauri 2000, figs 2–4). Remains of Pskov-style earthenware production have been found in the excavation at the University of Tartu Botanical Garden (e.g. TM 43: A797, A1162, A2458). In Tallinn, hundreds of misfired vessels dating to the late 13th or early 14th century have been found on the property at Sulevimägi Street 4/6, including red-fired earthenware vessels with glazed outer surfaces (Russow 2007, 76). All of these finds are associated with craftsmen of Rus' origin.

In addition, during the mid-13th century, simple ceramic vessels were produced in towns that, in shape, imitate jugs from the Rhineland, Lower Saxony, and the Low Countries, Paffrath-type globular pots, and western European tripod pots. This type of pottery has been found in Tallinn (Mäll & Russow 2000, 122–

123; 2003, 186–187), Tartu (e.g. TM A 112: 20; 270: 3832, 15881), and Viljandi (VM 11589: 69), as well as in the bishop's castle of Otepää (e.g. AI 4036 IV: 75, 974, 1139) and the Teutonic Order castle in Viljandi (Haak & Pärnamäe 2004, fig. 3). Sherds of such vessels have also been discovered in rural areas, namely at the settlement site of Põlli (AI 8670: 2) and as stray finds from Kurna in Harjumaa (AM A 29: 193), the settlement site of Olustvere in Viljandimaa (AI 4998: 2357), and the settlement site of Koela in Läänemaa (AM A 1136: 33). It is possible that such vessels were produced by potters of Pskovian origin working in Tallinn, Tartu, Viljandi, and Otepää.

A **brick making site** has been found in Tartu, right outside the town wall, which consisted of brick kilns, a layer of brick-manufacturing refuse, clay conservation pits, and clay mining pits. The brick-making site has been dated to the end of the 13th and the beginning of the 14th century (Bernotas 2013, 143–146). In Viljandi, within the area enclosed by the town wall, production waste of bricks and roof tiles dating to the second half of the 13th century or the early 14th century was found in the course of excavations at Lossi Street 21 (Tvauri 2010, 159, fig. 5).

Waste associated with **leatherworking** has been found in large quantities in the 13th–14th-century layers in Tallinn (Russow 2020, 130–131), Tartu (Metsallik 1992, 125; Reest 2012, 13–15, table 1), and New Pärnu (Samorokov 2012). Most of it was produced during the manufacture of footwear and tanning. In Tartu, log boxes have been found that were used as latrine pits. The 14th-century wooden boxes investigated on the plot at Lossi Street 3 are thought never to have been emptied (Mäesalu 2004, 399). It has therefore been suggested that the boxes were originally constructed for another purpose, such as tanning hides (Metsallik 1992, 139). In Tartu, a layer of wool and hair 8–15 cm thick was discovered in the immediate vicinity of one such log box. It contained numerous strips of leather, on the basis of which it has been concluded that the box may have been used for tanning (Aun 1998, 99, 131). No hide-working areas or leather-working waste have been found at prehistoric hillforts or rural settlement sites. Hides were probably processed in villages as well, but unlike the 13th–14th-century layers in towns, rural settlements lack the conditions needed for leather to be preserved.

Some evidence of glass-bead manufacturing has been found in the excavation area at Sulevimägi Street 4/6 in Tallinn, the same location where potters of Pskovian origin were active in the 13th century. Yellowish glass beads and bowl-like concave crucibles (AI 6648) were discovered at this site. Bead fragments uncovered in the excavation of the University of Tartu Botanical Garden, located in the area of the Rus' quarter of medieval Tartu, suggest that beads were also manufactured there in the 13th century (Russow 2020, 138–143).

Results and discussion

Table 1 shows that more craft-related finds have been discovered at settlement sites that have been excavated on a larger scale. However, when considering the

total number of finds, prehistoric strongholds from the 12th century and the first half of the 13th century have yielded over ten times more craft-related material than the 12th–14th-century rural settlements. The craft-related finds from strongholds are also more diverse than those collected from village sites. Similarly, among the finds from towns, the proportion and diversity of craft-related materials are significantly greater than in village settlements. This proportion increases even further when excluding categories of finds (such as wooden, leather, and textile objects) that have not been preserved in rural settlements.

Finds from village sites in Estonia dating from 1100–1400 indicate that the village was primarily an economic unit of agricultural production. The material evidence from villages points only to household crafts made for personal use.

Before the German and Danish conquest, the main centres of craft production in the Estonian area were strongholds. It has been suggested that the abundance of casting tools found at Final Iron Age strongholds may be due to the fact that these sites have been excavated more extensively and thoroughly than contemporary village settlements (Saage 2020, 25). However, casting-related finds are also absent among the surface finds from Estonian settlement sites, even though their total quantity is comparable to that of the finds from strongholds.

After the conquest, craftsmen from Germany, Scandinavia, and Kyivan Rus' arrived in Livonia along with other colonists. As a result, a new craft culture was introduced to the Estonian territory, bringing significant changes to both production technologies and the range of products in Livonia. However, the most important development was the founding of towns in the 13th century and the organisation of urban craftsmen into guilds, at the latest by the 14th century. In the 13th century, craftsmen also came to Tallinn, Tartu, and Viljandi from Pskov Land. By the 14th century at the latest, the technology and organisation of urban crafts had become fully aligned with those of other German towns in the Baltic cultural sphere (Tvauri 2022, 261 and references therein).

Since only very few closed find complexes or individual finds related to crafts have been recovered from 12th–14th-century village sites in Estonia, it is very difficult to determine whether craft production in villages changed as a result of the conquest and Christianisation. It appears that different branches of crafts were affected by this process to varying degrees.

All datable evidence of non-ferrous metalworking from villages, such as the casting hearth from Savastvere and the defective ornament pin from the Haapsipea II settlement site, as well as pottery production at Võnnu, dates to the first half of the 13th century. There is no securely datable archaeological evidence of non-ferrous metalworking in villages from later periods. In contrast, blacksmithing – an essential craft for agrarian communities – continued in villages throughout the medieval period, as evidenced by the Käku smithy investigated in Saaremaa. Although finds related to textile work from villages are also very scarce and cannot be dated precisely, archaeological textile remains indicate that fabrics and clothing were produced in villages both before and after the conquest.

The study of the garment remains from the Siksälä 13th–15th-century cemetery in the southeastern corner of Estonia suggests that rural people used fabrics and garments manufactured within the household (Rammo & Matsin 2015, 279–288).

I have previously studied the advancement of craftsmanship and manufacturing in medieval Livonia, concluding that technological changes in craftsmanship and manufacturing are reflected in the archaeological material 100–200 years after the crusades. The main cause of these changes was not the unification of Livonia with the 'west', where it had also been earlier, but it was rather the emergence of towns and a new organisation of craftsmanship, which emerged and spread in Germany at about the same time as in Livonia (Tvauri 2022, 308). Before the conquest in the first half of the 13th century, the main craft centres in the Estonian territory were hillforts with permanent settlements; later, towns took over this role. Rural inhabitants engaged in craftwork to a limited extent, primarily to meet their own needs, both before and after the conquest.

Conclusions

The article investigates the types of crafts practised in Estonian villages during the 12th–14th centuries and whether village crafts were influenced by the conquest and Christianisation of Estonia by German and Danish crusaders. The source material of the study consists of craft-related finds (tools, semi-finished products, and production waste) collected from twelve village sites dating to the period in question. To situate the village finds within a broader context, they are compared with corresponding material from four contemporaneous strongholds (Keava, Lõhavere, Soontagana, and Valjala) as well as from the cultural layers of Tallinn, Tartu, and Viljandi dating to the 13th–14th centuries.

The analysis revealed that a greater quantity of craft-related finds has been recovered from settlement sites that have been more extensively excavated. Nonetheless, even when the overall quantity of finds is taken into account, more than ten times as many craft-related items have been discovered in strongholds from the 12th century and the first half of the 13th century as compared to village sites of the 12th–14th centuries. The assemblages from the strongholds are also more diverse than those from the villages. Similarly, the share and variety of craft-related finds are markedly greater in urban contexts than in rural ones. The proportion of craft-related material among urban finds increases even further when excluding categories of artefacts absent from village contexts, such as wooden, leather, and textile objects.

The finds from Estonian village sites of the 12th–14th centuries indicate that villages were primarily units of agricultural production in economic terms. The evidence points only to household-level craft production intended for self-sufficiency. Since only a very limited number of closed find complexes or individual artefacts indicative of craft activities have been recovered from village

sites of this period, it is extremely difficult to determine whether, and in what ways, craft production in villages was affected by the conquest. What can be stated with certainty, however, is that prior to and during the conquest, craft production was concentrated mainly in strongholds, whereas in the post-conquest period, the bulk of craft output was produced in towns.

DATA AVAILABILITY STATEMENT

All data supporting the findings of this study are included within the article.

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Külakäsitöö Eestis 12.–14. sajandil

Andres Tvauri

RESÜMEE

Artiklis uuriti, millist käsitööd tehti Eesti külades 12.–14. sajandil ja kas külakäsitööd mõjutas Eesti vallutamine ning ristiusustamine saksa ja taani ristisõdijate poolt. Uurimuse allikmaterjaliks on kaheteistkümnelt vaadeldava perioodi külaasemelt kogutud käsitööga seotud leiud: tööriistad, pooltooted ja valmistuspraak. Paigutamaks küladest saadud käsitööga seotud leide laiemasse konteksti, võrreldakse neid nelja samaaegse linnuse (Keava, Lõhavere, Soontagana ja Valjala) ning Tallinna, Tartu ja Viljandi linna 13.–14. sajandi kultuurkihist saadud leiuainesega.

Selgus, et käsitööle viitavat leiuainest on saadud rohkem asulakohtadest, mida on suuremas mahus kaevatud. Samas on selgelt näha, et ka leidude koguhulka arvesse võttes on 12. sajandi ja 13. sajandi esimese poole linnustest saadud üle kümne korra rohkem käsitööle viitavat leiuainest kui 12.–14. sajandi asulakohtadelt. Linnuste käsitööga seotud leiud on ka mitmekesisemad kui külaasemetelt kogutud leiuaines. Ka linnade leiuainese hulgas on käsitööga seotud leidude osakaal märgatavalt suurem ja mitmekesisem kui külaasemete leiuaineses. Linnade leiuainese hulgas suureneb käsitööga seotud esemete osakaal veelgi, kui välja arvata leiurühmad, mis asulakohtadel pole säilinud (puidust, nahast ja tekstiilist esemed).

Eesti 12.–14. sajandi külaasemetelt saadud leiud näitavad, et küla oli majanduslikus mõttes eelkõige põllumajandusliku tootmise üksus. Küladest saadud leiuaines viitab üksnes oma tarbeks tehtud kodukäsitööle. Kuna Eesti 12.–14. sajandi külaasemetelt on saadud vaid väga üksikuid suletud leiukomplekse või üksikleide, mis viitavad käsitööle, on raske öelda, kas ja kuidas muutus külades tehtud käsitöö vallutuse tulemusel. Võib kindlalt öelda, et enne vallutust ja selle ajal olid Eesti alal käsitöö valmistamise kohad peamiselt linnused; pärast vallutust toodeti valdav osa käsitöötoodangust linnades.