



MEDIEVAL AND EARLY MODERN SUBURBAN SITE IN TALLINN, TARTU ROAD 1: ARTEFACTS AND ECOFACTS

**ERKI RUSSOW, LEMBI LÕUGAS, LIINA MALDRE, SIRJE HIIE,
KERSTI KIHNO, HEIDI LUIK and VILLU KADAKAS**

*Tallinna Ülikool, Ajaloo Instituut (Tallinn University, Institute of History),
Rüütli 6, 10130 Tallinn, Estonia*

KRISTA SARV

*Eesti Ajaloomuuseum (Estonian History Museum), Piritä tee 56, 10127 Tallinn,
Estonia*

ULLA KADAKAS

*Muinsuskaitseamet (National Heritage Board), Uus 18, 10111 Tallinn, Estonia;
ulla.kadakas@muinas.ee*

ANNELI KALM and MONIKA REPPÖ

Agu EMS OÜ, Roosikrantsi 17, 10119 Tallinn, Estonia

INTRODUCTION

Most of the finds¹ gathered from the Tartu Road 1 plot (for the overview on stratigraphical situation and found structures, see Kadakas *et al.*, this volume) come from the early modern layers, but the medieval ones contained abundant finds. From the medieval layers principally everything was gathered; only finds unsuitable for conservation were neglected. Gathering early modern mass material – pottery – was selective: where it was possible to glue the sherds together, everything was gathered; by larger find complexes only the sherds representing the characteristic parts of vessels were preserved (rim, base fragments, handles, etc.). Early modern finds of other materials were also selected, gathering more significant artefacts or their parts, which better characterized the respective contexts, avoiding industrial mass production.

The archaeological excavations at Tartu Road 1 were context based, therefore the finds collected were also recorded based on context and sectors. From the 24 sectors and 346² contexts 2038 find complexes (2274 find numbers were issued, but later during inventory some of the finds were not preserved because either these were in a very poor condition, or preservation of late mass production in big quantities was not considered reasonable) with ca. 20 000 single finds were gathered. Most of all ceramic artefacts or their fragments (~13 600), building ceramic artefacts (~1900), glass (~1350), leather (~800), iron (~900) and other metals (~450), less bone (84), textile (37), timber (34) and artefacts of combined materials (31) and other materials (84) were gathered. 13 limestone masonry details were collected.

¹ AI 7032: 1–2274.

² Finds were not got from all 752 identified contexts or it was not possible to get them (e. g. interfaces); most of the finds were got from soil layers, in lesser extent from the timber and stone structures.

While taking scientific samples mostly medieval, less early modern contexts were in focus. Osteological material, abundant in all organic rich layers, was gathered from more important contexts as samples, e. g. from 1–2 m². Bigger soil samples were taken for water sieving fish bones. For studying plant fossils samples penetrating all important layers were taken from some places. These should enable to describe changes in vegetation and to make conclusions about usages of the area.

The present article gives a primary overview of the gathered arte- and ecofacts, focusing primarily on bringing out the more outstanding features in excavating Tallinn's suburbs. The material got from Tartu Road 1 excavations is so huge and varied that needs a monographic approach in the future.

ARTEFACTS

Pottery

Among the excavated artefacts, the highest share belongs to different kinds of ceramic finds, from the architectural ceramics and pottery connected with foodways to the objects reflecting past leisure times and commercial activities – altogether more than 15 500 sherds and few complete items. Due to the large size of the collection, only some significant details will be discussed here, the complete analysis of the finds will be hopefully published elsewhere.

Most of the pottery finds collected during the excavation reflect the typical material environment of the medieval and later urban households in the eastern Baltic coastal towns – the common pottery type of medieval period being highly fired wares (stoneware and its predecessors) from several German production places, next to these a selection of local and imported earthenware representing cooking and dining vessels (see Table 1³ for an overview). Also the majority of the later pottery finds are rather characteristic, although one of the greatest differences from the 'normal' Tallinn suburban sites is the high amount of the Russian coarseware and glazed ware, which might be explained by a higher concentration of Russian population along riverbanks of the Härjapea River and cannot be regarded as an 'anomaly'. Another exception from the ordinary structure of the pottery assemblages in Tallinn is the large number of medieval glazed redware (late 14th century – 15th century), which in other local suburban sites tends to be rather modest with a few sherds, but in the case of Tartu Road 1 the total number of this ware is 152. Presently the question whether this group of pottery has a local background or is imported as previously thought (Russow 2007, 76–77) remains unanswered, but a recent comparison of Tartu Road 1 redware finds with examples from Finnish sites tends to show a similar chemical composition of the sherds and therefore indicate more likely foreign provenance (see Holmqvist-Saukkonen *et al.* 2013).

Next to bulk finds there are a number of other pottery finds in the collection, which are either rare examples in the archaeological find collections of Tallinn or deserve extra attention for several other reasons. As this kind of finds do not comprise any temporal or spatial whole it is hard to draw a simple conclusion on the site, but the remarkable diversity of exotic finds – both pottery and other materials as well (see below) – seems to indicate that the area of Tartu Road 1 had a significant role during the late medieval and early modern period. From the single ceramic

³ Table 1 is an attempt to give a quick and easy overview of the pottery finds, based on the first preliminary inventory of the collection by the staff of Agu EMS OÜ. Further systematic study of the finds will certainly bring some changes in this division, especially on the pottery of early modern and later periods – notably to the redware and tin-glazed ware.

finds a couple of ceramic objects deserve mentioning here. First of these is a sherd of Langerwehe glazed whiteware horn (Fig. 1: 1) – a second example in Tallinn after a similar find from another suburban site at Vabaduse Square in 2008 and unparalleled in other Estonian urban archaeological collections so far. Most certainly an uncommon item among the medieval objects is also a small ceramic ‘button’ with the image of a 15th century coat of arms (Fig. 1: 2). Although there are few examples of medieval ceramic seals around the Baltic Sea (see e.g. Grönwald 2010, fig. 4) it seems that the Tartu Road 1 find does not belong to this category as neither the shape nor the image support the notion and thus the function (gaming piece, counter?) of the object remains open.

Also later finds include several interesting pieces; especially rich is the collection of 16th and 17th century finds. Namely, next to the more common renaissance period decorated Siegburg and Raeren stoneware fragments also a sherd of a Cologne stoneware owl-shaped ‘*Eulengefäss*’ jug (e.g. Unger 2007, cat. nos. 176–178) was found (Fig. 1: 3) – so far unparalleled in Estonian urban ceramic collections, even though several other drinking vessels reflecting the joyous leisure time, such as puzzle jugs and human-shaped tankards have been found elsewhere in Estonian towns and monasteries. This kind of find is yet another example from the Tartu Road 1 collection suggesting that next to the ‘ordinary’ late medieval to early modern households the area under discussion had also at least one untypical social or functional unit where the value standards for consumed goods were notably higher than the average in suburban Tallinn. This kind of ‘anomaly’ can be highlighted also by some tableware finds. From the early modern period deposits a sherd of Portuguese faience (Fig. 1: 4), possibly from Lisbon *ca.* 1635–1660 falls into this category. So far, this is the third site in Tallinn producing such kind of rather uncommon pottery in northern Europe (for a recent overview, see Casimiro 2011), the other places being a site in the heart of the town (Sauna St 10, 2 or 3 plates) and another a coastal suburb (one plate from a 17th century trash pit at Põhja Ave. 31, see Nurk *et al.* 2012, fig. 6). However, the exceptional position of the site among other excavated suburban plots in Tallinn is even better characterised by another exotic pottery group, with a handful of finds of medieval tin-glazed wares from the Mediterranean region – 14 fragments of Valencian lustreware (Fig. 2: 1–14) and 2–3 pieces of possible central Italian archaic maiolica (Fig. 2: 15–17).

Until quite recently, the medieval tin-glazed wares were interpreted as a ‘high end’ pottery products, reaching first and foremost either noble households and religious houses, or were used in wealthy merchants houses with long-distance trade connections (Hurst *et al.* 1986, 40–53; Gutiérrez 2000, 175–184). This assumption has slightly blurred over the last few decades as the increasing number of respective finds (mostly Valencian lustreware) have been discovered all over the Baltic littoral – from northern German and Polish hanseatic towns up to the towns of Swedish medieval kingdom such as Turku – belonging to a variety of different find contexts. Even though, most of the finds are indeed likely to be connected with the feudal milieu and urban nobility and not with the suburban environment. Also in Estonia the rather modest number of finds of Valencian lustreware tend to allege the idea of exclusive tableware, available only to few households.⁴ However, as some examples show, medieval

⁴ Until the Tartu Road 1 excavation, 7 sherds (4 sites) from Pärnu, 1 fragment from Lihula (see Russow 2006, app. 2), 1 from Rakvere and 4 pieces (4 sites) from Tartu are known to the authors of the present paper. Also in Tallinn only 4 fragments (3 sites) have been found so far. 15th century Italian archaic maiolica has not been documented in Estonia previously, from the later find contexts only a few sherds of Italian tin-glazed ware are known so far.

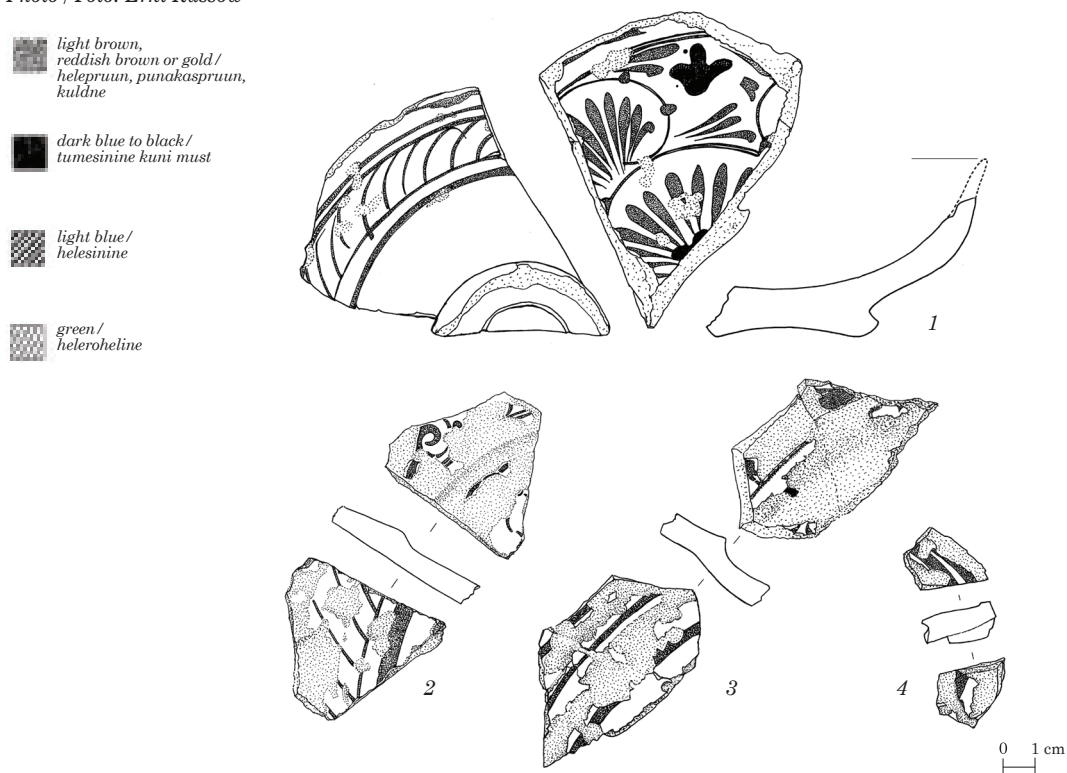


Fig. 1. 1 – Selection of uncommon medieval and early modern period pottery finds. 1 – fragment of Langerwehe glazed whiteware horn, 2 – ceramic ‘button’ with a 15th c coat of arms, 3 – sherd of Cologne stoneware ‘Eulengefäss’, 4 – Portuguese faience, ca. 1635–1660.

Jn 1. Valik erandlikke kesk- ja varauusaegseid keraamilisi leide. 1 – Langerwehe valge glasuurkeraamilise pasuna katke, 2 – 15. saj vapiga keraamiline “nupp”, 3 – Kölni kivikeraamika, katke öökullikujulisest (“Eulengefäss”) nõust, 4 – Portugali fajanss, u 1635–1660.

(AI 7032: 1106/15, 1126/1, 475/9, 431/7.)

Photo / Foto: Erki Russow



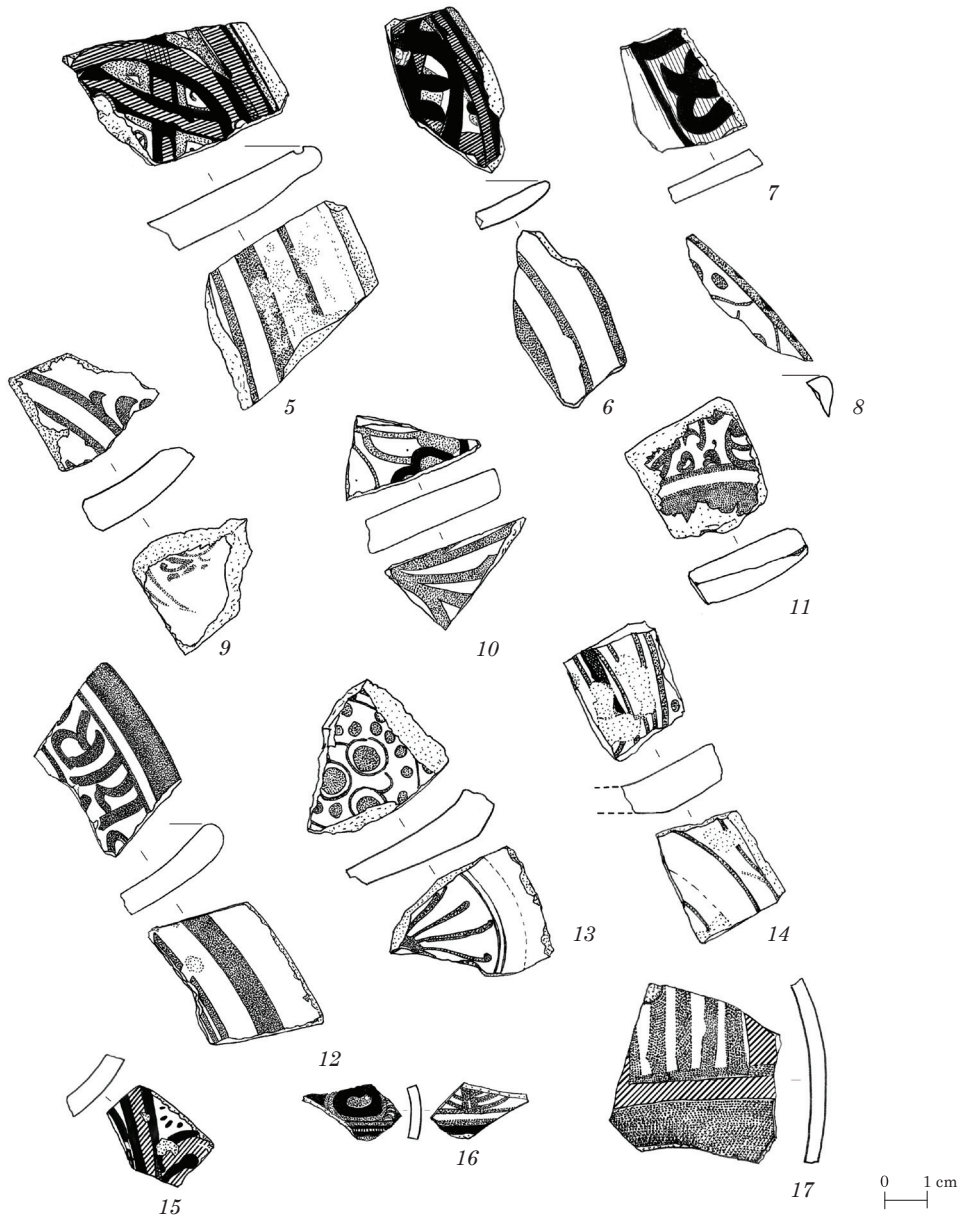


Fig. 2. Sherds of medieval tin-glazed ware. 1–14 – Valencian lustreware, 15–17 – possible sherds of 15th century Italian archaic maiolica.

Jn 2. Keskaegse majoolika katked. 1–14 – Valencia säravapinnaline keraamika, 15–17 – oletatavad katked 15. sajandi Itaalia arhailisest majoolikast.

(AI 7032: 1700/71, 1668/2, 445/3, 445/5, 1146/11, 743/5, 1623/35, 1308/9, 1102/4, 1180/19, 693/3–4, 1370/33, 519/19, 1444/4, 1703/54, 1623/34, 1647/96.)

Drawing / Joonis: Kersti Siitan

Table 1. Basic division of found pottery from the Tartu Road 1 site (without building ceramics).

Tabel 1. Tartu mnt 1 kaevamistelt leitud keraamika üldine jaotus (v.a. ehituskeraamika).

Composed by / Koostajad: Gert Pärnamäe, Ulla Kadakas, Erki Russow

Number = century / sajand

A/B = first or second half of the century / sajandi esimene või teine pool

a, b, c, d = first, second, third or fourth quarter of the century / sajandi esimene, teine, kolmas või neljas veerand

<i>Timeline/ Ajapiirid</i>	<i>Wares/ Keraamikarühm</i>	<i>Count/ Arv</i>
13bc	Paffrath-type globular pots (bluegrey ware) / Paffrathi tüüpi kerapotid (PAFF)	8
13bc	Proto-stoneware / Protokivikeraamika (PROTO)	11
13B	Highly decorated medieval redware / Keskaegne ornamenteeritud glasuurkeraamika (ORNPGLK)	14
13bc	Siegburg proto-stoneware / Siegburgi protokivikeraamika (SIEG1)	19
13d14a	Siegburg near-stoneware / Siegburgi varakivikeraamika (SIEG2)	97
13B15A	Local medieval unglazed coarseware / Kohalik keskaegne keraamika	377
13d15a	South Lower Saxon near-stoneware and stoneware / Lõuna-Alam-Saksi varakivi- ja kivikeraamika (LASX1–3)	92
13d15a	Langerwehe stoneware / Langerwehe kivikeraamika (LANG1–3)	192
14B15A	Langerwehe glazed whiteware / Langerwehe valge glasuurkeraamika (LANGVLGK)	2
13d15A	(North German) greyware / (Põhja-Saksa) hallid savinõud (HSN)	179
14d16a	Medieval (local?) glazed redware / Keskaegne (kohalik?) punane glasuurkeraamika	152
14a16A	Siegburg stoneware, medieval / Siegburgi kivikeraamika (SIEG3a–b)	1472
14d16a	Valencian lustreware / Valencia säravapinnaline keraamika (VALENCIA)	14
15bc	Italian archaic maiolica / Itaalia arhailine majooolika	3
14d16a	Waldenburg stoneware, medieval / Waldenburgi keskaegne kivikeraamika (WALD1)	89
15B16A	Raeren stoneware, medieval / Raereni keskaegne kivikeraamika (RAER1)	196
15B16A	Siegburg green-glazed stoneware / Rohelise glasuuriga Siegburgi kivikeraamika (SIEGGRGL)	1
15d19A	Glazed redware, late medieval – modern / Punane glasuurkeraamika, kesk- ja uusaegne kokku (PGLK)	3735
16bc	Cologne stoneware / Kölni kivikeraamika (COL)	4
16B17a	Raeren stoneware, early modern / Raereni varauusaegne kivikeraamika (RAER2)	126
16B17a	Siegburg stoneware, early modern / Siegburgi varauusaegne kivikeraamika (SIEG4)	16
16B17a	Waldenburg stoneware, early modern / Waldenburgi varauusaegne kivikeraamika (WALD2)	7
16B17B	Frechen stoneware / Frecheni kivikeraamika (FRECH1–2)	66
16b17A	Central European greyware with iron wash / Kesk-Euroopa angoobmaalingutega hall savinõu (ANGMHNS)	178

<i>Timeline / Ajapiirid</i>	<i>Wares / Keraamikarühm</i>	<i>Count / Arv</i>
16B17B	Seville-type coarseware / Sevilla tüüpi lihtkeraamika (SEVILLA)	6
16d17a	Weserware / Weserkeraamika (WESER)	2
17A18A	Westerwald stoneware / Westerwaldi kivikeraamika (WEST)	122
16d17B	Duingen stoneware / Duingeni kivikeraamika (Duing)	42
16B18B	Dutch glazed redware / Madalmaade punane glasuurkeraamika (PGLKHOL)	310
16B17B	North Holland slipware / Põhja-Hollandi maalitud glasuurkeraamika	5
16B18A	Tin-glazed wares / majoolika ja fajanss	341
17A19A	Slipware (redware) / Punane maalingutega glasuurkeraamika (PMGLK)	1206
17A18A	Slipware (whiteware) / Valge maalingutega glasuurkeraamika (VMGLK)	56
15A17B	Glazed whiteware / Valge glasuurkeraamika (VGLK)	482
17A19A	Whiteware / Valge glasuurita keraamika	37
18B20A	Industrial finewares (transferwares) / Uusaegne tööstuslik keraamika (trükikeraamika)	1499
18B20A	Porcelain / Portselan	76
18B19B	18th – 19th c stoneware mineral water bottles / Uusaegsed kivikeraamilised mineraalveepudelid	51
16B17B	NW-Russian glazed greyware / Loode-Vene hall glasuurkeraamika (VNHGLK)	17
16B18A	NW-Russian greyware / Loode-Vene hallid savinõud (VNHSN)	1615
18A19A	Russian glazed redware / Vene punane glasuurkeraamika	203
16B	Russian whiteware / Vene valged savinõud (VNVSN)	4
17B19A	White clay pipes / Valged savipiibud	1094
-	Unidentified / Määramata	7
<i>Total / Kokku</i>		14 225

Mediterranean tin-glazed wares have been occasionally found from other places as well, such as suburban artisans' (e.g. dyer) households and guesthouses or inns (Gutiérrez 2000, 181–183), which regarding the geographical location of the Tartu Road 1 close to the medieval riverbed and important river crossing might also be a plausible interpretation here in Tallinn as well.

All in all, even if the majority of the pottery fall into the category of typical examples of urban material culture, the number and variety of late medieval and early modern period 'ceramic anomalies' at Tartu Road 1 site is something unseen both in Tallinn and other Estonian towns. As the following parts of the present paper will show, the extraordinariness of the excavated site is visible in other find groups as well.

Leather

Leather finds were got from all over the excavation area. Altogether from all contexts 771 preservable leather artefacts or their fragments were gathered, among which fragments of footwear (517) and production waste (135) dominated. Many leather finds could be identified as an artefact (68) or a piece of leather without markers of production waste (19). Among the finds bearing enough markers for identification, in addition to footwear also mittens cut out of one leather piece (15), belts (6), knife sheaths (4), garments (4) and also a front panel of a belt purse and a fragment of a box lid or a book cover were found. Less leather finds were got from the medieval layers, most came from the organic rich layers of dung deposited in the 17th century.

Finds of footwear make up 67% of the whole leather material. Among these fragments of footings, especially of heel layers dominate. From types most represented are latchet shoes with heel, lower laced shoes, pumps and boots with higher heels. There are single fragments of soft peasant shoes and the so-called cowmouth shoes and of its subtype hornshoe. There are fragments of a shoe resembling the so-called jester shoe with a round forepart hitherto unknown among the leather finds of Tallinn (Fig. 3).

Of all the listed footwear types only the beginning of the usage era of the laced and soft peasant shoe match with the Middle Ages (Sarv 2004, 338), but both types remained in use also in the Early Modern Ages. The rest of the shoes reflect early modern types, which are in use with minor modifications of form and technology even today. The cowmouth shoes, which are an in-between form between medieval and early modern footwear tradition, deserve special attention. The circulation time of such shoes is limited with the second half of the 16th century (Goubitz *et al.* 2001, 275). During the 17th century latchet shoes with their distinct forms became popular and the dominating footwear type in the northern part of Europe (Goubitz *et al.* 2001, 304).

Of the find contexts only the earlier medieval layers in the north-eastern part of the excavation area point to local leather craftsmanship. From there pieces of raw leather with hair and waste pieces from different production stages were discovered. As these are filling layers, the material might have been brought from somewhere else and it is not clear where the leather was worked. Among the finds from the organic rich 17th century filling layers there are fragments of household artefacts and fragments of leather left over during production. Among the latter waste left over during both preparation of raw material and artefact manufacturing were represented.

Metal finds

The bulk of metal finds are fragments of artefacts made of iron and its alloys. The most numerous were nails (238), knives (79) and horseshoes (53), which are hard to date when found singly, but in a context based excavation such find groups of different periods can be described. Of iron finds, 360 date from the medieval period. A little more than one third of these are nails (132) and rivets (12). Different tools (knives, hooks, wedges, scissors, shears, axe, spade, etc.) form another larger group (58 artefacts). Horseshoes (19) are well represented among the material, as are buckles (16) and locks (4) and keys (7). There are also three spurs, two styli, an arrowhead and a piece of chainmail and a candle holder from the layers of this period. Of the 89 iron artefacts found from

layers of early modern period (the second half of 16th century – 17th century), the largest group is again nails (27) and rivets (4). There are also five locks and three keys, two weights, two buckles, fragment of a spur, an arrowhead, a ratchet and a brooch from these layers.

In comparison with other excavations in Tallinn, the present fieldwork has produced an exceptionally broad collection of smaller iron and non-ferrous (443 items) finds, although the metal detecting devices have been a standard element of research equipment for several years. A few rare or uncommon metal artefacts from medieval and early modern period layers deserve special attention. Of these a number of 14th – 15th century decorated buttons (Fig. 4: 1), hooks and jewellery are first such kind of finds from Tallinn. In addition to these finds, a small rectangular stamped sheet (Fig. 4: 2) was found from the medieval deposits, so far no parallels from the Estonian urban archaeological collections are known. If considering the Tartu Road 1 site during the medieval period as a place with lively traffic combined with commercial activities, it seems plausible that this particular item can be interpreted as a possible ‘tax mark’ of hanseatic trade like other similar finds from elsewhere in northern Europe (see Egan 2001, 102–103). Also a few (at least 2) cloth seals (such as Fig. 4: 3) and other related items like the above mentioned weights, but also one ceramic artefact (Fig. 1: 2) seem to indicate some kind of trading. The extraordinarily rich assemblage of foreign artefacts can be illustrated also with a 16th century knife (Fig. 4: 4) originating either from the Netherlands or England (for a related knife with a hoof, see Egan 2005, 92–93) and a 16th century southern German stiletto.

Among non-ferrous items there were also a few examples of decorated details of furniture and clothing adornments. Tin frames of glass windows were collected from the medieval deposits. There were 80 coins among the non-ferrous metal artefacts. One of the coin finds consisted of six silver *lübische* of Diocese of Tartu (likely dating somewhere between 1397 and 1415)⁵ that probably were deposited together, suggesting the possibility of a lost wallet.



Fig. 3. Leather shoe.
Jn 3. Nahkjalats.
(AI 7032: 1376.)
Photo / Foto: Vahur Lõhmus



Fig. 4. Selection of medieval metal finds. 1 – button, 2 – stamped sheet disc, 3 – cloth seal (Bremen?), 4 – knife handle.
Valik keskageid metall-leide. 1 – nööp, 2 – templijäljendiga ketas, 3 – tekstiilplomm (Bremen?), 4 – noapea.
(AI 7032: 1941/1, 1118, 1667, 1612/1.)
Drawing / Joonis: Kersti Siitan

⁵ Identified by Mauri Kiudsoo (AI).

Glass, bone and jet artefacts

The most common glass finds both in medieval and early modern layers were window glass (513), fragments of different vessels (273), goblets (172), drinking glasses (143) and bottle glass (112). There are 348 glass fragments that come from layers predating or contemporary to the medieval house. In addition to four red and one white window glass fragments among the mostly uncoloured 85 window glass fragments from this period, there are two stained glass fragments with special image. One of them is decorated with an unusual spruce tree ornament. Of the 117 glass vessel fragments, at least seven are Bohemian. Among the 106 beaker fragments, 35 are Bohemian, 24 fragments belong to 15th – 16th century *Fadenrippenbechers*. There are also 18 drinking glass fragments, six of which are fragments of *Krautstrunk* drinking glasses and four are 15th – 16th century beer glass fragments (Fig. 5: 1).

170 glass fragments have been found from layers of early modern period. More than half (98) are window glass fragments, two of them are red, one is blue. There are also four polychrome fragments of stained glass. In addition to 30 glass vessel fragments, there are 21 drinking glass and five beaker fragments. Of the drinking glasses, four belong to 16th – 17th century beer glasses, four to mineral water glasses used from the 1700s to 1850s, seven belong to *Römer's*, two to *Krautstrunk* drinking glasses and also two quite rare 15th – 16th century *Maigelein* wine glass

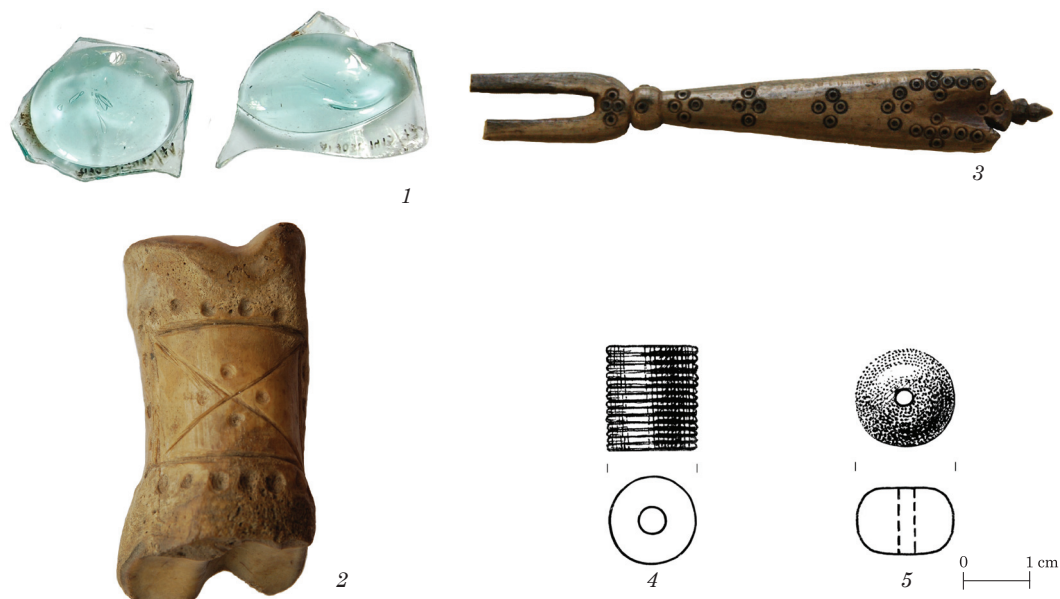


Fig. 5. Selection of glass, bone and jet finds. 1 – fragments of glass beakers, 2 – decorated knucklebone, 3 – fork, 4–5 – jet beads.

Jn 5. Valik klaasi-, luu- ja gagaadi-leide. 1 – klaaspeekri katked, 2 – ornamendiga veise varbalüli, 3 – kahvel, 4–5 – gagaadist helmed.

(AI 7032: 1413/71–72, 1836, 1811/1, 1109/1, 1152/1.)

Photo / Foto: Erki Russow, Sander Nittim

Drawing / Joonis: Kersti Siitan

fragments are discovered among the finds from this period. Also noteworthy are three 16th – 18th century beads.

The bone (69) and antler material (15 items) consisted of various categories of artefacts as well as of bone and antler working waste, which was found from both medieval and early modern contexts. Most numerous was processing waste of button and bead making. Numerous antler finds from the medieval contexts were mostly connected to manufacturing decorative plates for which antler of elk (*Alces alces*) was used. Both blanks and fragments of two decorated plates were found, one of which had been carved in the shape of a feather. Among the finished artefacts most numerous are different kind of small items such as bone needles, beads and dices. Less common are carved handles with a few examples, decorated gaming pieces and knucklebones (Fig. 5: 2) both found from the medieval as well as post-medieval layers, also two bone flutes from medieval layers. As a single exception a later bone item stands out – a decorated bone fork from the late 17th century deposits (Fig. 5: 3). Also a couple of gaming pieces, a comb and other items, one including a fragment of a crossbow nut. All in all the collection of bone finds is rather heterogeneous and thus it is difficult to point out any closer trends of special temporal or functional peculiarities.

The last group of artefacts – jet finds – are first such kind of findings from Tallinn. Altogether 10 items fall into this category, of which 4 are from medieval deposits and 2–3 have been found from later contexts, but might also have an earlier background as lot of other medieval finds have been re-deposited during the extensive earthwork on the site. Both these as well as the jet finds from medieval layers are mostly from contexts which do not allow connecting artefacts with on-site activities with absolute certainty. However, the overall situation (abundant collection of foreign and rather exclusive finds scattered around the excavation area) seems to support the idea that all jet artefacts were lost at the Tartu Road 1 site and do not belong to the category of re-deposited finds coming from intra-mural households – characteristic to a few other excavated suburban sites around the walled town.

The jet finds raise a number of questions, which are still mostly unanswered. The beads coming from medieval deposits (according to stratification the earliest is from the 14th century) are most likely from the rosaries, the tubular one (Fig. 5: 4) representing perhaps Pater and the more typical smaller one (Fig. 5: 5) is one from the ten beads for recitation of Aves (for 16th century context, see Deagan 2002, 65). However, the origin of the rosary is yet unresolved, as in addition to Spanish pilgrim centre Santiago de Compostela (see Taavitsainen 2003, fig. 3 for another northern European find of jet) this kind of material was processed also in northern Yorkshire, Whitby but also in south-western Germany and France (see Muller 1991, 5; Pierce 2013, 198–199). The same applies to other jet items, which might or might not be contemporary with the rosary.

ECOFACTS

Mammals

This article concentrates mostly on bone finds from the medieval layers, because the analysis of the abundant 17th century bone material has not been completed. The majority of the gathered bones belong to domestic animals; very few game bones were found (Table 2).

Table 2. Number of identified specimen by different stratigraphical units.
 Tabel 2. Määratud luufragmentide arv erinevate stratigraafiliste üksuste järgi.
 Composed by / Koostajad: Liina Maldre

	14th – 15th cc 14.–15. saj	15th c 15. saj	15th – 16th cc 15.–16. saj	16th c 16. saj	16th – 17th cc 16.–17. saj	Total / Kokku
<i>Bos taurus</i> Cattle / Veis	158	108	651	578	25	1520
<i>Ovis aries</i> Sheep / Lammast	13	7	76	46	1	143
<i>Capra hircus</i> Goat / Kits	2	15	15	11	1	44
<i>Ovis</i> / <i>Capra</i> sheep / goat	70	37	275	228	5	615
<i>Sus dom.</i> Pig / Siga	56	18	258	169	5	506
<i>Equus caballus</i> Horse / Hobune			2	1		3
<i>Canis familiaris</i> Dog / Koer	55	2	1	2		60
<i>Felis dom.</i> Cat / Kass			1	5		6
<i>Sus ferus?</i> wild boar? / Metssiga?			4			4
<i>Lepus sp.</i> Hare / Jänest	2		15	8		25
<i>Rattus sp.</i> Rat / Rott		1				1
<i>Phocidae</i> Seals / Hülged			1	2		3
Total / Kokku	356	188	1299	1050	37	2930

Based on the number of bone fragments cattle dominated both in medieval and post-medieval deposits. According to preliminary results the difference in relative abundance of cattle bones in different periods is rather small: 52.8–58.4%. This indicator is slightly higher among the 16th – 17th century finds: 67.6%, but it can be coincidental regarding the small number of bones identified so far.

Next abundant in percentage were sheep and goats. As bones of these two species are very similar, depending on the specific skeleton element, therefore in most cases the identification was possible only on the ‘sheep or goat’ level. Nevertheless in several cases one or another species could be identified. In the 15th century material the higher percentage of goats compared to sheep is based on rather plenty goat horn cores. In all other contexts there are more identifiable sheep than goat bones in the present research stage. Based on that fact it can be supposed that sheep bones also dominate among the sheep/goat bones by which more exact identification is not possible. The relative abundance of pig bones is higher among the 14th – 15th century material. It diminishes a bit in the beginning of the 16th century and increases again during the 16th century.

Horse, dog and cat are represented in the find material, but modestly. Of game bones the most represented is hare, mostly probably white hare (*Lepus timidus*), because there was no European hare (*L. europaeus*) in Estonia at this time according to present knowledge. Four pig bones, judging by their size can come from the wild boar; seals are represented by three bones.

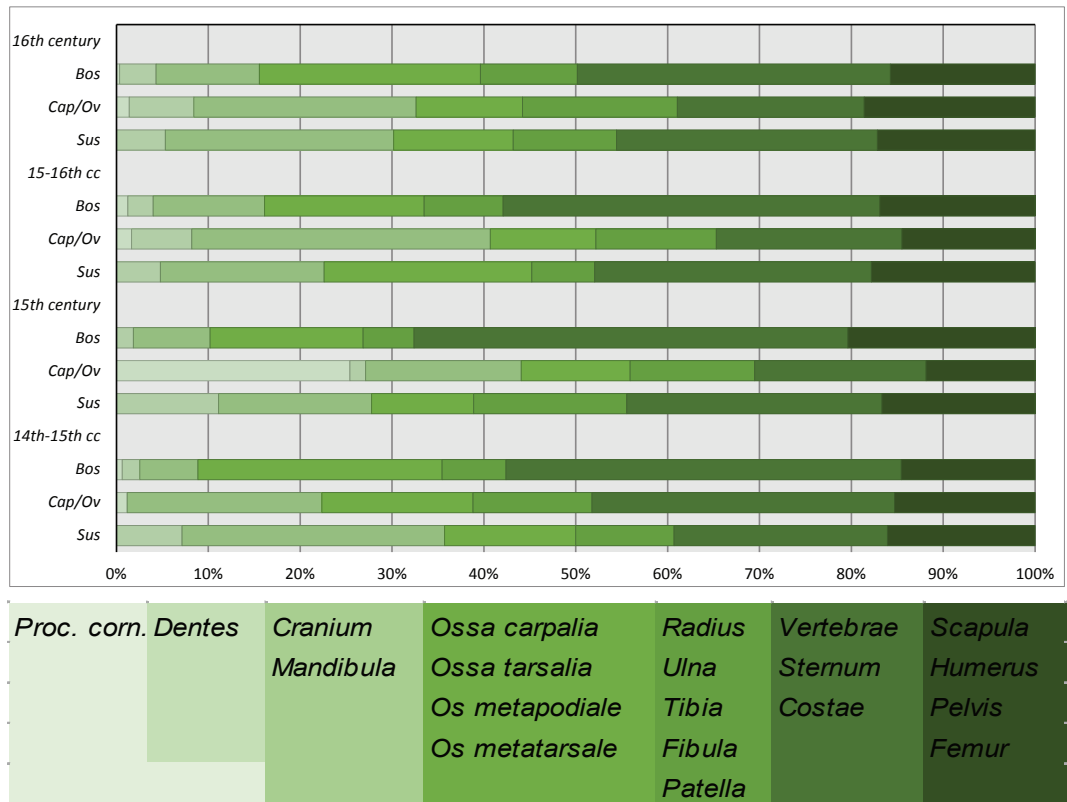


Fig. 6. Anatomical representation of bones.

Jn 6. Luude anatoomiline struktuur.

Compiled by / Koostanud: Liina Maldre

Cattle, sheep, goats and pigs are represented by both juvenile and adult animals. More or less all skeleton elements/body areas were found, indicating to a mixture of food and slaughter waste (Fig. 6). The abundance of bones from body areas rich in meat indicates that rather quality meat was consumed. However body parts with less meat have not been despised – there are mandibles with hacking and cutting marks and metacarpals and metatarsals of cattle among others. There is no bone slaughter waste of pigs, also their body parts with little meat are lacking.

The very small representation of horn cores shows that these had been taken to somewhere else – either dumped or delivered to artisans. It should be considered by sheep that ewes bred in Estonia mostly had no horns. According to the horn cores the 15th century is an exception: a lot of horn cores of goats, mostly billy-goats were collected. The assemblage includes a few teeth collected individually. Considering that there was a normal amount of cranium fragments, including maxillae and mandibles with teeth, the scarcity of single tooth finds indicates a good preservation state of the material. Teeth are rather durable to both chemical and mechanical impact. This is why separated teeth are often overrepresented in poorly preserved find complexes.

Relying upon maxilla and mandible fragments it can be said that the heads of sheep/goats have been used for food more than the heads of cattle.

No very clear tendencies appear in the changes of anatomical structure of the bone material in time: the relative abundance of cattle bones from body areas with lesser meat rather increases and of body areas rich in meat diminishes; of sheep/goats the results are vaguer.

Fish

A lot of fish bones and scales were gathered from layers of the 14th until 16th centuries. As gathering of larger bones was carried out during the excavations, for getting the small fishbones (e. g. Baltic herring) *ca.* 150 litres of excavated soil was brought to the laboratory, where water sieving was carried out (1 mm mesh). The aim of studying the fishbones from Tartu Road 1 excavations was to specify, which fish had been consumed and/or processed, if these were marine or fresh water fish, if these included species, which indicate fish trade or bones, which indicate specific processing techniques. The sea coast was much closer to the site in the Middle Ages and the Härjapea River flowed

nearby, which is why fishing could be tightly connected to these bodies of water.

Altogether 1820 bone fragments and 750 scales were analysed. In the find material the relative abundance of marine fish (including flounder, cod and Baltic herring) and fresh/brackish water fish (including pike, perch, cyprinids) was more or less even (Fig. 7). The scales (not included in Fig. 7) came mostly from perch and cyprinids, but also from pike.

It is important to differentiate between cranium and body bones. Of the body bones only vertebrae can be taken into consideration, because species cannot be usually identified according to ribs and radialis. Bony fish have more or less an even number of cranium bones and vertebrae relying on which species can be identified (in case of cod *ca.* 50 of both). The anatomical division of the four main fish species from the deposits predating the medieval house shows a big prevalence of cranium bones (Fig. 8). Such high prevalence of cranium bones indicates a place where fish was rather processed and not consumed. It means that fish was descaled where it had been found or in the immediate vicinity – the head was cut off

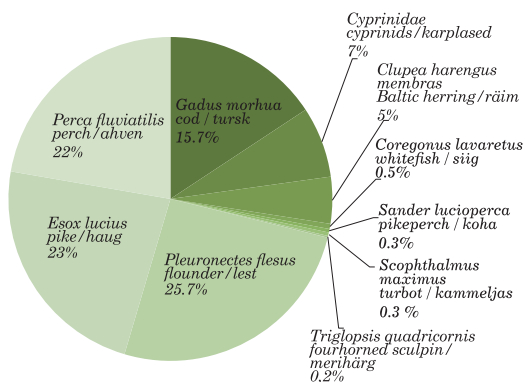


Fig. 7. Relative partition of fish species in the material based on identified specimen.

Jn 7. Kalaliikide suhteline jaotus materjalis määratud luude põhjal.

Compiled by / Koostanud: Lembi Lõugas

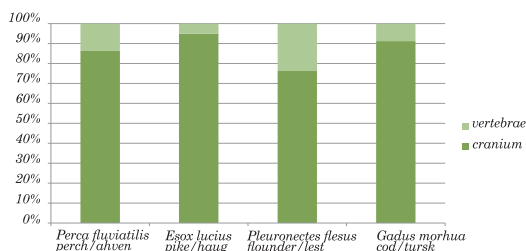


Fig. 8. Relative abundance of cranial and body bones of selected fish species.

Jn 8. Kala kolju- ja kereluude hulk.

Compiled by / Koostanud: Lembi Lõugas

and the entrails were removed. The body of fish with vertebrae was brought away and processed differently (e. g. salted or dried). In the case of perch the higher number of vertebrae compared to cranium bones was caused rather by a higher percentage of smaller fish vertebrae. It is possible that small perch were not processed like the larger ones and were dumped with the waste. Bigger perch was rather more represented by cranium bones and by very few vertebrae. The same was noticed with Baltic herring: there were more cranium bones than vertebrae, regardless that cranium bones are generally more fragile and tend to break up fast.

Cutting off heads and dumping on the site is indicated by e. g. cleithral bones, cut in half (Fig. 9). Even nowadays cutting cod like this before traditional drying is common in Norway. Active trading of dried cod (*stockfisk* in Swedish) took place in the Baltic Sea region in the Middle Ages and this way Atlantic fish reached Estonia and other countries. Finding several oyster shells also confirms long distance trade from the Atlantic to the eastern part of the Baltic Sea, although more guaranteed information could be obtained by isotope concentration analysis (e.g. ^{13}C , ^{15}N) of bones, which would enable to define Baltic cod, but also herring from the Atlantic one (see e. g. Orton *et al.* 2011).

Finding some vertebrae and the upper end of cleithrum, which as a result of cutting described above remains attached to the body of the fish enables to suppose that not only descaling and preparation for salting or drying took place on the site, but also consumption. At least an upper end of a very large cleithrum of cod discovered indicates a specimen from the Atlantic Ocean.

Processing flounder deserves special attention. There were a lot of anal bones of flounder in the find material. It is possible that this sturdy and sharp bone was inconvenient during consequent processing or consumption and was removed together with entrails. There were proportionally more vertebrae of flounder than of other fish, but mostly these were vertebrae which are located between the thoracal and the caudal part, i.e. in the area from which the anal bone was removed from. There is no known way of processing flounder by which waste like that is left and it is difficult to interpret how this assemblage was formed.

Plant macrofossils

Two soil profile columns were chosen for archaeo-botanical analysis: a 154 cm high soil profile column, penetrating the main medieval and early modern soil layers in the south-



Fig. 9. Two right cleithral bones of the cod found from Tartu Rd 1 material. They were cut in half while removing the head.

Jn 9. Kaks tursa parema rinnaüime toese luud (Cleithrum) Tartu mnt 1 materjalist. Need on lõigatud pooleks pea eemaldamise käigus.

Photo / Foto: Lembi Lõugas



Fig. 10. Medieval and early modern period layers in the south-western part of the excavation area. The interface between medieval and early modern layers is marked with a red line; on top of the organic rich soil layers there are remains of a building from the late 17th c. Archaeo-botanical samples were taken from the profile section marked with white.

Jn 10. Keskaegsete ja varauusaegsete pinnasekihtide lasumine kaevamisala edelaosas. Keskaegsete ja varauusaegsete pinnasekihtide vahepeel on märgitud punase joonega; orgaanikarikaste pinnasekihtide peal on 17. saj lõpul rajatud hoone jäänused. Arheobotaanilised proovid võeti valgega märgitud profiilipostist.

Photo / Foto: Ulla Kadakas

(*Papaver somniferum*) and fig (*Ficus carica*) and fragments of pericarp of buckwheat (*Fagopyrum esculentum*) were discovered in the south-western part of the excavation area in the 14th – 15th century layers. Plants of anthropogenic communities prevailed. Among these fat hen and red goosefoot (*Chenopodium album* and *C. rubrum*), common and annual nettle (*Urtica dioica* and *U. urens*) and common chickweed (*Stellaria media*) were most numerous. There was notably much henbane (*Hyoscyamus niger*) and sedges (*Carex* spp.), which most likely had been brought to the site with hay. A contemporary soil sample from the north-western part of the excavation area also included plants typical to anthropogenic communities, first of all field mustard (*Brassica rapa*) and common and annual nettle.

The earliest layer of the 17th century is characterized by abundant presence of species typical to wetlands – sedges, rushes (*Juncus* spp.), marsh lousewort (*Pedicularis palustris*), ragged robin (*Lychnis flos-cuculi*). There were a lot of grasses (*Poa*-*cea*) and other meadow plants which indicates to leavings of hay. Layers of the second half of the 17th century contained a lot of cereal bran fragments, passed through digestive tract. Also seeds of several companion plants to grains like cornflower (*Centaurea cyanus*) and common corncockle (*Agrostemma githago*) had fragmented which also indicates that these had passed through a digestion process. Of cultivated plants there was also cannabis (*Cannabis sativa*), buckwheat, cucumber (*Cucumis sativus*), dill (*Anethum graveolens*), pea (*Pisum sativum*) and opium poppy. There were also many seeds of forest berries in this layer – blueberry (*Vaccinium myrtillus*), cowberry

western part of the excavation area (Fig. 10), and another from layers predating the medieval house in the north-western part of the excavation area. The first one was divided into 15 samples, regarding stratification, each 6–12 cm thick with a volume of ca. 2 litres. The other was divided into 5 samples, each 3–11 cm thick with a volume of ca. 0.5 litres.

The organic rich samples were soaked for a day and night in a 10% KOH solution and washed thereafter on a sieve under running water. In the beginning, 100 ml was taken from each sample, washed on a 0.4 and 0.25 mm sieves and all the rest washed on a 0.4 mm sieve. The material which remained on the sieve was collected and stored in a refrigerator for analysis. Identifiable plant macrofossils were sorted according to species using a stereo microscope.

The species richness of discovered plants was rather varied – over 100 different species. Single seeds of opium poppy

(*Vaccinium vitis-idaea*), cranberry (*Oxycoccus palustris*), raspberry (*Rubus idaeus*) and wild strawberry (*Fragaria vesca*), also fragments of hazelnut (*Corylus avellana*).

Palynological material

Besides the macrofossil analysis, widely used by archaeologists, reflecting local historical vegetation and usage of plant resources, analysis of pollen and spores from soil layers is suitable for reconstructing vegetation in a larger neighbourhood. Pollen grains are segregated from soil with methods of physics and chemical treatment. Consequently the species composition of the pollen grains and their quantitative relationships are specified under microscope. Based on this it is possible to assess, how big the proportion of one or another plant group in the surrounding environment was.

Pollen was studied in the same soil samples where the macrofossils. The samples were watersieved through a 0.25 mm sieve to remove the bigger mineral parts and charcoal pieces. The samples which still included fine mineral material, were processed according to the method of Grichuk (Pokrovskaja 1950) with heavy liquid (CdJ_2 and KJ solution with a gravity of 2.2 g/cm^3), which enables to isolate mineral fractions. After that pollen samples were prepared by a standard laboratory technique (Berglund & Ralska-Jasiewiczowa 1986), according to which the material is processed with a mixture of acetic acid anhydride and sulphuric acid after boiling with potassium hydroxide. For calculating the pollen concentration of the soil sample *Lycopodium* marker spores were added to a known volume of sediment during the treatment (Stockmarr 1971). Identification of pollen and spores took place under $400 \times$ magnifications. For processing the results the programs TILIA & TILIA*GRAPH (Grimm 1992) was used. The processed results are presented as percents, whereby the sum of pollen of trees and herbaceous plants has been taken as basis for calculations.

Pollen was well preserved in the organic rich layers and pollen concentration reached 19 000–91 000 grains per 1 cm^3 of soil. A very low percentage of tree pollen was characteristic to layers of all periods (5–22%), mostly pollen of wind pollinated trees – pine (*Pinus*) and birch (*Betula*); also alder (*Alnus*) and spruce (*Picea*), indicating extensive openness of landscape. Taxonomic diversity of herbaceous plants is big, reaching to 50 names. Pollen of grasses (Poaceae), dropwort (*Filipendula*), carrot family (*Apiaceae*), sedges (*Cyperaceae*) dominates, also cow-wheat (*Melampyrum*), which refer to open forest vegetation. The last one is considered to be an indicator of herding in the forest. There are several types of pollen from aster family (Asteraceae) – type *Artemisia*, *Solidago*, *Saussurea*, *Centaure scabiosa* and *Centaurea jacea*. Of the indicators of human impact the Asteraceae subtype Liguliflorae pollen is represented; there are also representatives of family Brassicaceae, Chenopodiaceae and Caryophyllaceae; bindweed (*Convolvulus arvensis* type), common knotgrass (*Polygonum aviculare* type) and cornflower (*Centaurea cyanus*). Pollen of cereals was found in all samples; buckwheat (*Fagopyrum*) and cannabis (*Cannabis*) from the medieval layers.

The percentage of tree pollen in the lower part of the organic rich soil layer predating the medieval house was 25%, in the upper part 10%, mostly pine, birch and alder. Grasses make up 16–18%, cereals 12–13%. There was no pollen of rye in this layer. The multitude and variety of Asteraceae (including Liguliflorae) among the herbaceous plants is noteworthy.

CONCLUDING REMARKS

Deeper analysis and association of the artefacts and scientific data gathered during the excavations of Tartu Road 1 is still ahead. Only preliminary hypotheses that arose during excavations and cataloguing, which need further analysis and discussion were presented in the articles (see also Kadakas *et al.*, same volume). These are presented here as a sketch, relying upon sources of material culture, about the historical development of a suburban plot outside the town wall.

The earliest anthropogenic layers in the excavation area upon natural sand sediments were organic rich filling layers. Probably the filling activities, which levelled and elevated the ground level were necessary for taking the plot into use. What could have been the first usage of the area? The first structural remains were light buildings – wattle and daub fences and some kind of post structures, as well as a wagon track. According to fish finds it could have been a fish market or at least a place where preliminary processing took place. According to analysis of macrofossils plants typical to anthropogenic communities dominated in the area, mostly goosefoot, nettle and chickweed, which all fit to a site, partly in use already, partly wasteland yet. At the same time pollen studies indicate that the plot was surrounded by a rather open landscape where mostly pine and birch grew, there were also fields somewhere nearby.

The suburban medieval house near a major road, with all its building stages and room division, a paved courtyard and find material was not a common dwelling, but could have been a public house, an inn or a tavern. The medieval layers of the house stand out in the suburban context with unusual and exclusive ceramics, glass, metal and other finds. Bone finds indicate consumption of body areas both rich and poor in meat, in case of pigs mostly body areas rich in meat. It will remain a question for future research, if this data can be interpreted as garbage of a tavern or an assemblage, typical to a regular household.

The use of the plot could have remained similar in the end of the 16th and in the beginning of the 17th century, as it had been in the Middle Ages. From the bigger building erected on top of the remains of the medieval house and soil layers connected to it, fragments of ceramic and glass dining and drinking ware, distinguished and suitable for fine taste has been found, also the osteological finds indicate similar meat consumption as in the Middle Ages. Starting from the second half of the 17th century the usage of the area has changed. During the next two hundred years several smaller timber buildings were erected, the find material of this period corresponds to suburban milieu, representing typical everyday household, also with signs of domestic handicraft, but not of extensive production.

In the second half of the 19th century the previous bigger plots were divided into several smaller ones and big timber houses with massive limestone foundations were erected, a sewage system with limestone conduits built, water pipes placed. The area changed in connection with excluding Tallinn from the list of fortified towns, the demolition of the defence system in the middle of the 19th century and the following development from the previous suburb into a town centre or at least its vicinity.

Acknowledgements: The research was supported by the target financed research projects of the Estonian Ministry of Education and Science SF0130054s12, SF0130012s08

and also the research grant of Estonian Science Foundation ETF9405. The study of small finds (jet, non-ferrous metals) leans also on research done in spring 2012 by Erki Russow in London at UCL Institute of Archaeology and financed by British Academy through the project 'An archaeology of English culture in the eastern Baltic'. We would also like to thank several colleagues for the support and feedback: Gert Pärnamäe (Agu EMS OÜ) for the inventory of the massive collection of finds, Jaak Mäll and Ivar Leimus (Estonian History Museum) for their comments on selected metal finds, Georg Haggren (University of Helsinki, Finland) for commenting the glass finds, Mark A. Hall (Perth Museum & Art Gallery, UK) for thoughts and hints on jet and small finds, Tânia Manuel Casimiro (Universidade Nova de Lisboa, Portugal) for the identification of Portuguese faience. We appreciate the efforts of Kersti Siitan for making the illustrations of tin-glazed ware and selected small finds.

REFERENCES

- Berglund, B. E. & Ralska-Jasiewiczowa, M. 1986. Pollen analysis and pollen diagrams. – Handbook of Holocene Palaeoecology and Palaeohydrology. Ed. by B. E. Berglund. Chichester, 455–484.
- Casimiro, T. M. 2011. Portuguese Faience in England and Ireland. *BAR International Series* 2301. Oxford.
- Deagan, K. 2002. Artifacts of the Spanish Colonies of Florida and the Caribbean 1500–1800. Vol. 2: Portable Personal Possessions. Washington-London.
- Egan, G. 2001. Lead/tin alloy, metalwork. – Salisbury & South Wiltshire Museum Medieval Catalogue, Part 3. Ed. by P. Saunders. Hampshire, 92–118.
- Egan, G. 2005. Material Culture in London in an Age of Transition. Tudor and Stuart Period Finds c 1450 – c 1700 from Excavations at Riverside Sites in Southwark. *MoLAS monograph*, 19. London.
- Goubitz, O., Driel-Murray, C & Groenman-van Waateringe, W. 2001. Stepping Through Time. Archaeological Footwear from Prehistoric Times until 1800. Zwolle.
- Grimm, E. 1992. TILIA-TILIA*GRAPH Computer program, Illinois State Museum.
- Grönwald, H. 2010. Das Franziskanerkloster Gransee im Spiegel der archäologischen Untersuchungen. – Brandenburgische Franziskanerklöster und norddeutsche Bettelordensbauten. Architektur – Kunst – Denkmalpflege. Ed. by D. Schumann. Berlin, 186–209.
- Gutiérrez, A. 2000. Mediterranean Pottery in Wessex Households (13th to 17th Centuries). *BAR British Series* 306. Oxford.
- Holmqvist-Saukkonen, E., Väisänen, R. & Koivisto, A. 2013. Gubbackan, Mankbyn ja Tallinnan keskiaikaisten punasaviastioiden valmistusmateriaalit ja -teknologia (SEM-EDS) – tuontija vai paikallista valmistusta? – Historiallinen Aikakauskirja, 4, 2013, in print.
- Hurst, J. G., Neal, D. S. & van Beuningen, H. J. E. 1986. Pottery Produced and Traded in North-west Europe 1350–1650. *Rotterdam Papers*, VI. Rotterdam.
- Kadakas, V., Nurk, R., Püüa, G., Toos, G., Lõugas, L., Hiie, S. & Kihno, K. 2010. Rescue excavations in Tallinn Vabaduse Square and Ingermanland bastion 2008–2009. – AVE, 2009, 49–72.
- Muller, H. 1991. Jet Jewellery and Ornaments. Shire album, 52. Aylesbury.
- Nurk, R., Kadakas, V. & Toos, G. 2012. Preliminary archaeological investigations in the area of the medieval and post-medieval harbour of Tallinn. – AVE, 2011, 125–136.
- Orton, D., Makowiecki, D., de Roo, T., Johnstone, C., Harland, J., Jonsson, L., Heinrich, D., Bødker-Enghoff, I., Lõugas, L., Van Neer, W., Ervynck, A., Hufthammer, A. K., Amundsen, C., Jones, A. K. G., Locker, A., Hamilton-Dyer, S., MacKenzie, B., Richards, M., O'Connell, T. C. & Barrett, J. 2011. Stable isotope evidence for late medieval (14th–15th C) origins of the eastern Baltic cod (*Gadus morhua*) fishery. – PLoS ONE, 6 (11), e27568 (<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0027568>, last accessed 30.09.2013)
- Pierce, E. 2013. Jet cross pendants from the British Isles and beyond: forms, distribution and use. – Medieval Archaeology, 57, 198–211.
- Pokrovskaja, I. 1950. = Покровская, И. М. Пыльцевой анализ. Москва.
- Russow, E. 2006. Importkeraamika Lääne-Eesti linnades 13.–17. sajandil. Tallinn.
- Russow, E. 2007. Some remarks on medieval and post-medieval redware in Tallinn. – Pots and Princes. Ceramic vessels and stove tiles from 1400–1700. Ed. by K. Majantie. *Archaeologia Medii Aevi Finlandiae*, 12. Turku, 75–80.
- Sarv, K. 2004. Arheoloogiline nahk kui infoallikas. – Linnusest ja linnast. Uurimusi Vilma Trummali auks. Ed. by A. Haak, E. Russow & A. Tvauri. *Muinasaja Teadus*, 14. Tartu-Tallinn, 333–346.
- Stockmarr, J. 1971. Tablets with spores used in absolute pollen analysis. – Pollen et Spores, XIII, 4, 615–621.
- Taavitsainen, J.-P. 2003. Pyhiinvaellusmerkkejä hiippakunnan pääkaupungista. – Kaupunkia pintaa syvemmältä. Arkeologisia näkökulmia Turun historiaan. Ed. by L. Seppänen. *Archaeologia Medii Aevi Finlandiae*, IX. Turku, 307–320.
- Unger, I. 2007. Kölner und Frechener Steinzeug der Renaissance. Die Bestände des Kölnischen Stadtmuseums. *Publikationen des Kölnischen Stadtmuseums*, Band 8. Köln.

KESK- JA VARAUUSAEGNE EESLINNALINE ASUSTUS TALLINNAS, TARTU MNT 1 KINNISTUL: ARTE- JA ÖKOFAKTID

Erki Russow, Lembi Lõugas, Liina Maldre, Sirje Hiie, Kersti Kihno, Krista Sarv, Heidi Luik, Villu Kadakas, Ulla Kadakas, Anneli Kalm ja Monika Reppo

Käesolev artikkel kujutab endast mõttelist jätku eelmise artikliga alustatud Tartu mnt 1 kinnistu arheoloogiliste kaevamiste analüüsile, keskendudes leitud esemelise ja arheobioloogilise ainese esitelule. Arvestades, et kõnealustel uuringutel koguti 346 registreeritud kontekstist 2038 leiukompleksi umbes 20 000 esemeleiega, on alljärgnev kokkuvõte vaid põgus katse esitada üldistus Kivisilla eeslinna erakordselt rikkalikust materiaalsest kultuurist.

Suurima osa kogutud leidudest moodustab tavapäraselt **keraamika**, millest pärast välitöid toimunud selektsiooni otsustati leiukollektsioonis säilitada üle 15 500 esemekatke. Üldjoontes vastab kogutud keraamiline leiuväine (tabel 1) tüüpilisele kesk- ja uusaegsele linnakultuurile, sisaldades eelkõige kesk- ja varauusaegset kivikeraamikat, kesk- ja uusaegset glasuurkeraamikat ning uusaegset tööstuslikku keraamikat. Siiski torkab silma erisusi, mis tõstavad Tartu mnt 1 kinnistu oma olemusel teiste samalaadsete linnaarheoloogiliste objektide seas esile. Nii on tavapärasest arvukam keskaegse (14.–15. saj) glasuurkeraamika osakaal (152 katket) ning Tallinna kohta erakordselt kõrge on ka varauusaegsete venepäraste savinõude arvukus. Kuid kõige olulisemaks on terve rea kesk- ja varauusaegsete n-ö keraamiliste anomaaliatega esinemine Kunstiakadeemia kinnistu leidude seas. Nii on ebatavaliseks leiuks 14. saj Langerwehe valge glasuurkeraamilise pasuna katke (jn 1: 1), 15. saj vapikujutisega savinupuke (jn 1: 2), fragment Kölni kivikeraamilisest öökullikujulisest kannust (jn 1: 3) ja 17. sajandi Portugali fajansist (jn 1: 4), kui nimetada mõnda üksikeset. Esile tõuseb ka üks erandlik ja pigem elitaarne keskaegne keraamikarühm ehk Vahemere-regioonist pärit majoolika katkete (jn 2) ebatavaliselt kõrge esinemus – sisuliselt sama palju kui mujalt Eestist seni kokku leitud. Üritades neid ja teisi ülaltoodud leide kontekstualiseerida, tundub leidude ja leiupaiga geograafilise analüüsi põhjal ühe võimaliku seletusena, et EKA kinnistul asus arvatavasti keskaegne ja varauusaegne kõrts ja/või võorastemaja.

Ka **nahaleidude** (771 esemekatket ja tootmisjääki) analüüs pakub üht-teist huvitavat. Enamuse moodustavad jalanõude fragmendid (517 valmiseset ja 135 tootmisjäännet), kuid leidis ka vöö, noatupe, koti, raamatu- või karbikaane katkeid jne. Kuigi üldiselt esineb Tallinnale tüüpilisi nahkesemeid, on nt üks jalanõutüüp (jn 3) esmakordne leid Tallinnas.

Kaalukaima osa **metall-leidudest** moodustavad rauast ja selle sulamist valmistatud esemete katked (naelad, noad, hobuserauad, aga on ka konkse, kääre, kirves, labidas jne). Võrreldes Tallinna varasemate kaevamistega on ebatavaliselt kõrge pisemate metall-leidude esinemine, sealhulgas on esmakordseks leiuks mitmed keskaegsed nõobi- (jn 4: 1), haagi- ja pandlatüübid. Tallinna mõistes unikaalne on ka ühe väikesemebelatud metall-ketta (jn 4: 2) leid, mida võiks ehk tõlgendada hansakaubanduse maksumärgina. Kaubandusele viitavad mh ka nt paar kaubaplommi (jn 4: 3) ning leiuväine geograafilisele mitmekülgsele osutavad ka nt Madalmaade või Inglise päritolu 16. sajandi nuga (jn 4: 4), aga ka Lõuna-Saksa päritolu torke-pistoda ehk *stilet*.

Mitmekülgne on ka **klaasikollektsioon**, kus kesk- ja uusaegse aknaklaasi (513 katket) kõrval leidub veel mitmesuguste anumate (700 katket), sh nii böömi klaasi, 15.–16. saj peekrite (*Fadenrippenbecher*, *Krautstrunk* jne), aga ka hilisemate röömerite fragmente (jn 5: 1). Ka **luuesemete** ja tootmisjäännete valik oli mitmekülgne. Lisaks pigem tavapärastele helme- ja nõobileidudele ning mänguasjadele (jn 5: 2) koguti üksikuid haruldasemaid esemeid, nagu näiteks varauusaegne luust kahvel (jn 5: 3). Keskaja kontekstis erakordseks leiuks võib pidada ka mitme **gagaadist** helme leidmist, mis võiksid pärineda ühest palvekeest (jn 5: 4–5).

Uuringute käigus koguti lisaks esemeleidudele ka loodusteaduslikke proove, keskendudes sealjuures esmajoones kesk- ja varauusaegsetele ladestusele. Valikuliselt võeti analüüsiks loomaluid, samuti pinna-seproove kalaluude ning makrofossiilide ja palünoloogilise andmestiku tuvastamiseks.

Loomaluude analüüsi (tabel 2) põhjal on nii kesk- kui ka uusaegsetes kihtides domineerivaks liigiks veis, arvukuselt järgnevad lambad, kitsed ja sead. Leiti nii noorte kui ka täiskasvanud isendite luid ning kõiki skelettelemente (jn 6), mis viitab toidu- ja tapajäätmete segule. Tagasihoidlikult esineb ka hobuse, koera ja kassi luid. Ulukitest saadi arvukaimalt jäneseluid, leidub ka üksikuid metssea (?) ja hülge luid.

Huvitavaid tulemusi andis **kalaluude** ja soomuste eritelu (jn 7), mille tulemusena selgus et merekalade (sh lest, turk ja räim) ja mageveekalade (sh haug, ahven, karplased) osatähtsused on enam-vähem võrdsed. Erakordne oli keskaegsetest ladestustest kogutud luuleidude anatoomiline jaotus, mis näitas koljuluude

tugevat ülekaalu (jn 8). See viitab paigale, kus pigem töödeldi kui tarbiti kala. Kalade töötlemisele osundasid ka muud luuleiud (lestade ja tursa puhul), mistõttu pole võimatu, et piirkonnas asus kas kalaturg või vähemalt kalade esmane töötlemiskoht.

Taimejäänuste uurimisel tuvastati võetud proovidest üle saja erineva liigi. 14.–15. sajandi kihtidest avastati kultuurtaimedest unimaguna ja viigimarja seemneid ning katkeid tatra viljakestadest, kuid domineerisid siiski kohapeal kasvanud taimed, millest arvukaimad olid valge ja punane hanemalts, kõrve- ja raudnõges ning vesihein. Varauusaegsetest kontekstidest tuvastati märgala liikide esinemist – tarnasid, load, soo-kuuskjalga, käokannu, aga ka kõrrelisi ning teisi niidutaimi, mis viitavad heinajäätmetele. Kokkuvõttes osundab taimekooslus avatud ning niiskele alale, kus ei tegeletud kultuurtaimede kasvatamisega.

Ka **õietolmu** analüüs viitab avatud maastikule, millele osutab männi, kase, lepa ja kuuse õietolmu väike osakaal (5–22% määranguist). Rohhtaimedest eristati poolsada nimetust, neist domineerivad looduslike kõrreliste, angervaksa, sarikaliste, lõikheinaliste ning valgusrikastele metsaservadele, puisniitudele ja põõsastikele viitava härgheina õietolm. Kõikides proovides oli ka kultuurkõrreliste õietolmu, leiti jälgi nii tatrast kui ka kanepist.

Kokkuvõttes osutab Tartu mnt 1 kinnistult leitud rajatiste ja pinnasekihtide, leidude ja loodusteaduslike proovide analüüs, et kinnistul on läbi aegade olnud väga mitmekülgne ja põnev ajalugu. Kuni uusima ajani on kinnistu paiknenud pigem avatud alal, mis asus tiheda liiklusega tee läheduses. Hiliskeskaegne ning varauusaegne hoonestus, rikkalik ja mitmepalgeline leiumaterjal viitab erandlikule majapidamisele, vahest kõrtsile või võõrastemajale. 17. sajandi teisest poolest näib kinnistu roll muutuvat, võrreldes varasemaga kujunes alast üha enam tüüpiline eeslinnaline asustusüksus.