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ARCHEOLOGICAL EXCAVATIONS IN TARTU CATHEDRAL

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In summer 2008, archaeological excavations were carried out in the ruins of Tartu Cathedral and conditioned by reconstruction work that had started there in 2001. Rescue work was carried out because of the construction of a drainage pipeline and for repairing the pillars' foundations inside the cathedral. Also the ground level inside the church had to be dropped for the new floor, planned to be 50–60 cm lower from the present ground level. For this purpose the upper layers of soil were removed by a backhoe from the whole north aisle, the northern chapels' aisle, the northern tower and partly from the eighth, westernmost nave of the central aisle – all done under archaeological supervision.

The uppermost 50 cm of ground consisted mostly of debris (mortar, remains of wall bricks, tiles, floor bricks and some profiled bricks). Some pieces of limestone plates also came out while removing debris from the north aisle. Some bone artefacts were collected from the debris layer of the north aisle's fifth cross nave. The most interesting find was a brush with a bone back. A side or sides of the brush were probably broken, after which both sides were smoothed again (Luik 2008, 154–155). Below the debris in the depth of 50–60 cm a 5–10 cm thick layer of black soil of high charcoal content that contained fragments of 19th century pottery was revealed in the north aisle, in the eighth nave of the central aisle and in the chapel of the third cross nave. It probably dates back to the building of the library of the University of Tartu in the early 19th century.

For laying the pipeline, two trenches were made in the church (Fig. 1): one in the westernmost part of the church, the other in the northern aisle, parallel with the main axis of the church.

TRENCH 1
The first trench (12 × 1 m; 2 m in depth) was situated in the eighth cross nave; it was a continuation of the investigation, which started already in 2001 (Haak 2002, 110–120) and was continued in 2002. The ground in the trench was brown soil that contained traces of natural mineral

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1 Numeration of the cross naves runs from east to west. As cross naves nos. 1 and 2 have remained inside the re-constructed part of the ruins (University of Tartu History Museum), the easternmost investigated cross nave is no. 3.
ground (yellow sand and reddish clay) and remains of a disturbed Late Iron Age cultural layer in its lower part. Finds from the disturbed brown soil mostly included wall bricks, tiles, mortar, bronze slag and pottery fragments from the Viking Age and the Latest Iron Age.

There were several burials in the brown soil in trench 1: altogether 22 skeletons and their parts were found. As the trench was only 1 m wide and as it cut through the burials, most of the skeletons were incomplete and only 6 of them were unearthed totally (all sub-adults). Also a big limestone slab $1.27 \times 1.10 \times 0.13$ m with a flat surface, but without engravings and broken in three parts, was found. The slab, either a big floor plate or even a gravestone, was situated 1.1 m deep from the ground level, not in its original position. From the brown soil full of debris a fragment of medieval brocade band made of silk and very thin gilded silver plates (Rammo 2009, 18, fig. 19) was found. A yellow medieval biser bead was also found among the probable grave goods from the mixed layer.

**TRENCH 2**

Trench 2 ($19 \times 1$ m) was situated in the northern aisle, beginning from its westernmost part and ending in the fifth cross nave. Its depth was 2 m in the beginning and 1.5 m in the end. The whole trench went through mixed soil that contained some stray finds (Fig. 2). The ground had been greatly disturbed in the Soviet time by a water pipeline construction and a lot of mixed human and animal bones and garbage of that time was found there.

The disturbed ground of the trenches contained also several fragments of medieval stoneware and 7 coins from the second half of the 13th century to the end of the 15th century, all of Tartu bishopric (Table 1). The coins may be either donations from graves that were disturbed, occasionally lost coins or gifts brought to medieval altars.

**CONSTRUCTION REMAINS AND FLOORS INSIDE THE CATHEDRAL**

The removal of debris revealed also some construction remains, both medieval and of later origin. Thus, many big granite stones of granite that may belong to the earlier church foundations were unearthed in the north aisle. Big granite stones have earlier been found also from other parts of the church (Valk 1995, 75). Many of the stones were found in the fifth

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**Fig. 1.** The Cathedral of Tartu and the locations of excavation plots.
1 – existing walls of the Cathedral
2 – perished walls of the Cathedral
3 – excavation plot of 2001
4 – black cultural layer upon virgin sand
5 – black cultural layer upon mixed soil
6 – location of the medieval defensive wall of Toome Hill
7 – burial chamber of bricks
8 – burial
9 – excavation plots of 2008
10 – debris removing areas
11 – graveplate
12 – wall of the museum building.

**Jn 1.** Tartu toomkirik ja kaevandite asukohad.
1 – Toomkiriku säilinud müürid
2 – Toomkiriku hävinud müürid
3 – 2001. a kaevand
4 – must kultuurkiht pustumata alusliival
5 – must kultuurkiht segatud pinnasel
6 – Toome kaitsemüüri koht
7 – tellistest hauakast
8 – matus
9 – 2008. a kaevandid
10 – rusust puhastatud ala
11 – hauaplaadi asukoht
12 – muuseumi hoone välissein.

Drawing / Joonis: Riina Vesi, Maria Smirnova
cross nave where a foundation made of them, probably belonging to an altar, was unearthed on the west side of the pillar.

During the excavations also some remains of the cathedral floors were found in the north aisle. Floor fragments were preserved only near the walls and around the pillars (e.g. Fig. 3). In the fifth cross nave, there were traces of three floors, the uppermost of them 50 cm deeper from the ground level. The first and the second floor were made of quadrangular floor bricks (21 × 19 × 8 cm). The first two floors were piled on each other and linked with mortar; between the second and the third floor there was yellow sand. The third lowest floor was made of two types of bricks (both in same size 24.1 × 24.1 × 7 cm): green glazed bricks and ordinary ones without glaze. The floor was built in a ‘chessboard’ pattern, ordinary and glazed stones varied in turn. Under the third floor there was greyish sand that contained small pieces of charcoal.

In the seventh cross nave next to the first, i.e. westernmost pillar, some fragments of the floor were also found. The bricks there measured 28 × 28 × 7 cm. In the same cross nave next to the second pillar two floor bricks (24 × 25 × 8 cm) were situated. In both cases yellow sand was placed between the bricks and under them (in the last case a layer of 13 cm). In the third, fourth and seventh cross naves also similar floor fragments were found and they were in the same context as in the sixth cross nave.

From the chapel in the third cross nave the lower part of a transverse wall (Fig. 3), built later than other chapel walls, was discovered. The 60 cm-thick wall was made of bricks that had been put together hastily. The foundation was covered by a 20 cm thick burnt layer with pottery

<table>
<thead>
<tr>
<th>Findings no. / Leiu nr</th>
<th>Coin / Münt</th>
<th>Cross nave / Lööv</th>
</tr>
</thead>
<tbody>
<tr>
<td>302</td>
<td>Tartu bishopric, Bartholomäus Sawijerwe (1441–1459), half penny (Schurf) Brakteaat, Tartu piiskopkond, Bartholomäus Sawijerwe (1441–1459), šerf</td>
<td>VIII</td>
</tr>
<tr>
<td>306</td>
<td>Tartu bishopric, Dietrich III Damerow (1379–1400), penny Brakteaat, Tartu piiskopkond, Dietrich III Damerow (1379–1400), penn</td>
<td>VIII</td>
</tr>
<tr>
<td>314</td>
<td>Tartu bishopric, Helmich von Mallinkrodt (1459–1468), half penny (Schurf) Brakteaat, Tartu piiskopkond, Helmich von Mallinkrodt (1459–1468), šerf</td>
<td>VIII</td>
</tr>
<tr>
<td>345</td>
<td>Tartu bishopric, end of the 13th century and beginning of the 14th century, penny Brakteaat, Tartu piiskopkond, 13. sajandi lopp – 14. sajandi algus, penn</td>
<td>III</td>
</tr>
<tr>
<td>350</td>
<td>Tartu bishopric, end of the 13th century and beginning of the 14th century, penny Brakteaat, Tartu piiskopkond, 13. sajandi lopp – 14. sajandi algus, penn</td>
<td>III</td>
</tr>
<tr>
<td>353</td>
<td>Tartu bishopric, Dietrich IV Resler (1413–1441), half penny (Schurf), beginning from 1426 Brakteaat, Tartu piiskopkond, Dietrich IV Resler (1413–1441), šerf, alates 1426</td>
<td>III</td>
</tr>
<tr>
<td>368</td>
<td>Tartu bishopric, end of the 13th century and beginning of the 14th century, penny Brakteaat, Tartu piiskopkond, 13. sajandi lopp – 14. sajandi algus, penn</td>
<td>III</td>
</tr>
</tbody>
</table>

Table 1. Medieval coins from Tartu Cathedral.
Tabel 1. Keskaegsed mündid Tartu Toomkirikust.
Identified by / Määranud: Mauri Kiudsoo, AI

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MLA: Martín Malve & Heiki Valk

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fragments from the 19th century. The wall may be connected with building the university library. A well (2.45 × 2.60 m) in the seventh cross nave, made of big granite stones bound with mortar also originates from that period. In the north aisle’s sixth cross nave a timber-framed cesspit or waste pit was found near the fifth pillar. The upper part of the pit (2.25 × 2.25 m) contained numerous 19th century pottery fragments. Pieces of different types of house ware were found: pots, plates and flower-pots.

**THE GRAVE STONE AND AREA UNDER IT**

A large limestone plate was found *in situ* in the north aisle in the third transverse nave (Figs. 1; 3; 4) at the level of the uppermost floor, the remains of which were preserved immediately north of it. The stone 2.07 × 1.36 × 0.12 m was covered with a 50 cm thick layer of debris. It was decorated with a carved male figure, surrounded by a text written in minuscules. As the text and the image on the stone were somewhat worn, the stone
Fig. 4. Male figure on the grave-plate in the third cross nave of the northern aisle: left – general view, right – close view.

(TM A 172: 388.)
Photo / Foto: Heiki Valk

might be preliminarily dated to the second half of the 15th or first quarter of the 16th century. The left corner of the plate was missing. Since a Soviet time pipeline trench had been dug next to the plate, it was probably destroyed by a backhoe. In the hope to find the missing corner, the pipeline trench was re-opened in the third and fourth cross nave in the northern aisle, but the work did not give the expected result. However, a fragment (maximal measures 70 × 50 cm) of another, 15 cm thick brand-new grave stone with minuscle letters was discovered from the trench. There is not much information about the grave stones of Tartu Cathedral so far (Valk 1995, 70). Destruction of grave plates started already in 1558, when Russian soldiers were hunting for treasures from the graves (Russow 1993, 116).

Under the big grave stone the area of 2.10 × 1.30 m was studied up to the intact ground, i.e. the depth of 2.02 m from the ground level prior to the excavations (Fig. 1). Under the stone a layer of 1.40 m thick disturbed brown soil was discovered. The upper 1.05 m of it consisted mainly of debris (broken bricks, roof tiles, mortar) and the lowest 35 cm contained traces of natural soil, clay and disturbed Late Iron Age cultural layer. The brown layer contained also burials and mixed bones. Under the stone seven skeletons were revealed, two of them completely and five partly
under it. One of the two completely preserved skeletons belonged to an adult male (50+ years old) and the other one to an infant (0–2 months old). Other skeletons were destroyed by reburials or only partly excavated. Under the grave plate also some mixed bones of 7 other adults and 4 sub-adults were found.

**BURIALS**

Excavations revealed 29 skeletons and their parts preserved *in situ*. From trench 1 22 skeletons and under the grave plate 7 skeletons were unearthed. Skeleton analyses ascribed 15 skeletons to males (ages 20 to 50+), 4 to females (ages 25 to 50+) and 10 to sub-adults (ages between 0 months to 18 years). The number of mixed bones (thighbones) from the trenches suggested an approximate number of destroyed burials. During the long-time use of the cemetery and due to later earth work at least 169 adult and 66 sub-adult burials had been destroyed. The bigger number of adult bones as compared to children bones indicates their better preservation, but it is also possible that child burials were fewer in the cathedral. The big number of destroyed burials shows that the burial concentration in the church has been relatively high. This was also observed during the previous excavations (Valk 1995, 75).

Pathology signs were also noted on the bones. Most pathologies included osteoarthritis (degenerative joint disease), osteomyelitis, schmorl’s nodes, metabolic bone diseases (for example: rickets), hematologic disorders – the anemias (for example: *cribri orbitalia*), one burial had benign tumour of bone (button osteoma) and traumas of different limbs (Steinbock 1976). All this is quite common for medieval cemeteries.

In the case of five burials the position of hands could be observed: they were crossed on stomach or on belt zone. Most of the finds from the burials were coffin nails. In some graves traces of wood around the nails and under the coins were preserved. Wooden coffins connected with nails have also been found from the cemetery of St. John’s Church in Tartu (Tiirmaa 1997, 96). Three skeletons had coins as grave goods: one coin in two cases and two coins in one case. All coins from the burials were Swedish ½ øres, minted between 1666 and 1681. Most of the burials were oriented according to the Christian tradition (head towards the west or south-west), but there were also several graves with different orientations, e.g. in an opposite direction or perpendicular to others. Six burials were directed to the east (4 males, 1 female and 1 sub-adult) and two to the north (both males). Probably these burials belong to the period when the church was already deserted or in ruins: during the Livonian War (1558–1582) and the Polish (1582–1625) and the Swedish (1625–1704) reign.

In the Middle Ages not only clerks, but also profane persons, like the bishop’s vassals and members of their families were buried under the church floor. Burial inside the church was only for nobility and it depended on the financial resources. Buying burial ground to the bishopric main
Fig. 5. Fragments of Late Iron Age cultural layer in the fourth cross nave in the northern aisle of Tartu Cathedral.

In 5. Noorema rauaaja kultuuriki jäänused Tartu toomkiriku põhjalöövi IV ristlõövis. 

Photo / Foto: Heiki Valk

church must have cost much, not anyone could afford it. Burials from the 17th century might belong, judging by the ruined status of the Cathedral at that time, to the common people. It is also shown by small-value coins that served as grave goods. In the 16th–17th centuries it was a very popular tradition to put coins as donations in the graves in southern Estonia, both in rural cemeteries and urban churchyards (Valk 2001, 57–58, 76–77; Valk 2004, 105–109).

**LATE IRON AGE CULTURAL LAYER**

Under the grave stone and on both sides of the Soviet time pipeline trench also some in situ remains of prehistoric cultural layer were found upon
intact natural ground – reddish clay and yellow sand above it. The layer of dark, almost black, locally brownish and greyish sand with a high content of charcoal particles was ca. 10 cm thick (Fig. 5). The same layer has been found also during the earlier excavations inside, north and south of the cathedral (Valk 1995, 63–66, figs. 4–5; Haak 2001). The layer contained numerous fragments of prehistoric ware, including some hand-made pottery. Wheel-thrown pottery was sometimes decorated with wave and line ornamentation and a combination of both (Fig. 6). The pottery mainly dates back to period from the 11th to the first quarter of the 13th century (Tvauri 2000; Tvauri 2005, 47). Finds of Viking Age pottery, likewise in the course of previous excavations (Valk 1995, 63), were not numerous. The pottery from the Latest Iron Age layer is typical for prehistoric Tartu, especially for the downtown. Traces of the same layer and ware fragments originating from it were found also in other parts of the excavated area.

CONCLUSIONS
The excavations confirm the results of previous work and written data that the cathedral was founded on the site of a Late Iron Age settlement soon after the conquest (Valk 1995, 76): between the formation of the prehistoric cultural layer and building the church no post-conquest settlement layer has formed. Investigated graves confirm the existing picture about the character and chronology of the cemetery. The most significant finds included a well-preserved grave stone and a fragment of another stone. Coins from the second half of the 17th century show that the inside of the church was still in use long after the church was ruined and deserted.

References

2008. a suvel toimunud Tartu toomkirikus arheoloogilised uuringud, ajendatuna 2001. a alustatud dre-naažitorude paigaldustöö jätkumisest kaheksandaks ristlõövist ja põhjalõövis (jn 1). Rusu eemaldati põhja-

lõövist ning selle kabelitest, põhjatornist ja osaliselt kesklõövi kaheksandast ristlõövist.

Esimeses trassis (12 × 1 m, sügavus 0,2 m; jn 1) järgnes 50 cm paksusele rusukihiile 5–10 cm paks sõene kiht, mis sisaldas 19. saj. keraamikat. Selle all paljandis segadat pruuni nulla kiht, mis oli alunimes osas vähe muus ruksini ülemises. Traas-


Teine trassi (19 × 1 m; sügavus 0–1,5 m) kaevatu põhjalõövi (jn 1) VIII–V ristlõövi juba varem läbi kaevatud veetrassi alale. Kraavi leiti palju segatud init- ja loomaluid ning üksikuid juhuleid. Kuna keskaja paiknesid alati kirikus eri kohtades, võis tegemist olla omaege alt-

ari alusega. Üksikuid maakive, mida võivad päinened varasema kiriku vundamendist, esines ruskemagi. Põhjalõöv leiti piilarte ja seinte äärest ka kirikupõrand ja jäänused (jn 3). Kuuendas ristlõövis paljandus kolm põrandakihti, millest ülemised olid tehtud 21 × 19 × 8 cm mõõtmetega tellisplaatiidest. Alune pörand oli laotud malelaua-kujuliselt: gla-

suuritud rohelisid ja tavaliselt põrandapladiid (24,1 ×

24,1 × 7 cm) vaheldusid kordamooda. Põhjatorni alune rusu sisaldas samuti müüri- ja põrandateliti-

seid, katekive, tänapaevast prügi ning hulgaliselt looma- ja inimluid. Rusus leidus luuesemised, millest tähelepanuväärtsem oli hari.

Rusueemalduse käigus tuli põhjalõövi viieandest ristlõövis, piilari läinėkeljelt nähtavale suurimõndiga seotud maakive. Kuna keskaja paiknesid alati kirikus eri kohtades, võis tegemist olla omaege alt-

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Rusueemaldusel leiti ka keskajal hilisemaid ehitusjäännuseid. Seitsendastööd leiti selle tähta-

ve mõrgiga seotud suurtes mankavidest kaev (2,45 ×

2,60 m), mis oli täidetud nõukogudeaegse olemprü-

giga. Kuuenda ristlõövi viienda piilari juurest leiti väikestest õmRpalkidest jäätme- või lampkast (2,25

× 2,25 m), mille ülaosa sisaldas rohkesti 19. sajandi keraamikakilde (laua- ja toidunõud, lillépotid). Kol-

manda ristlõövi kabelis paljandus hooltelt ja ebakorrapäraselt laotud tellismüür (lauus 60 cm), mis oli jaganud kabeli kaheksast. Tegevust võib olla Tartu Õlikooli raamatukogu ehitamise aegse mütüriga. Sel-

le peal oli 20 cm paksune must 19. sajandi põlengki-

hti.

Põhjalõöv leiti kolmanda võlviku põhjaservast tuli ülemise ristlõöva sügavuse põrandapladiid kõr-

vat 50 cm paksuse ruksihiikalt läbi nähtavale 2,07 ×

1,36 × 0,12 m mõõtmetega paaest, inimesiõiguriga ja servades püsinpeva minuskelkirjaga hauakivi (jn 4; 3 × 2,10 m) uuriti läbi kuni puutumatse looduslikkonna pinnastaid. Paadast leiti 7 matust; mõned neist ulatusid selle alla vaid osaliselt. Kaks matust olid terved: täiskasvanud mees vanuses 50+ aastat ja vastasjänti vanuses 0–2 kuud. Haudat ulatusid looduslikku pinnastaid, mille moodustas puunakas savi ja seda kattevi kollane liiv. Looduslikki kihi peal oli kohati säilinud muinaaseust maad kul-

tuurkihti, mis sisaldas laine- ja joonornemendid savinõuikut (jn 6) ning vähesel hulgul viikingi-

ageast käikeraamikat. Hauakivi puuduvad nurr-

ka otsides kaevati nõukogudeaegne veetrassi laht-

ti põhjalõövi 3. ja 4. ristlõövi ulatuses. Kivi nur-

ka jää leidmata, kuid mõlema võlviku alal oli traasi servades säilinud u 10 cm paksust muinskihti (jn 5). Leiti ka teise, täiesti kulmata paest haua-

plaadi minuskelkirjaga katke.

Kaevamiste käigus avati 29 matust. Maitse-

tsevse vee 15 meest (vanuses 20–50+), 4 naist (vanuses 25–50+) ja 10 alaleist (vastasjänti – 18 aastat). Kahe trassi inimlased forensist vähemalt 235 lõhu-

itud matustes (169 täiskasvanut ja 66 alaleist). Pea-

misteks haualeideudeks olid kirstunaelad; mõnel pu-

hul oli niielt ümbruses ja mütüde all säilinud veidi kiristu. Surfuti õlndamast maudit vastavalt kri-

stlikule traditionsile – peaga lähed luunas. Kuu-

mutest olid vastassoonalisid, kaks peaga põhja po-

ole, ristikirguga. Peamisteks luuakse esinevad pe-

atoogiaidekse olid osteomüeliit, osteoartroos, rahhiit,

aneemia, punktosteoom; täheldati ka mitmeid para-

nenud luumurde.

Kaevamistelititskoduk 11 münti – nii keskajast (7), kui ka rootsi ajast (4). Keskaegsed mündid hõlmasid perioodi 13. saj lõpust kuni 15. saj lõpuni, rootsiaeg-

sed olid 17. saj teisest poolest (tabel 1).