Estonian Archaeology 4

Andres Tvauri

The Migration Period, Pre-Viking Age, and Viking Age in Estonia

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Contents

List of Figures 11
Abbreviations 16

Introduction
Chronology 17
About this work 19
Acknowledgements 23

Chapter 1. Historical and Natural Background
1.1. Early medieval Europe 25
1.2. Written references to Estonian territory 29
1.2.1. Icelandic sagas 29
1.2.2. Scandinavian rune stones 31
1.2.3. Latin and East Slavonic chronicles 32
1.2.4. Summary 35
1.3. Changes in natural conditions 35
1.3.1. Climate change 35
1.3.2. Neotectonic uplift 37

Chapter 2. Settlements and Households
2.1. Forts and settlement sites 39
2.1.1. The distribution and typology of forts 41

2.1.2. Migration Period forts 43
2.1.3. Pre-Viking Age and Viking Age forts 45
2.1.4. The fortifications of forts 51
2.1.5. Fort-and-settlement centres 56
2.1.6. The fort and settlement of Jur'ev in Tartu 59
2.1.7. Valgjärv lake settlement 62
2.1.8. Other settlements 63
2.1.9. Buildings 65
2.2. Household tools and everyday items 69
2.2.1. Grinding stones 69
2.2.2. Pottery 69
2.2.2.1. Iru-type pottery 70
2.2.2.2. Rõuge-type pottery 76
2.2.2.3. Rare handmade pottery 79
2.2.2.4. Slavic-type wheel-thrown earthenware 82
2.2.3. Metal vessels 86
2.2.4. Vessels made of wood or bark 87
2.2.5. Lid of a small antler box 87
2.2.6. Wooden hook 87
2.2.7. Fire-making devices 88
2.2.8. Knives 90
2.2.9. Whetstones 91
2.2.10. Combs 91
2.2.11. Tweezers 92
2.2.12. Locks and keys 93
2.2.13. Nails 93
2.3. Summary 93

Chapter 3. Main Sources of Sustenance

3.1. Land cultivation 95
3.1.1. Remains of fields 95

3.1.2. Agricultural tools 99
3.1.2.1. Hoe blades 99
3.1.2.2. Ard-shares 99
3.1.2.3. Scythe-knives and scythes 101
3.1.2.4. Sickles 102
3.1.3. Palaeobotanical data 102
3.2. Cattle raising 105
3.3. Hunting, fishing, and forest produce 108
3.3.1. Hunting and fishing tools 108
3.3.2. Bones of wild animals and fish 109
3.3.3. Forest produce 111
3.4. Summary 111

Chapter 4. Handicrafts and Early Industry

4.1. Production sites 113
4.1.1. Iron production sites 113
4.1.2. Smelting sites for non-ferrous metals 117
4.1.3. Production sites for clay pottery 118
4.1.4. Residues and unfinished pieces of bone working 118
4.2. Tools for handicrafts 119
4.2.1. Smithing tools 119
4.2.2. Equipment for non-ferrous metal working 120
4.2.3. Leatherworking tools 123
4.2.4. Axes and other woodworking tools 123
4.2.5. Textile tools 128
4.2.6. Other handicraft tools 131
4.3. Jewellery and clothing 131
4.3.1. Jewellery 132
4.3.1.1. Brooches 132
4.3.1.2. Pins 138
4.3.1.3. Small bronze pins 144

4.3.1.4. Breast chains and components thereof 145
4.3.1.5. Beads 147
4.3.1.6. Pendants 150
4.3.1.7. Neck rings 156
4.3.1.8. Bracelets 161
4.3.1.9. Finger rings 164
4.3.2. Belts and components thereof 166
4.3.2.1. Buckles 167
4.3.2.2. Belt distributors, loops, ends, and fastening plates 168
4.3.2.3. Mounts 169
4.3.2.4. Chatelaine chains 172
4.3.3. Knife sheaths 172
4.3.4. Agraffes 173
4.3.5. Textile finds and clothing 174
4.3.6. Development and regional features in jewellery fashion 177
4.4. Weapons and riding gear 180
4.4.1. Weapons 180
4.4.1.1. Swords and sword components 181
4.4.1.2. Seaxes 186
4.4.1.3. Scabbard fittings 188
4.4.1.4. Spearheads 189
4.4.1.5. Arrowheads 197
4.4.1.6. Shield parts 200
4.4.2. Riding gear 203
4.4.2.1. Bridle parts 203
4.4.2.2. Stirrups 205
4.4.2.3. Spurs 205
4.4.3. Development of weaponry 206
4.5. Production volumes and organization 209
4.6. Summary 214

Chapter 5. Trade and Exchange

5.1. Trade space of northern Europe 219
5.2. Economic hoards 220
5.2.1. Concept of 'hoard' and its varieties 220
5.2.2. Economic hoards consisting of jewellery or jewellery and weapons 222
5.2.3. Distribution and find context of coin hoards 223
5.2.4. Composition of coin hoards 224
5.2.5. Use of silver as currency 228
5.3. Goods 231
5.3.1. Domestic trade 231
5.3.2. Imported goods 231
5.3.3. Exported goods 232
5.4. Trading 234
5.4.1. Traders 234
5.4.2. Trade relations 236
5.4.3. Places and times of trading 238
5.5. Means of transport and roads 239
5.5.1. Boat and ship remains 239
5.5.2. Harbours and landing places 241
5.5.3. Roads and traffic on inland bodies of water 243
5.5.4. Draught animals and implements 246
5.6. Summary 247

Chapter 6. Burial Practices and Religion

6.1. Graves 251
6.1.1. Re-use of *tarand* and stone-cist graves 254
6.1.2. Cairn graves and stone grave-fields 256
6.1.3. Cremation burials surrounded with a stone circle 261
6.1.4. Underground cremation burials 264
6.1.5. Cremation barrows 269

6.1.6. Cremation sites 274
6.1.7. Boat burials 275
6.1.8. Mortuary houses 277
6.1.9. Underground inhumation burials 280
6.1.10. Number and distribution of graves 284
6.1.11. Animal bones in graves 285
6.1.12. Grave goods and other objects in graves 288
6.2. Votive deposits 291
6.2.1. Votive deposits of weapons and tools 292
6.2.2. Votive deposits of jewellery 294
6.2.3. Motives of depositing and sacrifice 296
6.3. Religious objects 298
6.4. Religious beliefs 299
6.5. Summary 302

Chapter 7. Land and People

7.1. Population size 305
7.2. Settlement units 312
7.3. Social stratification 315
7.4. Lifestyle of the elite 317
7.5. Centres and regions of power 318
7.6. Regional differences within Estonia 321
7.7. Summary 325

General Conclusions 327

References

Abbreviations 331
Manuscripts 331
Published sources 333

Index of Archaeological Sites 377

List of Figures

1. Division of Estonia into counties in the late 19th century. 20
2. Distribution of Migration Period sites in Estonia. 21
3. Distribution of Pre-Viking Age sites in Estonia. 22
4. Distribution of Viking Age sites in Estonia. 23
5. Neighbouring areas of Estonia in the second half of the first millennium AD. 26
6. Rune stone in Ängby, Uppland, Sweden. 31
7. Distribution of forts in Estonia in the second half of the first millennium AD. 40
8. The fort at Rõuge. 41
9. The fort at Vooru. 42
10. Aerial view of the fort at Kuusalu. 43
11. Radiocarbon dates indicating Migration Period activity at forts. 44
12. Section and excavation plan of the rampart of the fort at Kalana. 45
13. Plan of the fort at Iru. 46
14. Radiocarbon dates indicating Pre-Viking and Viking Age activity at forts. 47
15. General excavation plan of the fort at Rõuge. 49
16. Plan of the fort at Tõrva. 50
17. Limestone rampart with log raft foundation at the fort at Kuusalu. 53
18. Limestone wall on the outer side of the rampart at fort II at Pada. 54
19. Excavation plan of the middle rampart at the fort at Iru, showing two gateways. 55
20. Fort-and-settlement complex at Pada. 56
21. Radiocarbon dates from the settlement sites of the second half of the first millennium AD. 58
22. Location of the prehistoric fort and settlement site in Tartu. 60
23. Finds of Rus origin from the Jur'ev-era settlement site in Tartu. 61
24. Fragment of a bronze axe-shaped amulet from the Jur'ev-era settlement site in Tartu. 61
25. Location of the settlement site and bridge in Lake Valgjärv. 62
26. Distribution of the settlement sites without adjacent forts in Estonia in the second half of the first millennium AD. 64
27. Outline plan of a building at the fort-settlement at Pada. 65
28. Reconstruction of an Iron Age dwelling house near the fort at Rõuge. 66
29. Remains of a *keris* stove at the fort-settlement at Pada. 67
30. A grinding slab and a handstone from the fort-settlement at Iru. 69
31. Reconstructions of fine ware clay vessels from the fort at Iru. 71
32. Potsherd of Iru AIa type from the stone grave-field at Proosa. 72

33. Clay vessel of AIIIc type from the fort at Iru. 73
34. Reconstructions of coarse ware clay vessels from the fort at Iru. 75
35. Reconstructions of Rõuge-type fine ware and coarse ware clay vessels from various sites in south-eastern Estonia. 77
36. Rõuge-type fine ware pot from the fort at Otepää. 77
37. Rõuge-type coarse ware pot from the fort at Otepää. 78
38. Burial urn from the barrow cemetery at Loosi. 79
39. Potsherds with pinched decoration. 79
40. Distribution of pottery with pinched decoration in Estonia. 80
41. Potsherd with nail incisions from settlement site I at Verilaske. 81
42. Potsherd decorated with notches from the fort-settlement at Unipiha. 81
43. Slavic-type wheel-thrown pottery of the Pskov group 1. 82
44. Slavic-type wheel-thrown pot of the Pskov group 1 from the inhumation cemetery at Raatvere. 83
45. Distribution of groups 1 and 2 of the Slavic-type wheel-thrown pottery in Estonia. 84
46. Slavic-type wheel-thrown pottery of the Pskov group 2. 85
47. Fragments of a silver vessel of Eastern Roman origin from Varnja. 86
48. Wooden hook from the Valgjärv lake settlement. 88
49. Fire-striking stone from the barrow cemetery at Lindora. 88
50. Fire-steels. 89
51. Knives and a sheet bronze band for fastening the handle of a knife. 90
52. Whetstones. 91
53. Combs and a comb case. 92
54. Tweezers. 92
55. Rim lock key from the fort-settlement at Rõuge. 93
56. Cairn fields at Ilmandu. 96
57. Radiocarbon dates from the field remains of the second half of the first millennium AD. 97
58. Field remains at Tandemägi, Võhma. 98
59. Hoe or mattock blades. 99
60. Iron ard-share from the fort in Tartu. 100
61. Scythe-knives and a scythe. 101
62. Sickles. 102
63. Pollen-analysed sites relevant to the present study. 103
64. Percentages of bone fragments of the main domestic animals at selected forts and settlement sites. 106
65. Fish hooks and a troll from the fort and the fort-settlement at Rõuge. 109
66. Radiocarbon dates from Viking Age iron smelting sites. 114
67. Iron smelting furnaces at Raatvere. 115
68. The iron smelting site at Tõdva. 116
69. Defective bronze pendants in Borre style from the fort-settlement in Tartu. 117
70. Potsherds from the fort-settlement at Iru, broken and smelted together, presumably during the pottery firing. 118
71. Bone skate from the fort-settlement at Pada. 119
72. Smithing tools. 120
73. Clay mould halves from the barrow cemetery at Loosi. 121
74. Limestone mould halves from forts. 121
75. Crucibles. 122
76. Casting ladle from barrow cemetery III at Arniko. 122
77. Jeweller's hammer from the fort at Rõuge. 123

78. Leatherworking tools. 123
79. Socketed axe from the Kirimäe cremation burial. 124
80. Narrow-bladed shaft-hole axes. 124
81. Axes of Petersen's type C from graves. 125
82. Late Viking Age axes of various types. 126
83. Drawshave from the Kirimäe cremation burial. 127
84. Hollowing chisels from graves. 128
85. Spindle whorls. 129
86. Fragment of a stone spindle whorl from the settlement site at Ala-Pika. 129
87. Presumably an unfinished stone spindle whorl from the fort-settlement at Rõuge. 130
88. Iron sewing needle from the fort-settlement at Rõuge. 130
89. Clay loom weight from the fort-settlement at Pada. 130
90. Presumed weaving swords from the fort-settlement at Pada. 131
91. Bone awl for weaving bast items from the fort-settlement at Rõuge. 131
92. Crossbow fibulae of different types. 132
93. Various bow fibulae atypical of Estonia. 133
94. Symmetrical bronze fibula from the fort at Iru. 134
95. Penannular brooches with rolled terminals. 135
96. Penannular brooches of different types. 136
97. Penannular brooches atypical of Estonia. 137
98. Various types of Migration Period decorative pins. 138
99. Various types of Pre-Viking and Viking Age decorative pins. 139
100. Ring-headed bronze pins. 140
101. Ring-headed bronze pin with a chain of pendants, stray find from Püssi. 141
102. Bronze pins with knobbed cross-heads from graves. 142
103. Cross-headed bronze pin with a chain-holder, stray find from Savastvere. 143
104. Bronze breast chain combined with double cross-headed pins from the inhumation cemetery at Raatvere. 143
105. Mushroom-headed bronze pin from a burial site at Kõruse. 144
106. Bone pins from the fort-settlement at Pada. 144
107. Small spiral-headed bronze pins. 144
108. The Öötla find. 145
109. Bronze breast chain combined with double cross-headed pins from the inhumation cemetery at Lahepera. 146
110. Chain-holders. 147
111. Glass and tin beads. 148
112. Silver lunula pendant and bronze spirals from barrow cemetery II at Rõsna-Saare. 149
113. Bronze wire ring with a spiral from the cairn grave at Lihula. 150
114. Pre-Viking and Viking Age pendants of various types. 151
115. Silver necklace of coin pendants from the Paunküla IA hoard. 153
116. The Essu gold hoard. 154
117. Bronze rumbler bell from the inhumation cemetery at Lahepera. 154
118. Comb- and bird-shaped pendants. 155
119. Tooth and claw pendants. 156
120. Pendant made of a beaver astragalus from the fort at Otepää. 156
121. Silver neck rings from Migration Period hoards. 157
122. Silver neck rings from the Hummuli hoard. 158

123. Bronze neck ring with trapezoid pendants from Tähtvere, Tartu. 158
124. Silver neck ring from the Loosi hoard. 159
125. Bronze neck ring, a stray find from Savastvere. 160
126. Reconstruction of a composite bronze neck ring from the grave-field at Käku. 160
127. Migration Period bracelets of different types. 161
128. Pre-Viking and Viking Age bracelets of different types. 162
129. Spiral bracelets. 163
130. Finger rings. 165
131. Double spiral finger rings. 165
132. Bronze buckle and other belt fittings from the Paali II hoard. 166
133. Remains of a belt with a Gotland-Baltic type buckle and domed mounts from the inhumation cemetery at Lahepera. 166
134. Remains of a so-called Novgorod-type belt from the inhumation cemetery at Raatvere. 166
135. Buckles of various types from Migration Period and Pre-Viking Age graves. 167
136. Silver-coated bronze buckle from the stone grave-field at Proosa. 168
137. Two-part pentagonal bronze buckle from the burial site at Kõrveküla. 168
138. Belt distributor and belt ends from graves. 169
139. Various sheet bronze mounts from Migration Period and Pre-Viking Age graves. 170
140. Gilded bronze and silver mounts from the stone grave-field at Proosa. 170
141. Gilded silver mount from the stone grave at Ojaveski. 171
142. Bronze belt mounts of Permic origin from graves. 171
143. Iron chatelaine with a fire-steel from the inhumation cemetery at Lahepera. 172
144. Knife and sheet bronze edging of a knife sheath from stone circle III at Piila. 172
145. Knife sheath and a knife from the inhumation cemetery at Raatvere. 173
146. Agraffe buttons from the stone grave-field at Proosa. 173
147. Agraffes and agraffe buttons from graves. 174
148. Bronze spiral intertwining on the edge of a wrap from the inhumation cemetery at Raatvere. 175
149. Tin plaques from the Pühaste hoard. 176
150. Swords. 182
151. Sword with V-type hilt and an inlaid iron inscription, a stray find from Saaremaa. 183
152. Characters on the blade of the sword found as a stray find from Vatku. 183
153. Migration Period sword pommels from graves. 184
154. Hilt types of Pre-Viking and Viking Age swords. 185
155. Seaxes of various types. 187
156. Sheathed seaxe from the Laadjala inhumation burial. 188
157. Scabbard chapes. 188
158. Migration Period and Pre-Viking Age socketed spearheads of different types. 190
159. Barbed spearhead with an elongated socket from the cairn grave at Lihula. 192
160. Short barbed spearhead from Simuna. 192
161. Angon from the grave at Sõrve, Harjumaa. 193
162. Pre-Viking and Viking Age tanged spearheads. 193
163. Viking Age socketed spearheads of different types. 195
164. Arrowheads of various types. 199
165. Shield bosses of different types from graves. 201
166. Shield handgrips from graves. 202
167. Metal bridle fittings from Varetemägi at Ehmja. 203
168. Iron bridle bits from graves. 204

169. Iron bridle bit decorated in the Jellinge style from grave III at Keskvere. 204
170. Fragment of a bridle strap from the inhumation cemetery at Lahepera. 205
171. Fragment of an iron stirrup, a stray find from Saaremaa. 205
172. Spurs. 205
173. Distribution areas of the production of blacksmiths who made M-type spearheads in Estonia and neighbouring areas. 210
174. Main trade centres and routes in northern Europe and central Asia in ca 925. 218
175. Distribution of hoards in Estonia in ca 450–1050 AD. 221
176. Temporal distribution of Viking Age coin hoards in Estonia. 223
177. Hoard from the fort at Rõuge. 224
178. The Kehra hoard. 225
179. 9th–11th-century silver coins from various hoards. 226
180. Spiral silver ingot from the Ääsmäe hoard. 227
181. Weights found at the bottom of Lake Võrtsjärv at Vaibla. 228
182. A bronze cubo-octahedral weight and bronze dog figurines from graves. 229
183. Bronze ingot from the fort at Rõuge. 230
184. Reconstruction of boat I from Salme. 240
185. Boat rivets from stone grave I at Rae. 240
186. The main land routes and the Emajõgi River waterway in Estonia at the end of the Iron Age. 244
187. Distribution of Migration Period burial sites in Estonia. 250
188. Distribution of Pre-Viking Age burial sites in Estonia. 251
189. Distribution of Viking Age burial sites in Estonia. 252
190. Radiocarbon dates from the burial sites of the second half of the first millennium AD. 253
191. Cairn grave at Lihula. 257
192. Stone grave-field III at Lehmja-Loo. 259
193. Grave-field with stone circles at Käku. 262
194. Grave-field with stone circles at Piila. 263
195. Grave goods from stone circle IV at Piila. 264
196. Cremation cemetery at Linnamäe. 266
197. A richly furnished cremation burial in grave III at Keskvere. 267
198. Barrow 8 at Rõsna-Saare I during excavations. 268
199. Distribution of cremation-barrow cemeteries in Estonia and the western part of the Pskov region. 269
200. Barrow 9 at barrow cemetery I at Laossina. 270
201. Remains of burial boat I at Salme. 275
202. Cattle-bone and whalebone gaming pieces from boat burial I at Salme. 276
203. Bone die from boat burial I at Salme. 276
204. Remains of the burnt wooden structure at the mortuary site of Paju. 278
205. Remains of a probable mortuary house at Lepna. 279
206. Viking Age inhumation burial in the early *tarand* grave at Iila. 280
207. Plan of the cemetery at Raatvere. 282
208. Inhumation burial VIII at Raatvere. 283
209. Metal fittings of drinking horns from graves. 290
210. Spearheads of the Rikassaare hoard. 292
211. The Kardla hoard. 294
212. The Viira hoard. 295
213. Settlement site at Ala-Pika. 313
214. Distinct cultural areas in Estonia during the second half of the first millennium AD. 322

Abbreviations

The text includes the following abbreviations for the archaeological collections and archives of the respective institutions:

AI Tallinna Ülikooli ajaloo instituut / Institute of History at Tallinn University;
AM Eesti Ajaloomuuseum / Estonian History Museum;
DM Rīgas vēstures un kuģniecības muzejs / Museum of the History of Riga and Navigation;
RM SA Virumaa Muuseumid / Museums of Virumaa;
SM Saaremaa Muuseum / Saaremaa Museum;
TLM Tallinna Linnamuuseum / Tallinn City Museum;
TM Tartu Linnamuuseum / Tartu City Museum;
TÜ Tartu Ülikooli ajaloo ja arheoloogia instituut / Institute of History and Archaeology at the University of Tartu;
VaM Valga Muuseum / Valga Museum;
VM Viljandi Muuseum / Viljandi Museum;
ÕES Õpetatud Eesti Selts / Learned Estonian Society (this archaeological collection has been incorporated into the archaeological collection of TÜ).

Introduction

The objective of this monograph is to analyse the society, economy, settlement, and culture of the territory of present-day Estonia in the period of ca AD 450–1050. This period is known in the Estonian archaeological chronology as the Migration Period, the Pre-Viking Age, and the Viking Age. This was an era of rapid change, by the end of which traditional Estonian peasant culture as it is known until the 19th century had developed.

Whereas in Western Europe written sources from the second half of the first millennium AD herald the arrival of the Middle Ages, there is an almost complete absence of written information about the prevailing conditions and events that took place in the area of present-day Estonia. There are only remains of the farms and fortresses of that time beneath the earth, as well as cemeteries, overgrown field baulks and clearance cairns, and the large amount of excavated ancient objects or fragments thereof. Many aspects of prehistoric life cannot be researched because the source material is not extant and there is no hope of finding it. Moreover, many phenomena of human life do not generate archaeological source material. Thus our overall understanding of the Estonian Middle Iron Age and the Viking Age is inevitably fragmentary and superficial.

Chronology

The topic of this research is thus roughly the second half of the first millennium AD. I will use, though in a slightly modified shape, the periodization and period names that have become consolidated in Estonian archaeology over the last 15 years (Lang & Kriiska 2001):

(1) Migration Period (450–550);
(2) Pre-Viking Age (550–800);
(3) Viking Age (800–1050).

The Migration Period and Pre-Viking Age are also collectively referred to as the Middle Iron Age, while the Viking Age and the subsequent Final Iron Age are often combined under the title of Late Iron Age. In this work, the Middle Iron Age and Viking Age will be treated as one, because the distinction between the Pre-Viking Age and the Viking Age is actually weak in the archaeological record, and its present position is even disputable (see below). The period examined in this work is preceded in the Estonian archaeological chronology by the Roman Iron Age (50–450), and followed by the last period of prehistory, the Final Iron Age (1050–1227/1250).

The second half of the first millennium AD is historical time in a large part of Europe (see Chapter 1). Hence even in northern Europe

the archaeological periodization of that era is not based on object typology, but on historical events. This is illustrated even by the names of periods or the fact that historical events serve as the threshold dates for periods. Although we proceed preferentially from the changes observed in Estonian archaeological sites and artefacts, historical events in Europe and periodizations used in neighbouring territories are also considered — all the more so because the extreme scarcity of grave finds that can be dated makes it quite complicated to determine chronological periods in the second half of the first millennium in Estonia (Lang & Kriiska 2001, 102). The Iron Age chronology used in Estonia mainly corresponds to that used in Scandinavian countries and Finland.

The Migration Period is distinguished on the basis of the periodization used in European history and neighbouring countries. True, in neighbouring countries this period is usually dated to half a century earlier than in Estonia. In Estonia the interval between the Roman Iron Age and the Migration Period is set to the middle of the 5th century primarily because burial in *tarand* graves or the construction of *tarands* ended during that century, and burial in other types of graves began. However, there are also other phenomena in the archaeological record denoting the beginning of the Migration Period:

(1) the appearance of weapons in burials as grave goods;

(2) the broader distribution of hoards;

(3) the construction of hill forts;

(4) the disappearance from use of striated and textile-impressed pottery.

The beginning of the Pre-Viking Age has usually been situated around the year 600 in Estonian archaeological chronology (see Lang 1992a, 47; Ligi 1995, 234; Lang & Kriiska 2001, 102). In this work I shift this date to half a century earlier, to AD 550, because this appears to be when the graves used in the Migration Period become empty of finds. While finds that can be dated to the first half of the 6th century are relatively numerous in Estonia, the second half of the century seems to be almost empty in this respect, and this poverty of finds extends on to the early 7th century. The year 550 also serves as the borderline between the Migration and Vendel Periods in Sweden and between the Early and Late Germanic Iron Ages in Denmark.

The beginning of the Viking Age in northern Europe is traditionally dated to the year 800. This date is primarily based on written sources, which have provided the first data on military campaigns of Scandinavians. Solely on the basis of archaeological phenomena (including the appearance of Viking trading centres), one could shift the beginning of the Viking Age to a slightly earlier date, i.e. about 760 (Ambrosiani & Clarke 1998). In the Estonian archaeological record, the beginning of the Viking Age, i.e. the 9th century, is relatively poorly visible, because not many burials, hoards, and stray finds are known from that time. The 10th century is represented by many more sites and artefacts, as it was during that century that inhumation burials appeared, and hoards containing Arab silver coins became more numerous.

The Viking Age is often considered to end in the year 1066, when the army of Duke Guillaume of Normandy (William the Conqueror, King William I of England) defeated the Anglo-Saxon army in the Battle of Hastings, and King Harald III (Hardrada) of Norway organized the last Viking raid on England. This view is clearly too narrowly Britain-centred: actually, the changes marking the end of the Viking Age were more extensive and fundamental, and took place even earlier. Within the second half of the 10th century, the existing Viking trading system collapsed and the Scandinavian urban centres (e.g. Hedeby, Birka, and Staraja Ladoga) were abandoned or lost their former importance. New centres arose

in the east; from the point of view of the history of the Estonian territory, the rise of the cities of Novgorod and Pskov in the mid-10th century was significant. The acceptance of Christianity in Denmark in the late 10th century, and the unification of Sweden under the rule of one king and the Swedish conversion to Christianity in about the year 1000 were also significant events. Likewise, the spread of Christianity in Rus is worth mentioning.

The end of the Viking Age is clear in the Estonian archaeological record, as it is expressed in:

(1) the abandonment of centres consisting of a fort and a settlement;

(2) the establishment of new forts and the formation of village settlements;

(3) the establishment of new burial places;

(4) the rise of larger inhumation cemeteries;

(5) the appearance of numerous grave goods in graves;

(6) the appearance of wheel-thrown pottery;

(7) the replacement of Arab coins by European coins in hoards, and the increase in the volume of coin hoards;

(8) changes in agriculture, including the beginning of the cultivation of winter rye (*Secale cereale*).

The processes and changes that heralded the end of the Viking Age and the beginning of the Final Iron Age embraced in fact a longer span of time, roughly the period of 1000–1060. Also, the material culture of the first half of the 11th century differs considerably from that of the 10th century, and it was in that time that many ornaments and weapons that were characteristic of the Final Iron Age were introduced. Several of the above-mentioned phenomena are not only inherent to Estonia, but can also be observed in other Baltic Sea countries or in the whole of northern Europe. As a local change, one can add to the above list the destruction of the fort and *posad* of Tartu in about 1060, which had been controlled by the Grand Prince of Kiev since 1030 (Tvauri 2001, 225ff.).

About this work

This volume is one of a planned six-part series entitled *Estonian Archaeology*. The first part of the series, which examines the history of archaeological research, was published in 2006 as a collection of articles (*Archaeological Research in Estonia 1865–2005*). The third part, by Valter Lang, covers the Bronze and Early Iron Ages, and was published in 2007 (Lang 2007c). The volumes of the series will presumably stand side-by-side on bookshelves, and for that reason I will attempt to repeat as little as possible of what has been written in previous books. This work therefore devotes little attention to the historiography of the Middle Iron Age and Viking Age, because the first volume of the series has provided a thorough overview of that topic (Tvauri 2006; Mäesalu & Valk 2006). In the interest of better readability, I have followed the structure of volume three (Lang 2007c) in the main section. The Estonian version of this book is available at the web site of the Chair of Archaeology of the University of Tartu (www.arheo.ut.ee).

Since this book is above all intended for archaeologists and historians, the main emphasis is on specific research results. Readers will most likely open this volume in order to learn more about burial practices in Estonia during a particular era, for instance, or to find out whether or not a specific type of object was in use here, how it is dated, etc. Presumably many will read this work in order to ascertain how and to what level Estonian archaeology has developed as a discipline over the decades that have passed since the publication of the last general academic work on Estonian prehistory (Jaanits *et al.* 1982), or since the last academic synthesis of the topic in a foreign language (Moora 1932). Taking all of this into consideration, I will attempt to answer the following questions:

(1) What is the source material on which archaeologists base their conclusions about the period

Fig. 1. *Division of Estonia into counties in the late 19th century.*

from AD 450–1050 in Estonia? What sites and artefacts do we know about, and which have we investigated?

(2) What can we infer from the above concerning the economy, settlement, social organization, and culture in the territory of Estonia? What differences were there between regions, and what changes can one observe in the archaeological record over the period under examination?

(3) What contacts existed between inhabitants of Estonia and people from neighbouring regions, and what was the position of the region under investigation in the broader economic and cultural context of northern and eastern Europe?

Finding answers to the first set of questions primarily requires the perseverance to gather the data available in our literature, academic archives, and archaeological collections, and to prepare a systematic synopsis thereof. It is considerably more difficult to answer the other two sets of questions, as here we encounter various source-related, methodological, and interpretative problems. In general, my work is based on the achievements of all of the researchers who have investigated the Estonian Iron Age over the last ca 150 years. I have written this book using academic publications and excavation reports in manuscript form, but I have also examined almost all of the find material from that period in Estonian archaeological collections. It must be noted, however, that for obvious reasons I have not been able to include the most recent discoveries, made after the manuscript had been completed.

Estonian archaeology represents the continental European archaeological tradition in the sense that researchers do not see or portray themselves as mere bystanders. Estonians do not see themselves as the descendants of late migrants, as do several neighbouring peoples: we are investigating the history of our own country and people, our own ancestors. I will, nevertheless, attempt to avoid questions of ethnogenesis in this study, as I do not believe that the development of a nation can be investigated using archaeological methods. There are all too many examples of how

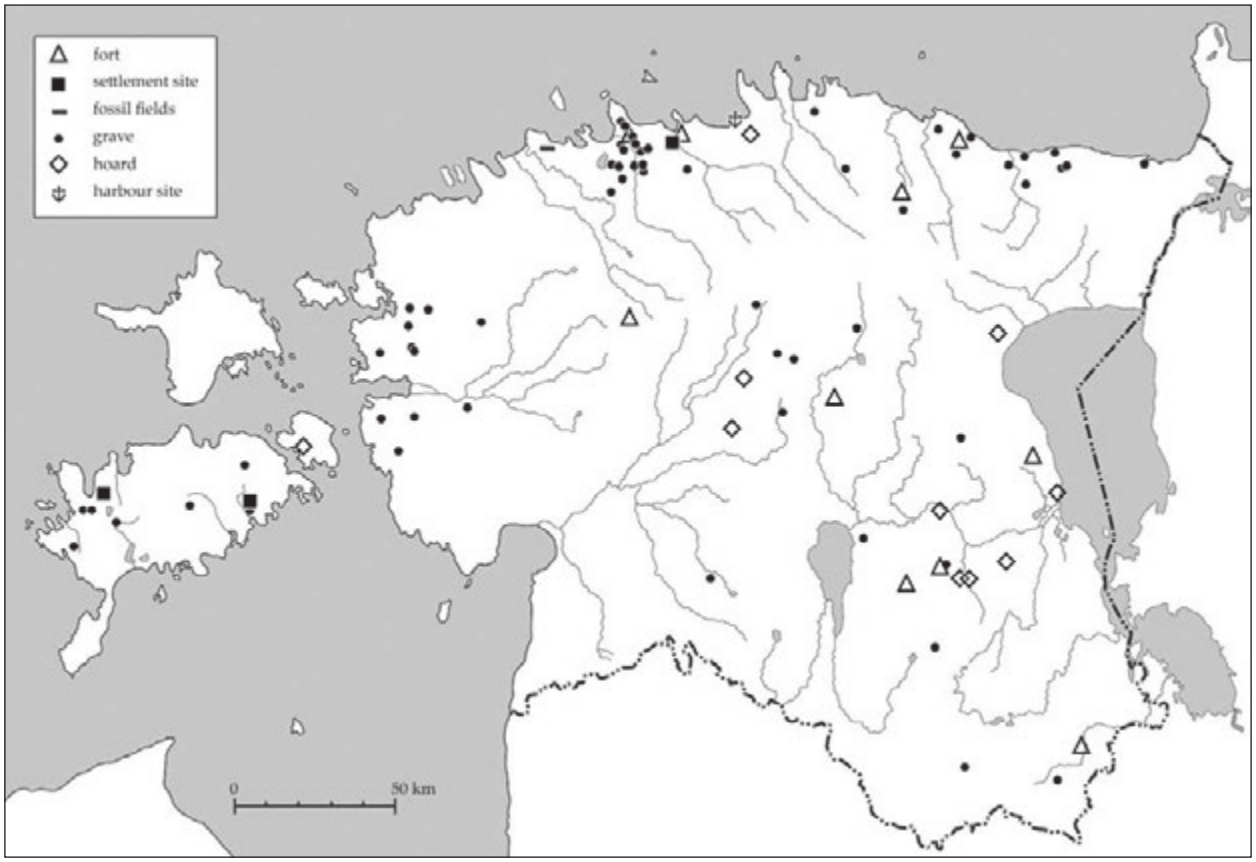

Fig. 2. *Distribution of Migration Period sites in Estonia.*

researchers have, based on one and the same source material, combined the same artefacts and sites with completely different, often invented, 'ethnoses'. This study will not seek to find Estonians' 'roots'. I am convinced that the contemporary Estonian national identity is a product of the events and ideologies of the 18th–20th centuries. At the same time, there is no doubt that the people who inhabited Estonia in the second half of the first millennium are the direct ancestors of modern-day Estonians.

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). The development of distinct cultural regions can be observed in the archaeological material throughout the second half of the first millennium, and at least in northern and western Estonia these regions clearly match the later historical counties. Also, the historical counties of Estonia have developed due to natural and landscape features, in contrast to the present territorial division of the Republic of Estonia, which only arose in the Soviet period as a result of administrative and political considerations.

The distribution maps used in this volume differ from those I have published before (Kriiska & Tvauri 2002, 175; 2007, 173). In order to observe the changes in and formation of settlement patterns, I prepared for this volume separate distribution maps concerning the Migration Period, the Pre-Viking Age, and the Viking Age (Figs. 2–4).

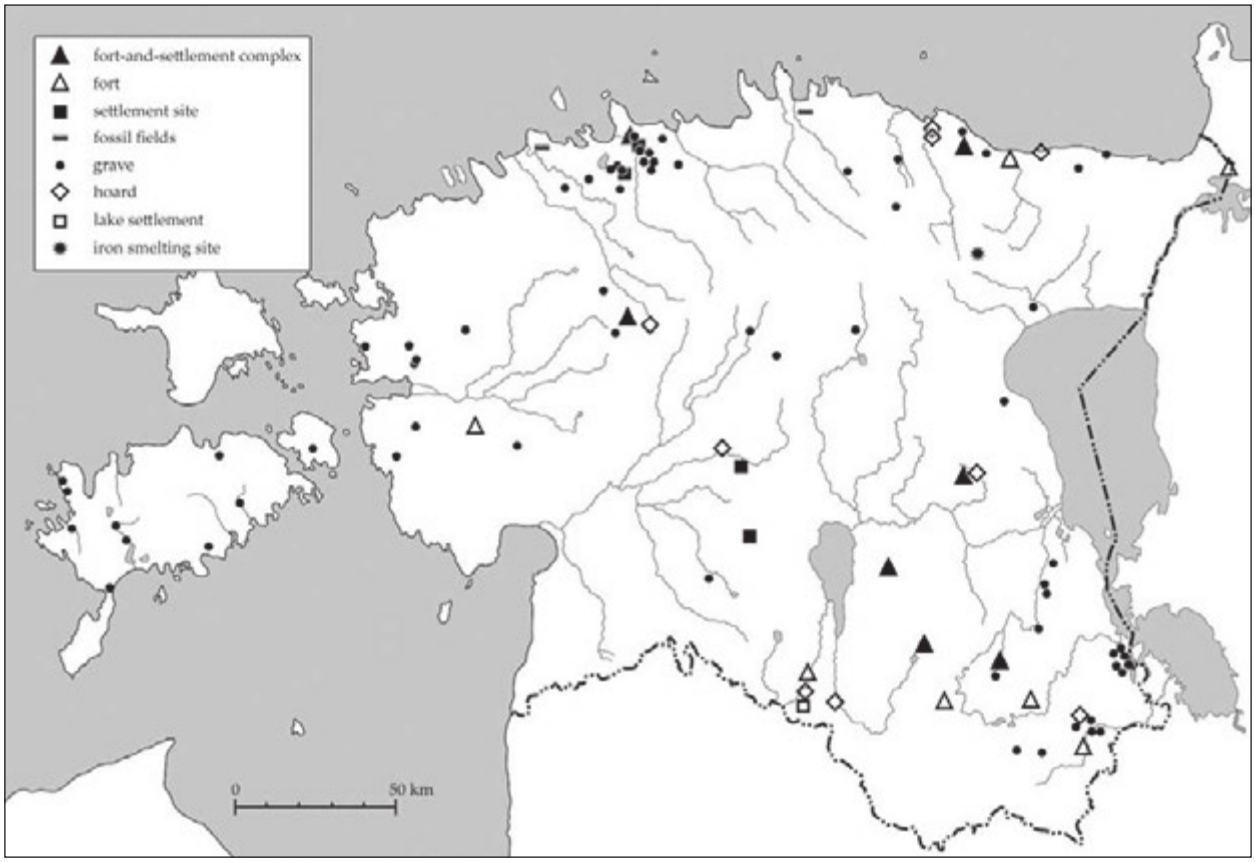

Fig. 3. *Distribution of Pre-Viking Age sites in Estonia.*

I only included sites that could be dated to these periods based either on the finds or radiocarbon dates obtained from the site. Thus forts and graves dated to the second half of the first millennium AD merely on the basis of their appearance, and settlement sites where the fragments of clay vessels do not permit a more precise dating than the period from the 5th to 11th centuries, have not been included in the maps. When several weapons have been obtained as stray finds, especially when they form a set (e.g. a sword or seaxe with one or more spearhead), or when they have been burnt, these have been considered to be part of a burial. The concept of 'stray find' in this book embraces both individual items found separately from an archaeological context and finds whose find context is for some reasons unknown.

It must be kept in mind that the overall picture of the distribution maps is strongly influenced by the conditions for the preservation and discovery of sites in different regions, and to what extent and where monuments have been sought. The archaeologically best researched areas include the surroundings of Tallinn and Tartu, Läänemaa, northern Tartumaa, Setumaa, and the surroundings of Rapla. Archaeological sites are clearly too little known or, in other words, have been insufficiently sought for in Järvamaa and the southern parts of Viljandimaa and Läänemaa, as well as on the island of Saaremaa, where Iron Age settlements are presently almost completely unknown.

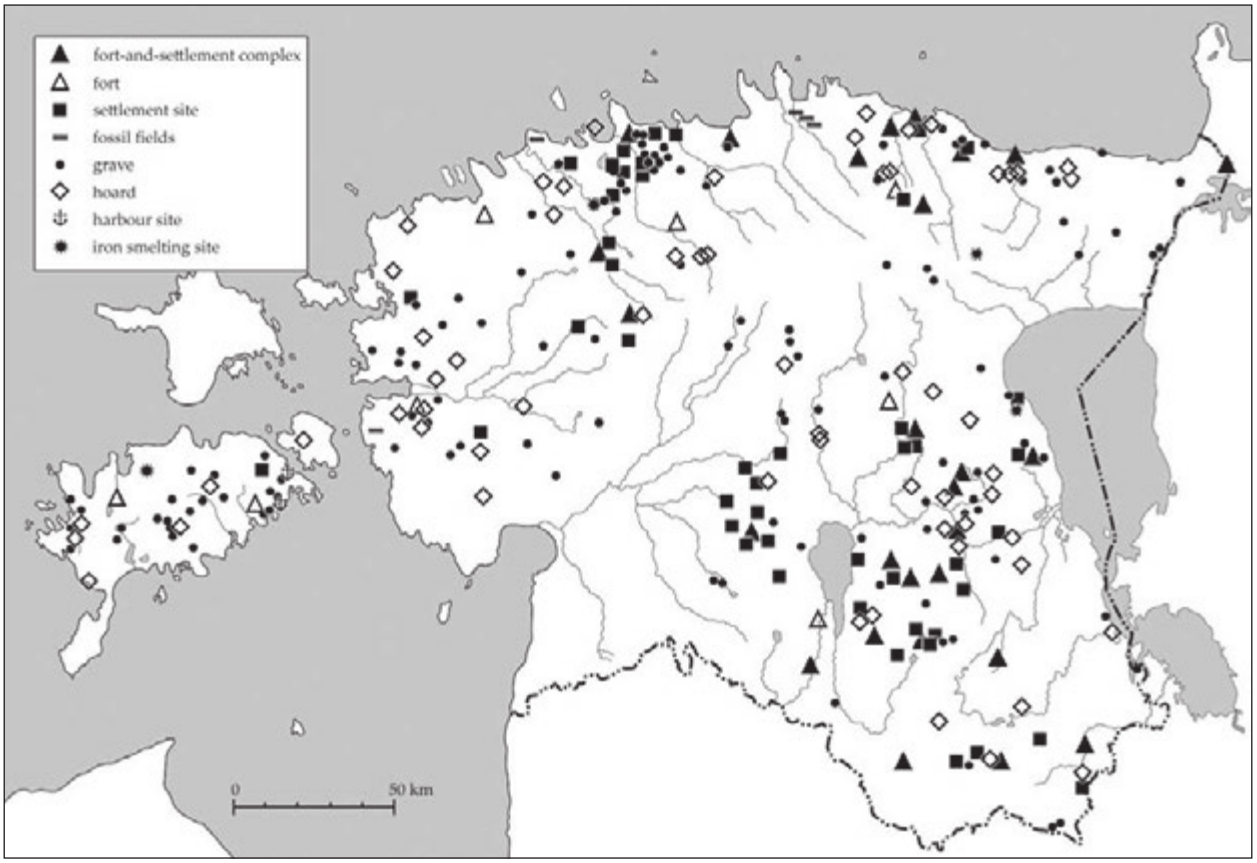

Fig. 4. *Distribution of Viking Age sites in Estonia.*

Slavonic names in this book have been transliterated according to the United Nations Romanization system for geographical names from 1987 (see, e.g., Erelt 1999, 19–21).

Acknowledgements

Firstly I would like to thank Valter Lang, Margot Laneman, and Kristel Külljastinen, who have directly contributed to the completion of this book. I am very grateful to Mare Aun, Arvi Haak, Tõnno Jonuks, Irita Kallis, Mauri Kiudsoo, Marge Konsa, Ants Kraut, Ivar Leimus, Heidi Luik, Priit Lätti, Liina Maldre, Mati Mandel, Kadri Nigulas, Ester Oras, Mirja Ots, Krista Sarv, Anti Selart, Ülle Tamla, and Heiki Valk for advice and assistance in gathering the source material, preparing the illustrations, or completing the manuscript. Valuable comments on the text by Audronė Bliujienė and Sirkku Pihlman have saved me from many errors. I am also indebted to Alexander Harding, Enn Veldi, and Mara Woods, who helped to translate the book into English.

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Chapter 1

Historical and Natural Background

Estonia is situated on the north-eastern periphery of Europe. For Christian Europe in the second half of the first millennium, this area was unknown territory to which the authors of the time only made indirect and non-specific references; it goes without saying that there are no local written sources. However, the area was closely connected with the broader political and commercial system through the mutual relations between centre and periphery, and developments in Estonia were almost synchronous with developments in the centre. Thus, in order to understand the Estonian archaeological sources, they must be compared with the broader context of European history.

In European history, the period in question was overshadowed by the fall of the Roman Empire. The strong influence of Roman culture was noticeable beyond the boundaries of the former empire during the entire Migration Period and long after. The Roman legacy lives on as the basis of Western cultural tradition. A second significant process, especially for Estonia, was the rise of the Scandinavian region, Scandinavians' active role beyond Scandinavia, and the formation and burgeoning of the distinctive Nordic non-material and material culture in the 7th–10th centuries. The third important historical process was the spread of Christianity to Scandinavia and Rus in the 10th–11th centuries, which completely changed the existing cultural and political order.

In the second half of the first millennium, Estonia was one of the most northerly areas in the world where the main source of sustenance was agriculture. Climatic conditions and climate change had an enormous influence on the life and livelihood of the people who lived here. Thus I will below offer brief background information about what is known of the climate and overall natural conditions in the period under consideration.

1.1. Early medieval Europe

The heyday of the Roman Empire ended in the 2nd century AD, when the territory of Rome began to decrease due to attacks from neighbouring countries and barbarian tribes. In 395 internal problems within the empire led to its division into two parts, the Western Roman Empire and the Eastern Roman Empire. The massive invasion of the territory of the Roman Empire by Germanic and other tribes in the 5th century, sometimes referred to as the 'great migration of peoples', dealt the death blow to Rome.

The Migration Period led to an era in European history that is commonly referred to as the Middle Ages, and is characterized by new centres and

Fig. 5. *Neighbouring areas of Estonia in the second half of the first millennium AD.*

territorial units with a new religious, intellectual, and cultural background. This period is tentatively considered to have begun in 476, when the last Western Roman Emperor, Romulus Augustulus, was deposed. In this troubled and violent period, trading contacts were interrupted, large cities became empty of inhabitants and fell into ruin, public buildings from amphitheatres to aqueducts fell into disrepair, and Roman mines were abandoned. Several tribes, mainly Germanic, arrived in the territory of the former empire, reshaping the entire political order. The centre of gravity moved northward from the Mediterranean to over the Alps. Here, the Catholic Frankish state, ruled by Germanic kings, became the main centre of power at the end of the 5th century. By the 9th century it encompassed the area of modern France, Switzerland, and the Benelux countries, as well as an extensive part of present-day western Germany and northern Italy. Out of the Frankish state and the Holy Roman Empire that arose in the 9th century after the collapse of the former, the heritage of the Roman culture and Christianity spread to Scandinavia and the Baltic area. In northern Europe, weapon types used by the Romans were adopted, and Roman jewellery styles were further developed. Christianity spread slowly but steadily northward, and by the end of the period in question, i.e. the beginning of the 11th century, it had been adopted in Scandinavian and Rus centres of power.

The migrant peoples who arrived from the east — the Huns, the Alani, the Magyars, and the Bulgars — made their own contribution to the new European cultural sphere. The nomads who arrived here were few in number and quickly

melted into the dominant population, but they brought significant innovations. Thus new weapons, riding equipment, and clothing and jewellery styles spread here from the steppes. In Pannonia, the local inhabitants even adopted the language of the Magyars, which has survived until the present as Hungarian.

The Eastern Roman Empire, based in Constantinople, lasted until 1453. The heyday of Byzantium began after the disappearance of the Western Roman Empire. In the second quarter of the 6th century, Emperor Justinian I attempted to restore the former Roman Empire, conquering Dalmatia, the Iberian Peninsula, and North Africa. The decline of the Eastern Roman Empire itself, however, also began in the second half of the 6th century. In 536 the world was struck by a still unexplained climatic phenomenon: the sun was shadowed for more than a year, crops did not mature, and a famine hit southern Europe (Keys 1999). In the years 541–544 an unprecedented pandemic, the so-called Plague of Justinian, devastated Byzantium, resulting in a drastic fall in population (Michell 2007, 374; Stathakopoulos 2007, 105). Slavs crossed the Danube River into the territory of the Eastern Roman Empire, and the majority of the population of the Balkan Peninsula became Slavicized. To the south, Arab tribes who had adopted the religion of Islam obtained free access to Byzantine territory in the 7th century. In the subsequent centuries the Arabs conquered extensive areas in Asia as well as North Africa and the Iberian Peninsula. The Arab Caliphate and culture continued to flourish until the end of the millennium.

Focusing on northern Europe (Fig. 5), one may first note that in the first centuries AD the cultural difference between Roman territory and the northerly Germanic areas was immense. Whereas in western Europe and the Mediterranean region there was a strong state system with a written cultural heritage, people in northern Europe lived in small independent tribal societies that could also be referred to as petty kingdoms (Hedeager 1992, 250–253). Written culture was absent, and the cultural heritage was passed on through oral tradition. Nevertheless, the Germanic tribes had close political and commercial ties with southern areas, which is evidenced by items of Roman origin in their graves, hoards, and votive deposits.

The collapse of the Roman Empire also changed the situation in Scandinavia. Nevertheless, the size of the resulting migrations has been overstated by both written sources and later historians. It appears that it did not after all denote a massive departure from northern Europe, but above all the movement of excess population hoping to find more abundant agricultural land, and in some cases only conquests by the military elite. In the archaeological record, the Migration Period is expressed in the reorganization of settlement patterns and, above all, of the balance of power. The most significant sign of the latter is the beginning of the construction of forts, which was the case not only in northern Europe, but also in the forested zone of central and eastern Europe. Also, Scandinavian researchers (e.g. Widgren 1983; Carlsson, D. 1988; Näsman 1988) have repeatedly spoken of the Migration Period in connection with a crisis in agriculture, asserting that the possibilities for extensive agricultural development had been exhausted and there was no longer additional land to cultivate. The shortage of land caused a greater power struggle within the community as well as an increase in aggression outward.

At the same time, the Migration Period is the most gold-rich era in northern Europe. Rome's wealth, which had been accumulated over centuries, fell into the hands of the Germanic tribes, acquired by plunder and also received as gifts. The greatest number of hoards of gold have been found in Denmark and southern Sweden and on the Baltic Sea islands of Gotland, Öland, and Bornholm. These hoards contain gold coins, gold ingots, and golden jewellery of both Western

and Eastern Roman origin. Craftsmanship in Scandinavia was at a higher level during the Migration Period than before that period or even later, during the Iron Age.

During the Migration Period, two tribes rose to the fore in Swedish territory: the Svear in its eastern and the Geats in its southern part. These were also the first territories and tribes which later, in the Viking Age, consolidated under the reign of one king, and were united by King Olaf Skötkonung (*Olawær skotkonongær*) around the year 1000. The Estonian territory had closer contacts with Svealand, which after Roman Iron Age rose to become the economic and cultural centre of Swedish lands. The growing power of Svealand is evident from the numerous graves of wealthy noblemen all around Lake Mälaren, and the first early urban handicraft centre on the island of Helgö in Lake Mälaren, which arose in the 5th century. The other part of Scandinavia that was of importance to Estonia was Gotland, the largest island in the Baltic Sea. In the 6th century, contacts between Estonia and eastern Sweden, which had subsided during the Roman Iron Age, began to appear in the form of lavish ornamentation such as jewellery, clothing details, and belts, which have been found in burials from that period in the coastal area of northern Estonia and on the island of Saaremaa (Selirand & Deemant 1985; Kuiv 1989). Scandinavians may have passed through the eastern part of the Gulf of Finland, as a fibula and belt fittings of eastern Swedish origin were found on the island of Bol'šoj Tjuters (Suur Tytärsaari) there (Carpelan & Uino 2003).

The presence of Scandinavians on the eastern shore of the Baltic Sea becomes archaeologically visible at the 7th century. In about 650, a settlement arose in Grobiņa, on the western coast of present-day Latvia, which has also been mentioned in written sources. A large cemetery has been found there, with the typically Scandinavian range of grave goods buried with the dead. According to an earlier interpretation (Nerman 1958), it was a colony of Svear and Gotlanders. The word 'colony', however, is probably not the correct term to describe such centres of Scandinavian-style culture along the East Way. The strong local quality in the Grobiņa finds leads one to believe that the majority of the settlers there were not Gotlanders or Svear (see Carlsson, A. 1983, 38; Thunmark-Nylén 1983, 307).

In the 750s at the latest, Scandinavians established a trading centre in Staraja Ladoga in the lands of the Baltic Finns. This was one of the Scandinavians' early urban trade and handicraft centres, all of which arose at roughly the same time (see also 5.1). In Svealand there was a similar centre called Birka, in Denmark Hedeby and Ribe, and in Norway Kaupang. From the 820s or 830s, Scandinavians went on trading expeditions along the rivers of eastern Europe to the Bulgar Khanate. The Vikings also reached Constantinople, where some of them served in the army of the Eastern Roman Emperor. From the middle of the 9th to the end of the 10th century, the nobles of Scandinavian origin had an important role in the rise of Rus.

According to the written sources, at about the end of the 8th and the beginning of the 9th centuries, Scandinavians began to raid the British Isles and the coastal areas of continental western Europe. In the subsequent couple of centuries — which are referred to as the Viking Age — many Scandinavians came to inhabit the British Isles and the coast of France. Norwegians settled the Orkney, Shetland, and Faeroe Islands and Iceland. Icelandic seafarers established colonies in Greenland and even reached North America.

In the Middle Iron Age and Viking Age the land east of Estonia in the present-day north-western Russia was inhabited by peoples who spoke Baltic-Finnic languages. It is likely that the local peoples played an important role in Viking Age trading centres established there by Scandinavians. According to the tradition recorded in the East Slavonic chronicles, in about

AD 862 the local tribes were united under the reign of three brothers of Scandinavian origin. Soon after that, one of the brothers, Prince Rjurik of Novgorod, obtained sole rule over the land. In 882 Oleg, the succeeding prince, captured Kiev, which had been the pivot of the East Slavs and became thereafter the ruling centre of whole Rus. The cultural and linguistic Slavicization of Rus had thus been rendered possible, though this process did not begin until the foundation of the city of Novgorod in the 940s and the adoption of Christianity by St. Vladimir, the Grand Prince of Kiev, in 988.

Around the end of the 10th or the beginning of the 11th century, Danish, Norwegian, and Swedish kings were baptized, and Christianity was adopted in all of those lands. The Viking Age is traditionally considered to have ended with the last Viking raids on England in 1066. By that time, the last familial and political ties between the rulers of Scandinavia and Rus had been severed. At that point, the Viking Age gave way to the Middle Ages also in northern Europe.

1.2. Written references to Estonian territory

1.2.1. Icelandic sagas

The events of the sagas recorded in Icelandic monasteries from the 13th century onward are connected with Iceland, and to a lesser extent with Norway and Denmark. There are, however, also many references to areas east of the Baltic Sea, and some of the events described in the sagas are believed to have taken place in Estonian territory. Of the rich Icelandic saga literature, the Kings' sagas, which focus on the interpretation of the history of the kings of Norway and Denmark, and Icelanders' sagas, which describe the history of Icelandic families and the actions of their members, are important sources in this respect. These are half-historical, half-literary works. In interpreting the data presented in sagas, one must consider that the Pre-Viking and Viking Age events therein were first passed on orally from one generation to another, and that the texts written by Christian clergymen centuries after the described events contain the understandings and attitudes of the recorders themselves and their era (Alas 1999; Jonuks 2005; Zilmer 2007; and citations therein).

The mythical events described in the Guta saga have been dated to about the year 500. In accordance with this account, Gotland was unable to feed its inhabitants, and a third of the island's population emigrated. The emigrants headed to the island of Hiiumaa (*Dagaiþi*) in Estonia (*Aistland*), where they apparently built a stronghold. On Hiiumaa they were also unable to feed themselves however, and thus they travelled on along the Daugava River to what today is Russia and from there on to Greece (Guta Saga, 4).

The next reference dates from the era of King Ingvar, who hypothetically ruled in Sweden in about 600. At the beginning of the 13th century, Icelander Snorri Sturluson put down in his version of the Ynglinga saga that one summer, Ingvar gathered his army, came to Läänemaa (*Aðalsýsla*), and plundered in a place called *Stein*. When a numerically superior Estonian force arrived, there was a battle and the Swedish warriors were forced to flee. King Ingvar fell, and he was buried right there by the sea, under a burial mound (Snorri Sturluson, Ynglinga saga, 32). This reference is the first in which a specific location in Estonia is mentioned, although that location can no longer be identified.

In the saga about Norwegian King St. Olaf (*Óláfr Haraldsson*, lived ca 995–1030), it is stated that he had tried to conquer the island of Saaremaa (*Eysýsla*) in 1008. The inhabitants of Saaremaa, who were surprised by the unanticipated attack,

initially agreed to pay tribute, but then gathered an army and attacked. Olaf apparently won the battle, but nevertheless took his soldiers back home (Snorri Sturluson, Óláfs saga helga, 8).

A longer story in which the events allegedly took place in Estonia (*Eistland*) is in the saga about Óláfr Tryggvason, son of the King of Norway and later himself king; the saga was transcribed at the beginning of the 13th century (Snorri Sturluson, saga Óláfs konung Tryggvasonar, 7f.). In 967, when Óláfr was three years old, he was on his way to visit his uncle Sigurd in Novgorod with his mother Ástriðr. At sea they were captured by Estonian pirates who killed some of the group and divided the survivors among themselves. Óláfr, his tutor Torulf, and his associate Torgils were taken by an Estonian called Klerkón. Klerkón killed Torulf and bartered Óláfr and Torgils to an Estonian called Klerkr in exchange for a good goat. Óláfr was purchased from Klerkr by a third Estonian, Réás, who had a wife called Rékon and a son called Rékoni, in exchange for an expensive garment. The young Óláfr lived in Réas' home for six years, until the age of about nine or ten. On one occasion, Ástriðr's brother Sigurd visited Estonia to gather tribute on behalf of Grand Prince St. Vladimir. He recognized Óláfr at a trade fair and bought his freedom. He also freed Torgild and took them both back to Novgorod with him. There Óláfr later saw Klerkón in a market and killed him for murdering his tutor. Ástriðr remained in slavery in Estonia for another three years. Once a wealthy Norwegian called Luðinn came to Estonia to do business, as he had many times before. In the slave market he saw Ástriðr, whose freedom he bought on condition that she marry him.

The names of the Estonians who appear in this account are not typically Estonian, and thus it has been speculated that the people referred to in the saga were instead representatives of Baltic tribes (Palmaru 1980, 269; Tarvel 2005). On the other hand, one can conclude from the sagas themselves that both the characters mentioned in the sagas and the recorders of the sagas perceived a clear difference between the northern and southern part of the eastern Baltic countries and the different languages of the people who lived there. Thus it is not particularly likely that they may have been confused when it was claimed that the people in question were Estonians (*Þat váru Eistr*). It is more likely that the names were 'restored' when the sagas were transcribed, in order to add credibility to the account. This would explain both the Scandinavian appearance of the names and their distinctive grouping (*Klerkón-Klerkr* and *Réás-Rékón-Rékóni*) (Jonuks 2005, 52f.).

The saga of Brennu-Njáls describes an expedition in 972 by Icelander Gunnarr, during which the Icelanders arrived to Rävala (*Rafala*) in the summer, encountered Vikings there, and defeated them in battle. After that they moved to Saaremaa (*Eysýsla*) and stayed there for some time behind a promontory (Brennu-Njáls saga, 30). That reference is the first occurrence of the toponym that was in use at the beginning of the 13th century to refer to the county that covered the coastal zone of north-western Estonia (Rävala). The same section of the saga continues with a description of how the Icelanders met a man named Tófi on Saaremaa, and how he led them to the camp of the two great leaders Hallgrímr and Kolskeggr. There ensued a sea battle that the Icelanders won. After the battle, Tófi led Gunnarr to the location of treasure hidden in the forest by the Vikings. Gunnarr asked what payment he would like in return for this information, and Tófi replied that he was a Dane and would like to return to the land of his birth. Tófi also explained that he had been taken prisoner by the Vikings and allowed to disembark on Saaremaa, where he had lived ever since. Since Hallgrímr and Kolskeggr are Scandinavian names, and Hallgrímr used a typically Icelandic weapon called an *atgeir*, it is believed that Gunnarr encountered Scandinavians who had set up

camp on Saaremaa (Alas 1999, 247). It may be the case that although the saga was most likely based on historical events, the authors transcribing the saga have attempted to make the story more believable by adding details, including names and descriptions of weaponry (Jonuks 2005, 51f.).

At the early 10th century, princes Hálfdan the Black (*Hálfdan svarti*) and Hálfdan the White (*Hálfdan hvíti*) apparently came to Estonia (*Eistland*) to plunder. The latter is said to have died in Estonia (Snorri Sturluson, Haraldz saga ins hárfagra, 33f.).

The saga about Örvar-Oddr reveals that the forces of Kvillánus, a mythical King of Novgorod, also known as the Viking Ögmundr Killer of Eythjófr (*Ögmundr Eyþjófrsbana*), included warriors from Rävala (*Refaland*), Virumaa (*Vírland*), Estonia (*Eistland*), Livonia (*Lífland*), and Courland (*Kúrland*) in addition to representatives of other tribes of the Baltic region (Örvar-Odds Saga, 30).

Fig. 6. *Rune stone in Ängby, Uppland, Sweden, showing an inscription in memory of Björn who was killed in Virumaa (photo: Ants Kraut).*

Some of the references to Estonia found in the sagas fall into the category of myth and fantasy. There is a section in Brennu-Njáls saga about Thorkell, who was also known by the nickname of Foulmouth (*Þorkell hákur*), and who was said to have killed a flying fire-drake (*flugdreka*) in western Estonia (*Aðalsýsla*) (Brennu-Njáls saga, 119).

The sagas are the earliest sources in which the name of Estonia (*Eistland*) is used in its modern-day sense (Grünthal 1997, 216). In the sagas, Estonia is either considered to mean the entire area of Estonia in general or to denote those regions of Estonia in which names were not precisely known (Jonuks 2005, 54). As for the different regions of Estonia, it is apparent from above that Virumaa (*Vírland*) and most likely Hiiumaa (*Dagaiþi*) have been mentioned, and repeated references have been made to Saaremaa (*Eysýsla*), mainland western Estonia (*Aðalsýsla*), and the north-western Estonian coastal area Rävala (*Rafala*, *Rafaland*).

1.2.2. Scandinavian rune stones

Rune stones are a unique type of written source. These can be a stone in an upright position or a rock surface on which runes have been carved (Fig. 6). Rune stones are mostly decorated with animal ornamentation that is often interwoven with Christian symbols. Over 3000 rune stones are known in Scandinavia; about 2500 of them are situated in Sweden, including 1000 stones in Uppland. The rune stones mostly date from the 10th–11th centuries. As a rule they were erected in memory of the dead, and in some cases they even mention the place of death (Zilmer 2005, 38ff.). As a result rune stones reveal where the Scandinavians' journeys took them. The rune stones of central Sweden also sometimes mention Estonia or places in Estonia.

The Frugården rune stone in Västergötland (Vg 181), which dates from the 11th century,

was erected in memory of a warrior who fell on 'Estonian lands' (*i estlatum*) (Zilmer 2005, 165ff.). In the case of this stone, it is emphasized that Estonia is mentioned in the plural, which may refer to the fact that the definition of Estonia combined different counties at that time (Salberger 1986, 84f.).

Virumaa is mentioned on three Uppland rune stones (Zilmer 2005, 161ff.). On two different rune stones in Ängby (U 346; U 356 — Fig. 6), there is a text in memory of Björn, who fell in Virumaa (*a urlati* and *a uirlanti*). On the third stone in Uppland (U 533), a mother commemorated her son who was killed in Virumaa (*a uirlanti*).

In addition, there are many texts whose interpretation is uncertain, or whose connection with Estonia is very indirect. For example, one rune stone found in Släbro in Södermanland (Sö 45) bears the name *aistfari*, which could be translated as 'one who travels to Estonia' (Zilmer 2005, 169).

1.2.3. Latin and East Slavonic chronicles

In the work *De origine actibusque Getarum* (*Getica*), compiled by Roman historian Jordanes in 551 or 552, a people called *Aestii* are mentioned among other peoples of northern Europe (Jordanes, V: 36). In the same work it is stated that Ermanaric, King of the Ostrogoths (ruled ca 350–376), conquered among others a people called *Thiudos* (Jordanes, XXIII: 116). The name *Aestii* (*aestiorum gentes*) was first recorded much earlier, as it can be found in Roman author Tacitus' work *De origine et situ Germanorum* (*Germania*), compiled in about the year 98, where it refers to a people living to the east of the Germans. According to an earlier opinion, *Aestii* and *Thiudos* referred to, respectively, Estonians and Chud, the latter in the same sense as in much later East Slavonic chronicles, i.e. Baltic Finns (on the historiography, see Grünthal 1997). It has, however, now been convincingly proven that in referring to the *Aestii*, Jordanes did not mean the ancestors of the modern-day Estonians, but instead the inhabitants of the south-eastern coast of the Baltic Sea (Palmaru 1980, 261f.; Karaliunas 2003). As for the people referred to as *Thiudos*, Jordanes does not mention where they were located or what language they spoke. Besides the similarity in sound, there is nothing to prove that *Thiudos* meant the same in 6th-century Constantinople as the ethnonym *чюдь* in 12th-century Rus (Grünthal 1997, 154).

The first more or less reliable chronicle data about Estonia can be found in the chronicle *Gesta Danorum* by Saxo Grammaticus (lived ca 1150–1220). According to this fabular reference, one of the most famous *berserkers* — Starkatherus or Starkaðr — came from the region which borders Sweden on the east, where 'Estonians (*Estonum*) and other numerous barbarous nations now dwell far and wide' (Saxo Grammaticus, 6.5.2). *Berserkers* ['bear shirts'] were mythical and especially frenzied warriors devoted to the god Odin. Saxo described Starkaðr as an eight-armed giant from whom Thor cut off six hands, thus making him human-like. Indeed, this story was unbelievable already in Saxo's time; his incredulity is documented in his chronicle (Jonuks 2005, 56). Starkaðr is also said to have taken part in the legendary Battle of Bråvalla, which apparently took place between the kings of Sweden and Denmark in about the mid-8th century. Men from Estonia, as well as Livonians and Curonians, also apparently took part in the battle (Saxo Grammaticus, 8.3.13).

The East Slavonic chronicles (*лемонucu)* offer unique information about the prehistory of Estonia. These have been compiled at different times and by different authors since the second half of the 11th century. Most redactions of chronicles that refer to events from the 11th century are, however, believed to date from the 15th century. In the rewriting of the chronicles, the conditions

and political circumstances of the time were either consciously or unconsciously taken into consideration, and the way in which later Russian rulers saw or wished to portray their country's past is clearly reflected therein. The data about the events of the 9th–12th centuries originate from a hypothetical chronicle composed at the beginning of the 12th century, which is commonly referred to as the Primary Chronicle (*Повесть временьныхъ летъ* — 'Tale of the Years of Time'). It is presumed that the chronicle was compiled in about 1113 in Kiev by a monk called Nestor.

Among the tribes of north-western Russia that invited the Varangians from Sweden to rule them in 862, Nestor also mentions the Chud (*чюдь*) (PVL, 13). In the 9th and 10th centuries, the Chud were one of the most frequently mentioned peoples in the East Slavonic chronicles, apart from the Varangians (of Scandinavian origin) and the Vepsians (of Baltic-Finnic origin). They participated in the implementation of Varangian rule and in the princes' military campaigns. Disputes between the Chud and the Grand Prince of Kiev are not mentioned in that period. Most researchers who have investigated matters involving the Chud are convinced that since the 11th century, mention of the Chud in the chronicles generally refer to Estonians (see Ligi 1980, 610). But this claim is not always valid, and probably not at all concerning earlier times. The name 'Chud' was used to refer to all Baltic-Finnic peoples of north-western Rus, or in earlier periods even all non-Slavic tribes in north-eastern Europe (Grünthal 1997, 154; Selart 2000, 103 and citations therein).

The oldest written reference to a definite place on Estonian territory that can be identified today is connected with events that in the East Slavonic chronicles are dated to the year 6538 'after the creation of the world', which roughly corresponds to AD 1030. This reference is to the campaign led by Jaroslav Vladimirovič (later referred to as Jaroslav the Wise), who was Grand Prince of Kiev in the years 1019–1054, to Tartu (see also 2.1.6). The reference is found in all chronicles in which the events of that era are described, and was in most cases copied from the Primary Chronicle. These events are described in the reconstruction of the original text of the Primary Chronicle as follows (PVL, 65):

> Jaroslav conquered Belz. And Jaroslav's fourth son was born, and he named it Vsevolod. In the same year, Jaroslav set out on a campaign against the Chud, conquered them, and established the fort of Jur'ev. At the same time, Bolesław the Great died in Poland, and there was an uprising there: the rebels killed bishops, priests, and their own boyars, and staged a rebellion.

The report of Jaroslav Vladimirovič's campaign was presumably included in the Primary Chronicle from a chronicle compiled in Novgorod, which of the now extant chronicles is most completely and precisely rendered in the Sofia First Chronicle (Kuzmin 1977, 73). The latter states: 'In that year, Grand Prince Jaroslav set out against the Chud, conquered them and established the fort of Jur'ev, and then came to Novgorod' (SPL, 176). The Tartu campaign of Jaroslav the Wise is the very first campaign onto Estonian territory from Rus that is known from the written sources. There is no doubt that Jur'ev and Tartu are one and the same place: this is proved by parallel references in chronicles compiled in Rus and Livonia, and the name 'Jur'ev' is also used in the East Slavonic chronicles to refer to Tartu in connection with later events.

In 1054 Jaroslav Vladimirovič died, and his possessions were divided among his sons; Izjaslav Jaroslavič received Kiev and the Novgorod Land, and appointed Ostromir to be the *Posadnik* of Novgorod, i.e. the Grand Prince's vice-regent. The next known campaign to Estonian territory is connected with him, and mentioned in the chronicles under the year 6562 (ca 1054). In the Sofia First Chronicle (SPL, 182), the reference is expressed thus:

> And Izjaslav came to the fort in Kiev and appointed Ostromir to Novgorod. And Ostromir went with the Novgorodians against the Chud, and the Chud killed him, and many other Novgorodians fell with him. And Izjaslav set out against the Chud once again, and conquered the *осек Кедипив*, that is the hand of the Sun.

The text presents two campaigns. The first was led by Ostromir, but the place where he died is not mentioned in the chronicles. *Kedipiv*, conquered in Izjaslav's subsequent campaign, was most likely Keava in ancient southern Harjumaa, as the present-day village of Keava still bore the name *Kedempe* in 1410 (Johansen 1951, 70). As the word *осек* denoted in Old Slavonic an abatis in the forest, it seems that it was a refuge in a forest or bog that was conquered (Nazarova 2001, 285f. and citations therein). Actually, in the mid-11th century there was a fort and an extensive adjacent settlement of at least 8 ha in area extant in Keava, as is evidenced by archaeological research done there. Moreover, judging from the extent and thickness of the cultural layer and the numerous fragments of clay pottery, this was one of the largest Viking Age settlement centres in Estonia. However, no definite signs of the fort having been attacked by Novgorodians (for instance Rus-style arrowheads) have been found (see Lang & Konsa 2004). It is possible that the residents of the fort were unwilling to encounter the attack and were hiding in some temporary refuge, but were nevertheless found. An alternative interpretation is that Izjaslav conquered the fort itself, while the choice of the word *осек* was intended to emphasize that the defences of the fort were predominately made of wood (Tõnisson 1997, 357). One should nevertheless note that this term cannot be found elsewhere in chronicles to refer to forts, even if the latter were wooden structures.

A separate question is how to date these events. It is likely that AD 1054 as the date of Ostromir's campaign is implausible (see Janin 1962, 49; Vahtre 1992, 625), and thus the campaign against Keava led by Izjaslav could not have taken place in 1054 or 1055. It is more probable that it instead took place in about 1059 or 1060 (Nasonov 1951, 81; Nazarova 2001, 288). In the chronicles there is indeed a mention under the year 6568 (1060) that Izjaslav returned to Estonia in that year. In the Sofia First Chronicle (SPL, 183) that reference is phrased thus:

> … in the summer, Izjaslav set out against the Sosols and made them pay 2000 grivnas in tribute every year. But since they were [initially] prepared to pay, they sent the tribute collectors away; in the spring [thus in 1061] they came and conquered the villages around Jur'ev, burned down the fort and houses and did a great deal of damage, reaching Pskov with their attack. Men from Pskov and Novgorod fought against them; 1000 Rus died, but an uncountable number of Sosols were killed.

The ethnonym *ссолъ* or *сосолъ* (which in English could be referred to as 'Sosols') found in the East Slavonic chronicles under the year 1060 does not appear in other written sources, and thus various assumptions have been made regarding its meaning (see Tvauri 2001, 227ff. and citations therein). The amount of tribute mentioned in the chronicle texts — 2000 grivnas a year — shows that this was a large and prosperous area that was taxed. Novgorod, for instance, paid Kiev 2000 grivnas a year until 1014 (PVL, 195). It is clear that if tribute was imposed on a district, there had to be individuals from whom tribute could be exacted, and an administrative structure to collect the necessary sum. Providing that under the years 1054 and 1060 the chronicles describe one and the same event, it seems more reasonable to presume that the 'Sosols' were residents of Harjumaa (Tõnisson 1997, 20; 2000; Tvauri 2001, 229). On the other hand, it cannot be excluded that the above military campaigns were waged against different parts of Estonia and the 'Sosols' were in fact the inhabitants of a district in southern or eastern Estonia.

1.2.4. Summary

The earliest written mention of Estonian territory or the ancestors of the Estonians can be found primarily in Icelandic sagas and in Latin or East Slavonic chronicles, transcribed in the 12th–13th centuries. A few toponyms related to Estonia can also be found on Scandinavian rune stones.

These are individual references or episodes from which one can obtain no adequate understanding of prehistoric conditions in the territory of Estonia. In addition to the scarcity and general wording of these references, they have also been composed centuries after the described events themselves, and thus are more a reflection of the conditions and understandings of the era in which they were written. Furthermore, they were composed by people who most likely never visited Estonia. Several of the references describe mythical events and creatures, and there is also no certainty that the people mentioned in these episodes ever existed. Thus, for the most part, these are not a source for Estonian historical research, but instead folkloric material.

All one can deduce from the earliest Scandinavian written sources is that in the Viking Age Estonia was well known to Scandinavians, including Icelanders, Norwegians, and Danes, who came here for plunder and trade. Both the relatively precise topography and Scandinavian given names appear to indicate that the eastern coast of the Baltic Sea was seen as part of the Nordic cultural area (Jonuks 2005, 135). Several references make it possible to infer that warriors from Estonia participated in military campaigns led by Scandinavians. The sagas also give a faint inkling of the everyday conditions of the period, but in case of persons and events, however, facts are mixed with fantasy.

The first specific reference to events that took place in Estonian territory and can be verified through archaeological evidence originates from an East Slavonic chronicle that was compiled in the early 12th century and is referred to as the Primary Chronicle. In this it is described how in about 1030 Grand Prince Jaroslav Vladimirovič of Kiev defeated the inhabitants of south-eastern Estonia in a campaign, and established a stronghold in Tartu. The next reference describes events from around the year 1060, that is, how after the death of Jaroslav Vladimirovič, Novgorod *Posadnik* Ostromir organized a campaign on Estonian territory, presumably to Keava in Harjumaa, and died there. The next to come to Estonia was the new Kievan Grand Prince Izjaslav, who exacted tribute from an area whose residents later refused to pay, and destroyed the Kievan Grand Prince's stronghold in Tartu.

1.3. Changes in natural conditions

1.3.1. Climate change

The climate has changed repeatedly over time. For farmers, the weather was literally a matter of life and death, particularly in Estonia, which in the first millennium AD was one of the most northerly areas in the world in which inhabitants engaged in agriculture.

Investigators of climatic history have concluded that in the Bronze Age the global climate was a couple of degrees cooler than it is at present. In the Pre-Roman Iron Age, the climate began to warm up at a rapid rate, reaching a peak at about the beginning of the Christian era. A cooling process began in the Roman Iron Age, but a new period of warming arrived in about the 4th or 5th century, when the average temperature was about 1.5 °C warmer than it is today. The climate of the 6th–8th centuries, however, was somewhat cooler than it is at present, while in the 9th–10th centuries average temperatures were once again about 1.5 °C

warmer than they are today (Randsborg 1991, 28, fig. 13; Issar 2003, fig. 2.7). Nevertheless, the direction and rhythm of climate change in different parts of Europe have differed considerably. For instance, although the general trend in the north-eastern part of Europe throughout the last two millennia has been towards cooling of the climate, in south-western Europe the climate has actually become warmer (Davis *et al.* 2003, fig. 4).

An overview of the climatic conditions that prevailed in Estonia in the first millennium AD is provided by the peat layers in bogs and by the sediment layers in lakes and the pollen found therein. Research performed at different times and in different places (Klimanov *et al.* 1984, 167; Rõuk 1992, 26) has yielded slightly different results. Based on the latest research data (Seppä & Poska 2004, fig. 5), it appears that at about the beginning of the Christian era, the climate of the eastern coast of the Baltic Sea was warmer than our present climate, so that the average annual temperature was nearly 1.5 °C warmer than it is today. Roman Iron Age featured a rapid cooling to about the level of present times. In the Migration Period and Pre-Viking and Viking Ages, average annual temperatures were similar to those of the present day. A period in which average annual temperatures were up to 0.5 °C cooler than today began near the end of the Viking Age.

In the period from about the second half of the Roman Iron Age to the middle of the Viking Age, the climate was much more maritime than in the Pre-Roman Iron Age and Early Roman Iron Age. In this humid climate, bogs began to develop incredibly rapidly, and many forests became swamps. The water level in lakes apparently rose, and flooding from rivers became more extensive. In the Migration Period, the area covered by spruce forests increased rapidly, which was followed by an equally rapid decrease in their area in the Viking Age, possibly as a result of extensive slash-and-burn tillage and to a lesser extent the rapid paludification of forest land and the expansion of bogs. At the end of the first millennium, forest still covered nearly three quarters of the Estonian mainland (Rõuk 1992, 25).

In addition to changes that took place over millennia or centuries, weather has also been changeable over shorter periods. These changes should not be neglected, because a crop failure that lasts as little as two years can undo population growth that has accumulated over several centuries. A drastic example of the latter is the two catastrophic periods of famines in Estonia in the 17th century (see Palli 1996).

The written sources reveal that in AD 536 a climatic catastrophe took place in the northern hemisphere, which was expressed in the darkening of sunlight and the significant cooling of air temperature. These in turn led to a serious famine and mass fatalities (Arjava 2005). The incident is also clearly traceable in tree rings in the northern hemisphere, where tree growth was hampered at that time or in subsequent years (Baillie 1999; Gunn 2000; Jones 2000; Young 2000). Ice layers in Greenland also display the traces of the event (Larsen *et al.* 2008). It has not yet been possible to determine what caused the event, but it is presumed to have been an immense volcanic eruption (Keys 1999; Larsen *et al.* 2008) or a comet striking or passing very near Earth (Baillie 1999). It is very likely that the so-called event of 536 also caused crop failures in northern Europe (for more information, see below, 7.1).

There were likely more years of crop failures with more local consequences, but there are no written data about these, and neither are they clearly expressed in tree rings or pollen diagrams. Ivar Leimus (2004a) has inferred from the chronological distribution of coin hoards that a famine that killed entire families and left numerous treasures buried beneath the earth may have struck Estonia and neighbouring countries in the middle of the 10th century (see 7.1).

1.3.2. Neotectonic uplift

One significant long-term natural process that noticeably influences the living conditions of Estonian coastal areas is neotectonic uplift. It continues to take place in the area north-west of the northern coasts of Lake Võrtsjärv and Lake Peipsi. Uplift is most rapid in the north-westernmost corner of mainland Estonia, where it has taken place at a rate of 2.8–3.2 mm per year for about the last 4000 years (Punning & Miidel 2004). Therefore, the lithosphere has risen there 2.5–3 m over the last millennium.

One thousand to one and a half thousand years ago, the coastline of the relatively high northern coast, which is hemmed with limestone, was not very different from how it looks today, but the changes in low-lying western Estonia and the western islands have been great indeed. In the mainland part of western Estonia, the coastline from the beginning of the Migration Period is generally 1–4 km from where it is now, while in the eastern part of Matsalu Bay, for instance, the coast has receded at least 10 km during that time. The present-day Noarootsi Peninsula was a separate island until modern times. The island of Saaremaa was smaller than it is today, and several parts of it (for instance the Sõrve Peninsula) were separate islands.

Chapter 2

Settlements and Households

Ancient human habitations offer direct data on the distribution and location of settlement, but also the structure of society and sources of sustenance. Two types of habitations are known from the period under review. Forts are the most readily recognizable objects in the landscape, as they were generally situated in naturally well-defended locales, for instance hills, and they usually feature man-made fortifications such as ramparts, moats, and steepened slopes. Forts can be considered to be not only military fortifications, but mostly also domiciles, for the majority of them were either permanently or temporarily inhabited. The second type encompasses the remains of unfortified farmsteads or villages, grouped under the term 'settlement sites'. The majority of the artefactual material from human habitations consists of household tools and everyday items. These items will be addressed primarily in this chapter, although finds of this category also appear extensively in burial places.

In comparison to the rather few forts and settlement sites dating from the Migration Period and the Pre-Viking Age that have been found, the number of known Viking Age habitations is relatively large. Accordingly, the overall image of human dwellings and everyday life in Estonia during the entire second half of the first millennium is predominately based on Viking Age data.

2.1. Forts and settlement sites

As of 2008, 133 prehistoric forts were known to have existed in the territory of present-day Estonia, and more or less extensive excavations have been organized at 61 of them (Tõnisson 2008, fig. 6). There are 41 forts that excavation results show were used in the second half of the first millennium or at the beginning of the 11th century (Fig. 7).

Forts generally are readily recognizable even after centuries due to the tendency of ramparts, moats, and/or flattened central courtyards to remain visible. Typically, they were occupied and worked in for long periods and were repeatedly rebuilt after having burned down. Forts therefore usually preserve a relatively thick cultural layer containing numerous portable artefacts and the remains of buildings. As a result, they are one of the richest sources of information about the Estonian Iron Age.

In researching the chronology of forts, the excavation of ramparts usually offers the most information. A rampart generally displays several layers of destruction which are made distinct from one another by layers of infilling and levelling. In the interior of forts, the cultural layer is usually shallower and has been disturbed by continuous inhabitation or by later ploughing. Building

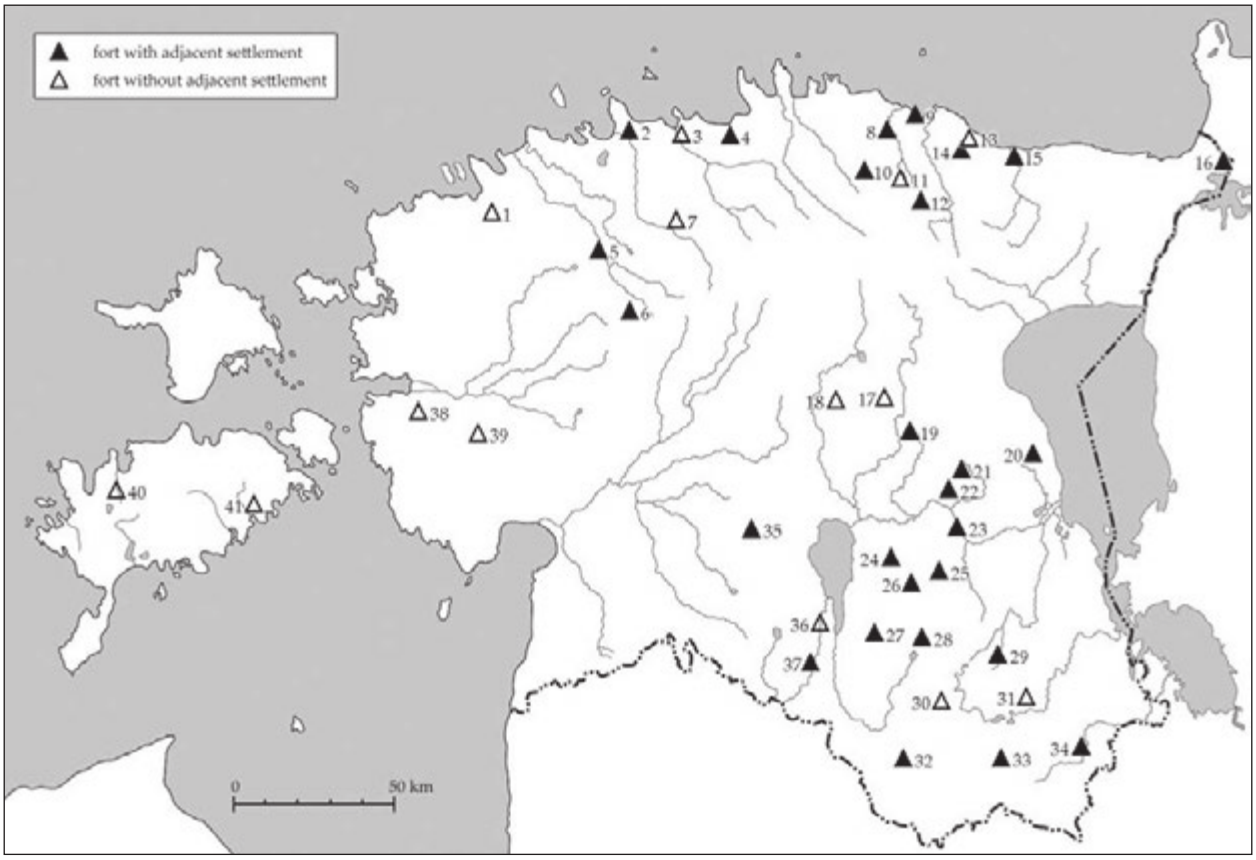


Fig 7. *Distribution of forts in Estonia in the second half of the first millennium AD. 1 Padise; 2 Iru; 3 Jägala; 4 Kuusalu; 5 Lohu II; 6 Keava; 7 Ahisilla; 8 Varangu; 9 Ussimägi at Toolse; 10 Kloodi; 11 Rakvere; 12 Nurkse; 13 Koila; 14 Pada II; 15 Tarakallas at Purtse; 16 Narva; 17 Kurista; 18 Kalana; 19 Kassinurme; 20 Peatskivi; 21 Saadjärve; 22 Lähte; 23 Tartu; 24 Alt-Laari; 25 Unipiha; 26 Peedu; 27 Aakre; 28 Otepää; 29 Tilleoru; 30 Urvaste; 31 Mõrgi; 32 Karula; 33 Rõuge; 34 Hinniala; 35 Viljandi; 36 Vooru; 37 Tõrva; 38 Lihula; 39 Soontagana; 40 Kärla; 41 Asva.*

remains, hearths, storage pits, and artefact finds discovered in courtyards cannot usually be stratigraphically related to the layers of the ramparts.

Some of the forts that were established in the late first millennium were continuously in use into the Final Iron Age (e.g. Saadjärve, Tartu, Otepää, Viljandi, Tõrva, and Kärla), and there are also forts on top of which new strongholds were built in the Middle Ages (Tartu, Otepää, Viljandi, and Rakvere). In such forts, most of the cultural layer from the first millennium was destroyed in the course of later construction. The question of whether these forts date from the period under review is determined mainly on the basis of the artefactual material.

Approximately 80 settlement sites that lack fortifications and can be dated to the second half of the first millennium have been found in Estonia. About 30 of them are located directly next to a fort (see Fig. 7), and will hereinafter be called fort-settlements. More or less extensive excavations have been performed at only 25 settlement sites (16 of which are fort-settlements). The remaining settlements have been dated to the period in question

Fig. 8. *The fort at Rõuge. View of the rampart from the adjacent settlement site east of the fort (photo: Andres Tvauri, 2000).*

on the basis of data obtained from surface survey, test pitting, or archaeological monitoring.

The majority of settlement sites are found on ploughed fields. What remains of the settlement is a patch of cultural layer that is darker than the surrounding soil and contains debris of burnt stones, tiny pieces of charcoal, and potsherds. Indeed, in most Estonian Iron Age settlement sites, the uppermost 40 cm of the cultural layer has been disturbed by ploughing. In numerous cases, there is not a thick cultural layer in the settlement site, and thus building remains or other features are indistinct and difficult to interpret. The fact that the majority of settlement sites of the late first millennium are located in areas that even today are actively used (for instance in village centres) causes these settlement sites as archaeological monuments to be poorly preserved and suffer continual damage.

2.1.1. The distribution and typology of forts

The distribution of Estonian archaeological sites (Figs. 2–4) demonstrates that the forts of the later half of the first millennium are located in areas where other contemporaneous sites are known, and thus a higher population density can be presumed. That is to say, forts were mostly situated in settlement centres. Also, there is a clearly

Fig. 9. *The fort at Vooru, pictured from the north-west (photo: Erik Laid, 1931, AI).*

visible connection between the location of forts and rivers (Fig. 7). This can be explained by the fact that rivers were transport arteries as well as by the suitable environment offered by the slopes of river valleys for the construction of forts in the otherwise relatively flat Estonian landscape.

The greatest density of forts dating from the second half of the first millennium is found in south-eastern Estonia, northern Tartumaa, and western Virumaa. The areas with the fewest known forts are north-western Estonia, the eastern and south-eastern part of Virumaa, Järvamaa, Läänemaa, the western islands, and Pärnumaa. The paucity of forts can be easily explained in the case of the forested parts of Virumaa, as well as south-western Estonia and the island of Hiiumaa, where agricultural settlement has always been very sparse due to the shortage of arable land. In north-western Estonia, central Järvamaa, Läänemaa, and the island of Saaremaa, however, other archaeological sites dating from the second half of the first millennium are relatively numerous (see also 7.6).

Evald Tõnisson has divided Estonian forts into four main types on the basis of their location and outward appearance (Tõnisson 2008, 39–41):

(1) Promontory forts, which are situated on a headland that extends out from a plateau or ridge. Forts of this type were protected on three sides by steep slopes, while the fourth or so-called landward side was cut off with artificial defences (a rampart and ditch). Promontory forts are the most common type of fort in Estonia, making up ca 40% of the forts of the period considered in this work. The fort at Rõuge in south-eastern Estonia is a typical example of this type (Figs. 8, 15). Promontory forts were widespread throughout eastern and central Europe.

Fig. 10. *Aerial view of the fort at Kuusalu (photo: Estonian Air Force, 1936, AI).*

(2) Hilltop forts that were built on the higher part of a long ridge and protected on two sides by steep natural slopes and artificially constructed fortifications at the ends. This type of fort is especially characteristic of northern Tartumaa, where forts were built on long drumlins and eskers. In the same area, ancient forts are often referred to popularly as *Kalevipoja säng* ('bed of Kalevipoeg', Estonian mythological hero), due to their characteristic shape (Fig. 9).

(3) Hilltop forts that were situated on a separate hill and protected on all sides by hillsides. Some of the forts of this type have ramparts, whereas others do not. The Estonian Migration Period, Pre-Viking Age, and Viking Age forts only include a few exemplars of this type, the most famous of them being Otepää in south-eastern Estonia.

(4) Forts that were situated on flat land or a low eminence, with the fort interior protected by a man-made circular rampart. The only fort of this type that can be dated to the late first millennium AD is that of Pajulinn at Kuusalu in north-western Estonia (Fig. 10). Forts with circular ramparts built on flat land began to be erected in western Estonia in the Early Iron Age (see Lang 2007c, 74ff.). Large and strong ring forts became more numerous in the Final Iron Age.

2.1.2. Migration Period forts

Based on presently available information, and with few exceptions, forts were not used in Estonia during the period from the 2nd to the 4th centuries, but began to be built once again in the Migration Period or even at the end of the Roman Iron Age. The only signs of such forts are a few radiocarbon dates and/or artefact finds under the

ramparts of later forts, and there are no definite data concerning the construction and appearance of forts. Signs of human activity from that period have been detected at ten forts (Fig. 2).

The fort at Peatskivi village in north-eastern Tartumaa, which is also known as the 'Bed of Kalevipoeg' of Alatskivi, was already in use in the Pre-Roman Iron Age. In the excavation trench dug in the south-western side of the fort's 2200 m² central courtyard, burnt remains of what were possibly Pre-Roman Iron Age fortifications were found. A layer of sand 1 m thick had been heaped over the remains, on top of which burnt remains of wood were found that were dated to the middle of the first millennium AD (Fig. 11)[1]. Hollows 0.7–1 m deep and filled with soil and small stones along the south-western edge of the compound originated from the same period. No artefact finds from the mid-first millennium were discovered (Aun 1974, 91).

The fort at Kalana in northern Viljandimaa was built during the Migration Period (Lavi 2002, 251–254). The compound covers approximately 2000 m², is bounded on three sides by steep slopes, and is defended on the fourth side by a rampart originating from the Final Iron Age. The earlier layer became visible under a 1–1.5 m thick fill layer on the outer side of the rampart (Fig. 12). This was a greyish vein with an average thickness of 10 cm, which in the higher part of the former hillside became a 30–40 cm thick layer containing charcoal particles and remains of burnt wood. The only find that was discovered in this context was a single potsherd, but the charcoal from the burnt wood was dated to the Migration Period (Fig. 11). It is likely that a slender wooden fortification with no substantial earthwork stood here at that time.

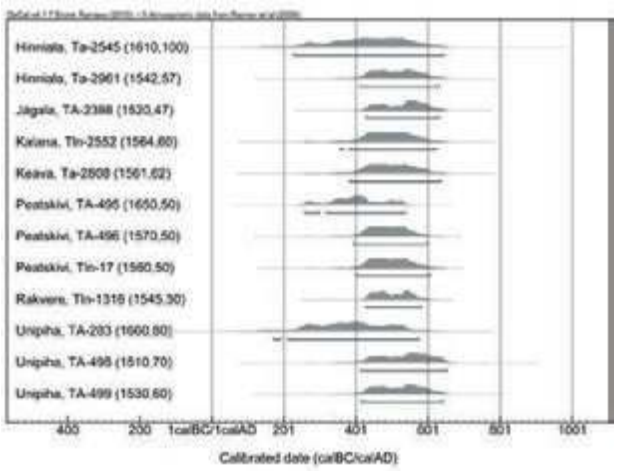


Fig. 11. *Radiocarbon dates indicating Migration Period activity at forts.*

The fort at Hinniala in the south-eastern corner of the country is situated on the western bank of the Piusa River, at the end of a promontory surrounded by the river on three sides (Valk 2007, 56–62). On the landward side, the fort was protected by a narrow ridge ca 25 m long and 1–1.5 m wide and a moat up to 2.5 m deep and about 8 m wide. At the opposite end of the fort, a rampart with its outer side smoothly merging with the hillside is observable. On both the north-western and south-eastern sides of the fort, terraces situated lower than the main plateau had been carved into the hillside, and the south-eastern terrace has a low rampart on its outer side. Three small trenches were dug at the fort. It appears that the ramparts, which were initially up to 1.8 m high, consisted of two layers separated by a burn layer (i.e. they were built in two stages). The trench dug on the plateau of the fort exposed a non-intensive cultural layer 30–35 cm in thickness in which potsherds and burnt pieces of clay were found. The burn layers of the ramparts and the lower part of the cultural layer in the compound yielded three charcoal samples, which were dated to the Late Roman Iron Age or the Migration Period (Fig. 11). The later phase of construction in the rampart

[1] All ^{14}C dates in this research are presented as dendro-adjusted (cal) to a likelihood of 94.5%. For calibration, I used the OxCal v4.1.7 computer programme (Bronk Ramsey 2011).

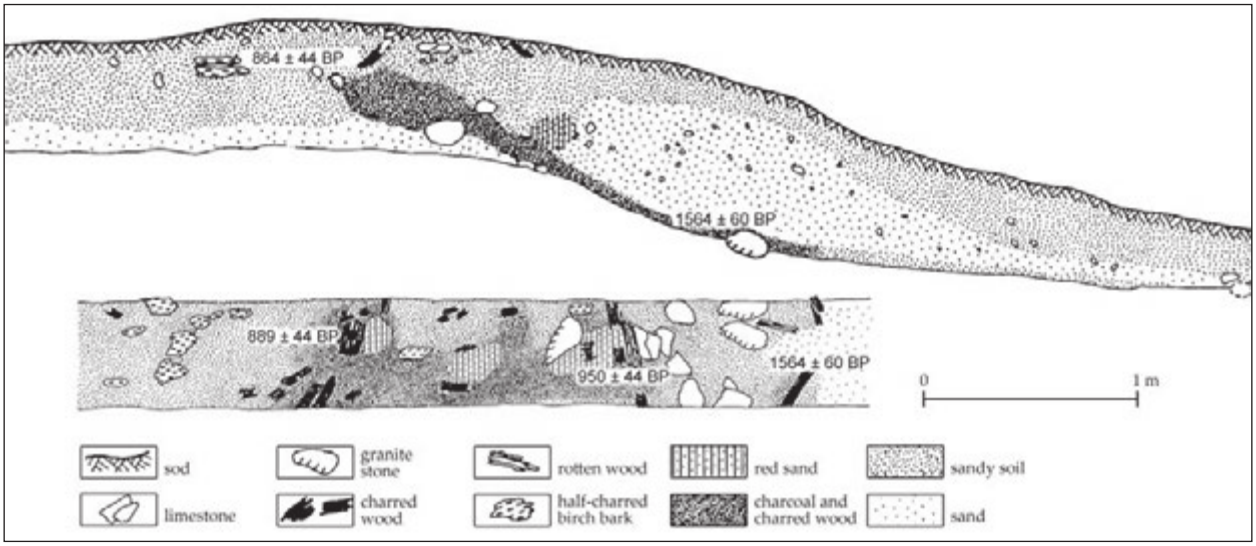


Fig. 12. *Section and excavation plan of the rampart of the fort at Kalana (after Lavi 2001, fig. 2).*

has been radiocarbon-dated to the 7th–10th centuries (Fig. 14).

Traces of the Migration Period inhabitation have been recorded in the northern part of the fort at Iru near Tallinn, where a group of finds dating from the 5th–7th centuries, perhaps exclusively from the 6th–7th centuries, has been obtained: some parts of belts, a bronze mount, a blue glass bead, a bracelet, and sherds of nine clay vessels (Lang 1996a, 101f.). The charcoal gathered from the test pit dug at the southern end of the Pre-Roman Iron Age fort at Jägala, eastern Harjumaa (Lavi 1999a; see also Kriiska *et al.* 2009), has also been dated to the Migration Period (Fig. 11). Migration Period ^{14}C dates have been obtained from wood remains found in one of the ramparts of the fort at Keava, Harjumaa, and under the ruins of the main building of the medieval fort in Rakvere, Virumaa, as well from the fort at Unipiha in south-eastern Estonia (Fig. 11), though there are no artefact finds from this period in these forts. The fort at Koila, Virumaa, has yielded the pommel of a knife handle dating from the 5th or 6th century (Lõugas & Selirand 1989, 297), and the iron pommel of a sword and the U-shaped chape of a sword's scabbard were found at the fort at Peedu in south-eastern Estonia (Moora 1939, 114, fig. 69). Based on the sections dug on the slopes, two phases of construction can be distinguished at Peedu, the younger of which is from the Viking Age (*ibid.*, 105f.). One can presume that the artefacts dated to the Migration Period are related to the earlier phase of construction.

2.1.3. Pre-Viking Age and Viking Age forts

Of the 41 known forts from the second half of the first millennium, 37 were built and/or were in use during the Pre-Viking and the Viking Ages (Figs. 3–4). Archaeological excavations have been performed at 35 of those forts.

In north-western Estonia, the most thoroughly investigated fort that was used in the Pre-Viking and Viking Ages is the fort at Iru. The results of the investigation have been summarized by

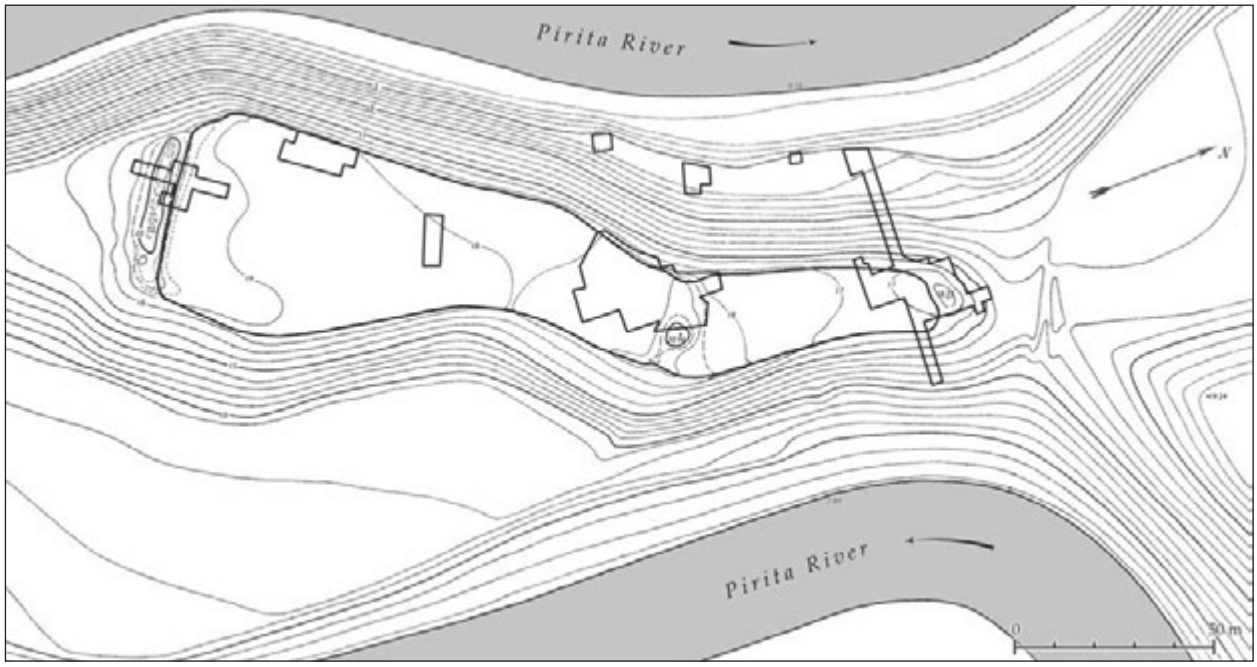
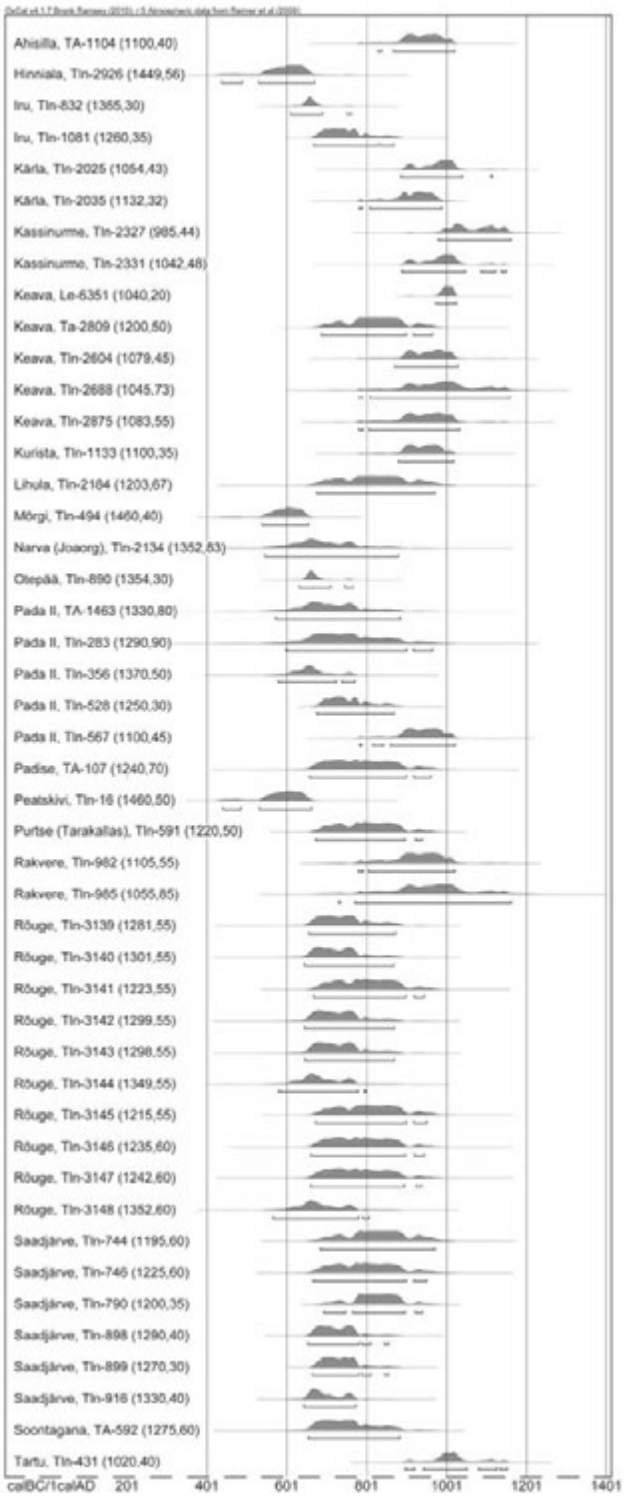


Fig. 13. *Plan of the fort at Iru (after Vassar 1939, pl. III; excavated areas after Lang 1996a, fig. 19, and Mägi 2007d, fig.4). Altitudes on the figure are relative.*

Valter Lang (1996a, 34–104). The promontory fort that is situated in a meander of the Pirita River consists of two plateaux separated by a rampart; the area of the northern compound is 1100 m², while the southern one comprises 4000 m² (Fig. 13). In total, 1250 m² of the fort's surface area have been excavated. The hill at Iru was in use as early as the Late Bronze Age, when it accommodated a fortified settlement. Signs of human activity dated to the 6th century AD have been found on the northern end of the hill (see 2.1.2). Roughly a hundred years later, settlements arose at the northern foot of the hill, on the narrow western river-facing terrace, and on the fort's southern plateau (see also 2.1.5). Traces of settlement from that period have also been discovered a few hundred metres north-east of the fort, in the present-day village of Iru. In about the year 700, the fort that stood on the northern plateau burned down and remained in disrepair while life continued on the southern plateau and in the settlement. Some 150 years later, the southern plateau was fortified with ramparts and a wooden fence. The beginning of the Viking Age, i.e. the 9th century, can be considered to be the most active period of use of the fort. In about the year 900, the buildings and fortifications on the southern plateau burned down, after which this part of the fort was abandoned once and for all. After that, a fort about one-fourth of the size of the southern fort was built on the northern plateau. Its fortifications were initially made of wood and sand, but later, massive stone ramparts were erected at its ends. At the same time, the settlement beside the fort continued to be used. The fort at Iru was permanently abandoned at the beginning of the 11th century.

Pajulinn ['Bog Fort'] at Kuusalu in the eastern part of Harjumaa has a distinctive location and structure (Fig. 10). This is a ring fort built in a bog with a 2200 m² courtyard; together with a low



rampart (described in greater detail below, see 2.1.4), the fort covers an area of 3500 m². The cultural layer, which lies under a 20 cm thick sediment of peat, is 30–40 cm thick and rich in finds (Schmiedehelm 1939). The find assemblage can be dated to the 9th–10th centuries (Lang 1996a, 326).

One of the most notable Pre-Viking Age and Viking Age sites in western Virumaa is fort II at Pada (Tamla 1978; 1983; 1996). It is situated on the eastern slope of the Pada River valley, which rises to a height of up to 14 m and protects the 8000 m² compound of the fort from three sides (Fig. 20). On the eastern side, the fort is bounded by a flat gulch. The south-eastern side of the fort, where there was no hillside, was fortified with an end rampart, which has survived to a height of 2.8 m. The rampart, which consists of sand and granite stones and has a reinforcing limestone wall on its outer side, at present up to 1 m high (Fig. 18), was built in at least three stages, the first being of Pre-Roman Iron Age date. Based on radiocarbon dating (Fig. 14), it is likely that the middle stage was built in the Pre-Viking Age. In the last period of construction during the Viking Age, the rampart was made higher and expanded, and a ditch ca 2 m wide and 1 m deep was dug in front of it. Clear signs of burning on the collapsed stones at the rampart's inner side indicate that the rampart had been topped with a wooden structure which was subsequently

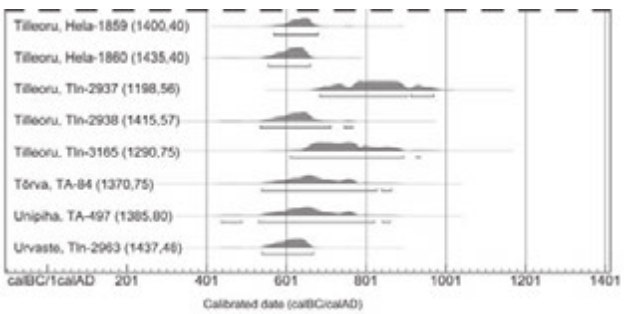


Fig. 14. *Radiocarbon dates indicating Pre-Viking and Viking Age activity at forts.*

destroyed by fire. The cultural layer in the fort's interior was, however, thin, and the remains of a fireplace or a rudimentary *keris*[2] stove, a small amount of ceramics, and a few metal objects were the only finds obtained therein.

The fort at Kurista, northern Tartumaa, was erected in the Viking Age (Lavi 2002, 242–248). The fort is located on the higher southern end of a long esker. Its lateral sides were protected by steep natural slopes, while the ends were protected by ramparts which at present reach a height of 1.5 m, and a low ditch in front of each of them. The courtyard was 1200–1300 m² in extent. The earliest remains of wooden fortifications, radiocarbon-dated to the 9th–10th centuries (Fig. 14), were found beneath the rampart at the northern end, which implies that the original fort lacked earthwork and was surrounded only by wooden defences. The ramparts were built in the 11th–12th centuries in several stages. There is no cultural layer in the fort's interior.

In southern Tartumaa, the fort at Unipiha (Aun 1975a) can be singled out as a typical example of Pre-Viking and Viking Age forts, although its oldest fortifications may date from the Migration Period or even the Late Roman Iron Age (see 2.1.2). This is a promontory fort that lies on the higher end of an elongated esker. The area of the fort is separated from the rest of the esker by a rampart and two half-metre deep ditches at its outer foot. The area of the courtyard is roughly 1000 m². The present height of the rampart reaches 1.4 m at its inner foot, and 2 m at the outer foot. Charred logs that were found lining the edge of the hill beneath the rampart indicate that the earliest defences were comprised of a wooden fence. Later a sand bank was heaped in several stages in its place. Granite stones had been used to clad the outer facing of the embankment, and the whole rampart had been surmounted by wooden fortifications. The thickness of the cultural layer was up to 60 cm at the inner side of the rampart, while in the central part of the compound it only reached 10–15 cm. Excavation in the fort's interior uncovered the remains of a *keris* stove as well as several hearths piled of stones, some partly sunken. Most of the finds (e.g. Figs. 74: 1; 119: 1; 131: 1; 164: 2) date from the 8th–9th centuries (cf. Fig. 14).

In archaeological literature, one of the most frequently mentioned forts of the late first millennium in Estonia is the fort of Rõuge, which is situated in the western part of the Haanja Uplands, south-eastern Estonia. From 1951 to 1955 it was one of the most important objects of archaeological research in Estonia, and became a kind of standard for the southern Estonian fort of the second half of the first millennium. Rõuge is the only fort of the period in question where the compound has been fully investigated, and a 4 m wide cross-section was also dug through the main (eastern) rampart. The find assemblage from the fort and the adjacent settlement is most likely the largest in Estonian archaeology from the period under review. Also, excavation results have been published fairly thoroughly, although synoptic treatments have appeared only in Estonian (Moora 1955) and Russian (Schmiedehelm 1959; Aun 1992, 25–32). A type of clay pottery has been named after Rõuge (see 2.2.2.2), and from time to time one can even find references to the concepts of Rõuge Culture (Beletski 1997, 15) or Rõuge-Kamno site type (Beleckij 1996) in the literature. This should not be taken as evidence, however, that in the period in which they existed, the fort and settlement at Rõuge were more important than centres of the same type in south-eastern Estonia, or that the site is richer in finds than those fort-and-settlement complexes that have been investigated less thoroughly.

The fort at Rõuge is situated on a natural promontory 9–12 m high, which is flanked from the west by the Liinjärv Lake valley and from the north by

[2] *Keris* is a pile of loose round stones on top of a stove. For more information about such stoves, see 2.1.9.

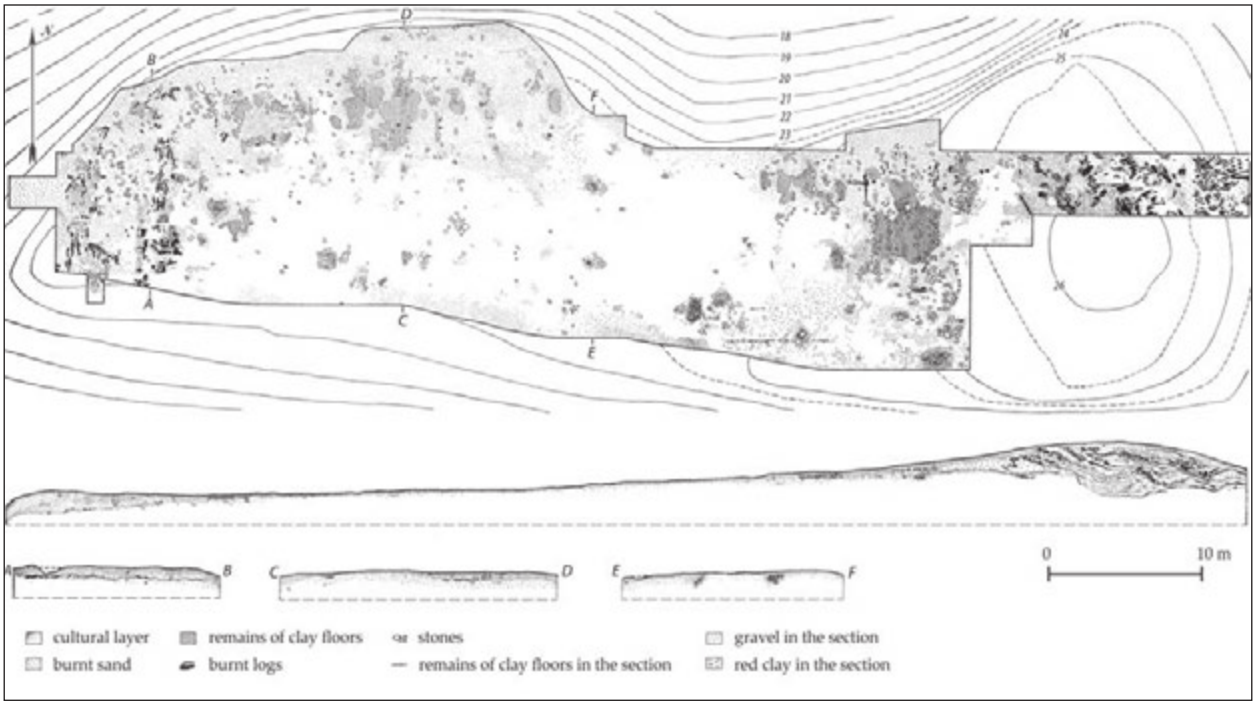


Fig. 15. *General excavation plan of the fort at Rõuge (Schmiedehelm 1959, fig. 2). Altitudes on the figure are relative.*

a ravine. The fort's courtyard is up to 70 m long and 19 m wide, covering an area of nearly 850 m² (Fig. 15). This area was probably initially larger, about 1000 m², but the stream has eroded the fort's slope over time. From the landward side, i.e. the east, the fort was defended by a ditch and an end rampart, the latter being up to 3 m high and made of heaped sand and gravel (Fig. 8). The narrowing western tip of the promontory was also bounded by a ditch and a low rampart. Directly east of the fort, behind the ditch that protected it, lay an extensive settlement (see 2.1.5).

Five or six phases of construction were distinguishable by burn layers in the excavation of the fort's eastern end rampart (Schmiedehelm 1959, 155–157; Lillak & Valk 2009a). The charred timbers found in the rampart seem to originate from rectangular log structures, which apparently reinforced the embankment of the rampart. At the first stage of construction, the middle part of the rampart seems to have been only 1 m high and even shorter at the ends. Later the rampart was heightened several times, and the ditch in front of it was deepened.

In the compound the average thickness of the cultural layer was 40 cm, but at some places it exceeded 1 m. The northern part of the compound revealed clay floors of five or six buildings (see 2.1.9). The remains of the buildings were very poorly preserved, and it was impossible to definitively establish whether or not the buildings were used simultaneously. Judging from the stratigraphy of the courtyard, the fort's interior burned down two or three times.

There were several stone hearths in the centre and in the southern part of the compound. The potsherds and animal bones found near them indicate that they were primarily used for food preparation. A stone hearth with heavily burnt sand above and around it was uncovered near

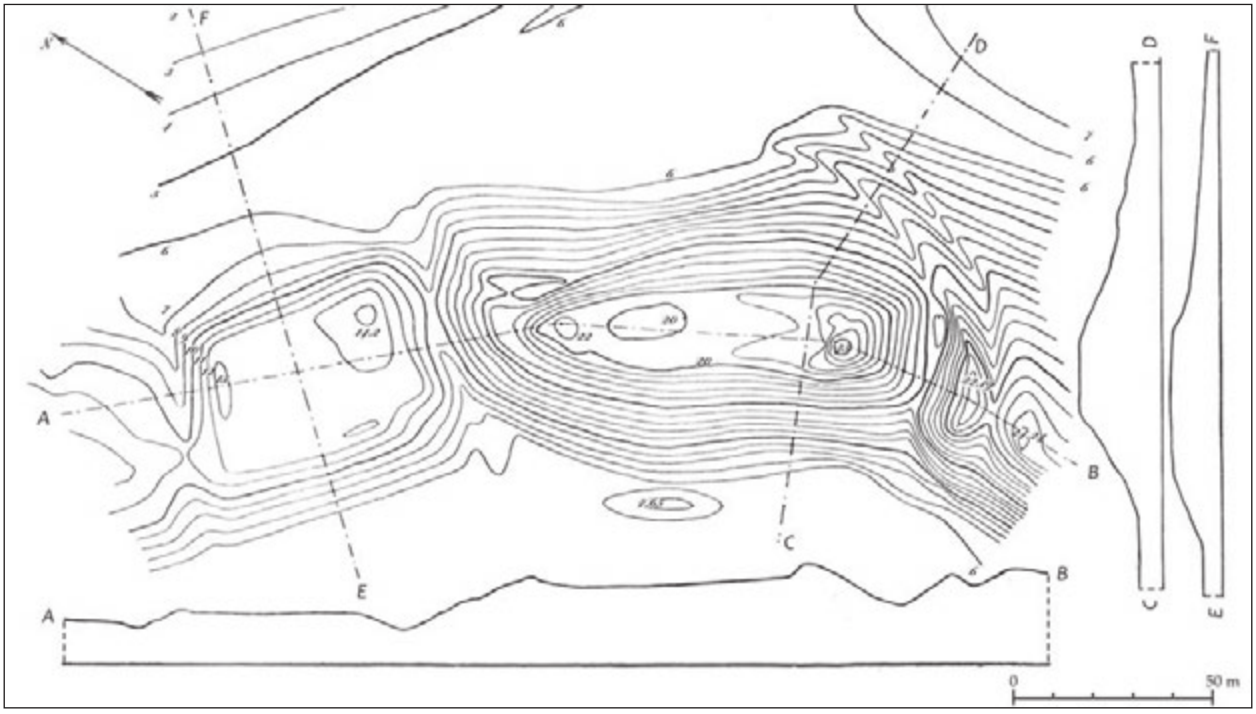


Fig. 16. *Plan of the fort at Tõrva (Laid 1933, fig. 4). Altitudes on the figure are relative.*

the easternmost building. The fragments of crucibles and casting moulds prove that bronze casting had been practised there. Charred timber found around the hearth may have originated from a small structure, perhaps a smithy.

The fort's interior yielded an abundant find assemblage, most of which consists of potsherds. Also found were many objects relating to handicraft and everyday life (Figs. 65: 1; 74: 2, 4; 77; 85: 1; 183), as well as jewellery (Fig. 118: 4) and Arab silver coins (altogether ten coins from the Viking Age, four of them forming a small hoard — Fig. 177). A small number of potsherds and some other finds apparently originate from the Pre-Viking Age, while most of the artefactual material dates from the 8th–10th centuries (cf. Fig. 14).

The only fort in southern Viljandimaa that has undergone relatively thorough archaeological investigation, Tantsumägi ['Dance Hill'] at Tõrva, is situated on the western bank of the primeval valley of the Õhne River, on a long esker 12–15 m high (Fig. 16; Tõnisson 2008, 280f.). The fort lies on the higher and narrower part of the ridge. The surface area of the compound, enclosed by end ramparts, is about 1100 m². To the south-east, the fort is separated from the rest of the ridge by an end rampart up to 3 m high and by a double moat. In the northern part of the fort, there is a lower end rampart with a moat in front of it. Behind the moat, in the lower and broader part of the ridge, there are outer fortifications or a fortified settlement site with an area of ca 1000 m², which is protected to the north-east by another low moat. Excavation in the fort's interior revealed that the fort had two phases of occupation, the first dating from the second half of the first millennium, and second to the end of the Final Iron Age. Most of the few finds obtained from the fort's cultural layer were fragments of clay pottery. The excavation of the outer fortifications only yielded finds

from the earlier phase of inhabitation. Judging from radiocarbon dating (Fig. 14), this period of occupation dates to the Pre-Viking Age. The ramparts have not been excavated and therefore the date of their erection remains unknown.

None of the forts of Läänemaa have been found to contain artefacts or occupation layers from the Pre-Viking or Viking Age. However, both of the larger Final Iron Age forts in Läänemaa — Lihula and Soontagana — have yielded material that radiocarbon-dates to the second half of the first millennium (Fig. 14).

Data on forts on the island of Saaremaa used in the second half of the first millennium are also meagre. At Asva on the eastern coast of Saaremaa, at the hummock that in the Bronze Age accommodated a fortified settlement, the slopes were presumably raised and an end rampart with dry stone walls and supporting log structures was built in the Viking Age. Most of the ceramics and many of the metal objects obtained from the fort's upper layers also date from the Pre-Viking or Viking Age (Lõugas 1967). Pre-Viking and Viking Age layers are present beneath the Final Iron Age layers in the courtyard of the ring fort at Pöide, as well as beside the fort, in the easternmost part of Saaremaa (Lõugas & Mägi-Lõugas 1994a; 1994b). Since the fort's rampart has not yet been excavated, one cannot exclude that there was an unfortified settlement there in the Pre-Viking and Viking Ages and that the fort was established only in the Final Iron Age.

The fort at Kärla in the western part of the island of Saaremaa was presumably founded in the Viking Age. The fort has an exceedingly large circular rampart 500 m in length and surrounding an area of ca 18,700 m². The rampart's height, which reaches 10 m, is also awe-inspiring. Sand dunes have been made use of in parts of its construction. The cultural layer in the compound, which contains sand, pieces of charcoal, and burnt stones, is 30–70 cm thick. The fort's location is unusual, as it is situated in a forest, 7–8 km from the nearest Iron Age settlement. On the other hand, the fort is quite close to the iron production area at Tuiu, which entered into use at the end of the Viking Age (see 4.1.1), as well as to Tagalaht Bay, which is a good natural harbour. Two radiocarbon dates obtained from the charcoal gathered in the compound and the rampart suggest that the fort was already in use in the Viking Age (Fig. 14). Most radiocarbon dates and finds from the site are from 11th–13th centuries (Ligi *et al.* 1996, 23; Peets 1996, table 1).

2.1.4. The fortifications of forts

The principles of establishing and constructing forts appear to have remained relatively unchanged throughout the second half of the first millennium. The outer appearance and defences of forts display considerable variation resulting from the differences in landscapes. Another factor that governed the construction of forts was the availability of construction material: in areas with abundant limestone, for instance, this material was also used in the building of ramparts. The size and means of the fortification also depended on the builders' resources and needs and whether or not the fort was to be permanently inhabited.

In establishing forts, builders sought to take maximum advantage of natural features. Ramparts were only erected in the least well protected spots, and the shape of the compound and ramparts followed the shape of the hill. Earthwork done for fortification was small-scale, especially when one considers that a fort's defences were often formed in several stages over a long period of time.

As a rule, the ramparts of forts from the second half of the first millennium reveal the remains of several phases of construction which are separated by fill and levelling layers consisting of sand and gravel and no artefacts. In the rampart of the

fort at Rõuge, for instance, there are six distinguishable stages of construction (Schmiedehelm 1959, 157). Five stages encompassing a maximum period of 200 years have been counted in the rampart of the fort at Unipiha (Aun 1975a, 346f.). The end rampart of fort II at Pada exhibited at least two stages of construction dating from the second half of the first millennium (Tamla 1980, 379), while in the rampart of fort Tarakallas at Purtse, which was in use from the 8th to the early 13th century, five stages of construction were discerned (Mäesalu & Tamla 1983, 307f.).

Forts were mostly destroyed by fire, which is generally understood to have been caused by an attack. One cannot, however, exclude other possibilities. The wooden defences of forts were built in a rather primitive manner, often directly on the ground. In many cases soil was heaped up against the wooden structures, which certainly caused the wood to decay rapidly. Consequently, the wooden forts of that time could not have been very durable. They required renovation from time to time, and burning them down may have been the easiest way to free the area for the construction of new fortifications. Also, accidental fires that arose from a hearth or some smaller light source must have been frequent.

In their first stages of occupation, forts often lacked ramparts, and were protected only by a wooden fence or a more elaborate structure of log boxes. In the earlier stage at Unipiha, the side that was not protected by steep slopes had a fence made of horizontal logs (which is borne out by the charred timbers found under the later rampart), and only later was a rampart built at that location (Aun 1975a, 346). The cultural layer of the oldest settlement period at the fort at Urvaste, south-eastern Estonia, is also located beneath the rampart (Valk 2007, fig. 21), and the same goes for the fort at Kalana described above (see 2.1.2, Fig. 12). One can only hypothesize about the precise appearance and height of the protective fence. In order for the fence to prevent the enemy from invading the fort, it had to be at least high enough that an attacker could not climb over it without using additional equipment, thus at least 2.5–3 m.

At some forts, earth or stone ramparts were not built at all; these were probably only used for shorter periods. A characteristic example of a fort without a rampart is the Viking Age fort at Peedu, south-eastern Estonia. To defend its 650 m² courtyard, rectangular structures made of horizontal logs and connected to each other were erected at the eastern end of the fort. These were not only defensive structures, but also dwellings (Moora 1939, 107f.). Similarly, the forts at Aakre, Kuigatsi (Puka), and Karula all have cultural layers but nonetheless lack ramparts. Wooden fortifications were probably present on the lateral sides of forts that possessed more substantial ramparts at their ends. Traces of such structures have, for instance, been found at the fort at Padise, north-western Estonia (Saadre 1970), on the northern plateau of the fort at Iru (Lang 1996a, 67f.), and at the fort at Rõuge (Schmiedehelm 1959, 157f.).

As a ring fort, Pajulinn at Kuusalu is exceptional in the Estonian Viking Age context. In comparison with the large ring forts of the Final Iron Age, Pajulinn is a fairly modest structure: a rampart 4–5 m wide and just 0.5 m high enclosed a compound of 2200 m² (Fig. 10). The rampart may initially have been 1.5 m high (Tõnisson 2008, 191). Pajulinn is also unique in Estonia because the fort was built in a bog. Thus, a raft of slender pine logs covered in brush and placed in two crosswise layers was laid down to form the foundation for the stone rampart (Fig. 17; Schmiedehelm 1939, 127f., pl. X, figs. 77–78). Pajulinn is the only ring fort in Estonia that is definitely known to have been built in the Viking Age. Its structural features are more similar to the Early Iron Age circular enclosures built on flat land than the large ring forts of the Final Iron Age. However, it has been speculated that the ring fort at Ehmja (Kuradimägi), western Estonia, also dates from the second half of the first millennium (Lang 2007a, 182).

Fig. 17. *Limestone rampart with log raft foundation at the fort at Kuusalu (photo: E. Saadre, 1936, AI).*

In describing the dimensions of a rampart, one must take into consideration that the present-day outward appearance of a fort reflects the situation after the destruction that ended its last period of use. Ramparts were generally not heaped all at once, but gradually over time, and new structures were erected above the ruins of the old ones. Several of the forts that were established in the late first millennium remained in use even in the Final Iron Age, at which point their fortifications were significantly improved. The larger ramparts of forts that were used no later than the Viking Age stand today approximately 3–3.7 m above the surface of the fort's interior. Fort II at Lohu, north-western Estonia, for instance, has a rampart of that height (Tõnisson 2008, 200). Generally, however, the ramparts are no more than 1–1.5 m high. As regards their initial height, the presently 2 m high southern limestone rampart of the fort at Iru, for instance, has been estimated to have originally reached 3.5–4 m in height on the basis of the amount of debris that surrounds it (Vassar 1939, 75). One must, of course, take into consideration that in addition to ramparts, forts were usually also defended by the slopes of an elevation.

The ramparts of forts in southern Estonia usually consist only of sand or gravel. In northern and western Estonia, where limestone is readily available, it was made use of in the construction of ramparts. Excavation of the southern rampart of the fort at Iru, for instance, revealed that the rampart consisted entirely of stone and gravel, and had originally been up to 4.7 m wide. Both

Fig. 18. *Limestone wall on the outer side of the rampart at fort II at Pada (photo: Toomas Tamla).*

faces of the rampart were reinforced by a wall laid of large limestone slabs, into which larger granite stones had been inserted (Lang 1996a, 66f.). The earliest phase of the fortifications of fort Tarakallas at Purtse, Virumaa, was comprised of a 4–5 m wide rampart made of stones and sand, reinforced on either side by dry stone walls of limestone slabs, which in places remain intact to a height of 1 m (Mäesalu & Tamla 1983, 307). At fort II at Pada, a limestone wall was only found on the outer side of the rampart (Fig. 18; Tamla 1980). The circular rampart of Pajulinn at Kuusalu was also laid of limestone slabs.

In the construction of the larger, i.e. eastern, end rampart at Rõuge, joined timber boxes filled with sand were probably used (Tõnisson 2008, 78). Remains of one such box were also found at the fort of Tartu, but radiocarbon dating admits the possibility that they date from the Final Iron Age (Tvauri 2001, 76f.). Definitive data of timber box walls being used to reinforce a sand rampart are indeed known from forts of the Final Iron Age (e.g. Lõhavere and Soontagana).

The sand, gravel, or stone ramparts of forts were topped with log fortifications, which were often inhabited. One vivid example of this are the timber boxes that surmounted the rampart of the Pre-Viking Age fort at Saadjärve. These boxes were constructed of logs laid horizontally to a size of 2 × 2.5 m; fire-weathered hearthstones

and animal bones found therein testify to their use as a dwelling (Lavi 2002, 241, 255). The earlier ramparts at Iru were presumably similar (Lang 1996a, 70), and analogous fortifications were present on the flanks of the fort at Rõuge (Aun 1992, fig. 12). Boxes of horizontal logs were used in forts of the second half of the first millennium throughout the Baltic States, north-western Russia, and eastern Central Europe.

It has been presumed that as early as in the 10th century the middle rampart of the fort at Iru (see Fig. 13) included a log tower, which defended the main gate to the northern plateau (Lang 1996a, 71, 103). That would be unique in Estonia at such an early time, since defensive towers only became common in early 13th century forts (Tõnisson 1981b).

Forts could be entered through one or several gateways. At many forts (e.g. Pajulinn at Kuusalu and Pada II), the location of the gateway(s) is still visible today. A gateway dated to the late first millennium has been uncovered in the middle rampart at Iru (Lang 1996a, 61f.). A 3 m wide passage with dry walls of limestone slabs traversed the limestone rampart crosswise (Fig. 19: B). A wall had been erected semi-diagonally in front of the gateway, protecting the gate from direct attack. This formed a gateway 7.6 m in lenght and with a 45° turn. Attackers had to approach the gate in such a way that their right (unshielded) sides faced a defensive tower likely situated on top of the fort's rampart. The passage's inner opening was later walled up, perhaps to trap the attacking enemy by the faux passageway.

Another passage was found traversing the same rampart at Iru in its western end, though it was much narrower, reaching no more than 1 m in width (Fig. 19: A). Two stone-packed post holes at the inner opening suggest that a wooden gate had been present there. A narrow passage, which was presumably contemporaneous with the main gate, was also discovered in the stone wall that hemmed the western edge of the north plateau.

Fig. 19. *Excavation plan of the middle rampart at the fort at Iru, showing two gateways (after Lang 1996a, fig. 19).*

Here, two opposite limestone walls were laid semi-diagonally through the rampart, 0.6–1 m from each other, narrowing outwards. It has been presumed that this passage was used as an alternate or emergency exit to reach the hillside (Vassar 1939, 69). All of the above-described defensive passages at Iru date from the second half of the 10th century (Lang 1996a, 61, 103).

Several forts from the second half of the first millennium have shallow ditches in front of their ramparts. For instance, a ditch about 1 m deep and 2–2.5 m wide was discovered in front of the end rampart of fort II at Pada, at a distance of 4 m from the rampart's stone structures (Tamla 1980, 379). A moat about 10 m wide and 2 m deep lies in front of the rampart of the fort at Rõuge (Schmiedehelm 1959, fig. 1). Forts generally have such a low moats that they were not a significant obstacle for attackers. It is likely that such ditches were generally not consciously built defences, but depressions left by taking soil to make the rampart.

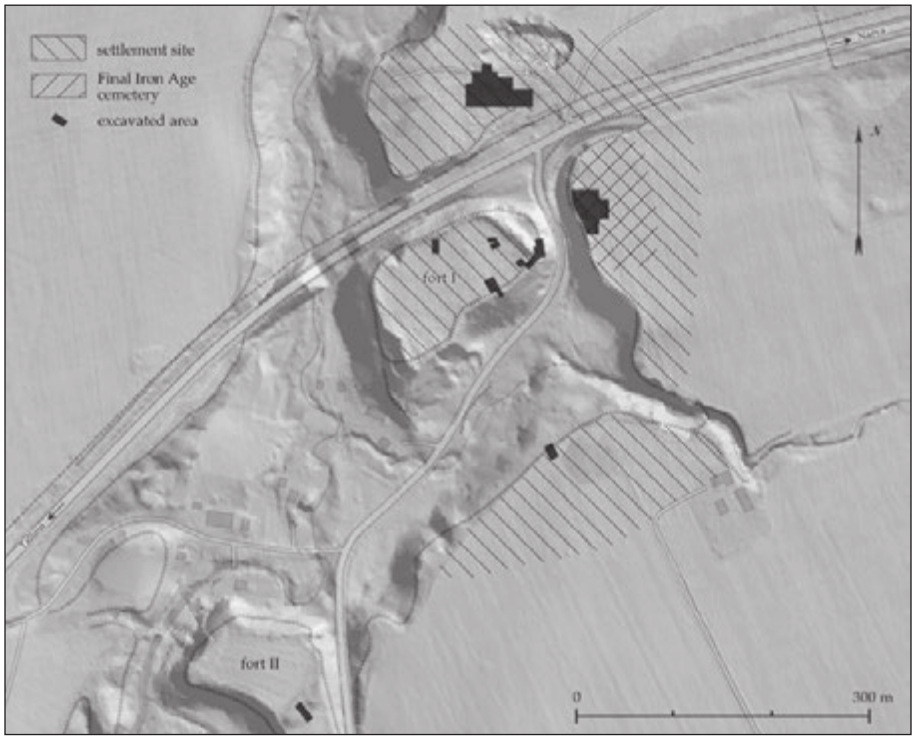


Fig. 20. *Fort-and-settlement complex at Pada (map: Estonian Land Board; location of the excavation trenches after Tõnisson 2008, fig. 30). Note that fort I was established only in the Final Iron Age, above the cultural layer of the Viking Age settlement.*

2.1.5. Fort-and-settlement centres

In the Pre-Viking Age it became common for there to be a settlement in the direct vicinity of a fort. Although such arrangements of a fort with an adjacent settlement began to arise by at the latest the beginning of the Pre-Viking Age, most of these complexes were founded in the Viking Age. Most Viking Age forts were coupled with a neighbouring settlement, although examples of forts without settlements are also known (Figs. 4, 7). The greatest number of such fort-and-settlement centres have been found in south-eastern Estonia, and fewer in Virumaa, while they are more sparse in north-western Estonia, and appear to be completely absent in central and western Estonia. This matches the general pattern of distribution of forts, as the latter two regions are relatively lacking in forts from that period. Similar complexes are also known in the Pskov region across Estonia's eastern border, and in Latvia, Lithuania, and Central Europe.

There are about twenty definitely known Pre-Viking and Viking Age fort-and-settlement complexes: Iru, Kuusalu, Lohu II, and Keava/Linnaaluste I and III[3] in north-western Estonia; Pada II and Ussimägi at Toolse in Virumaa; Kassinurme, Peatskivi, Saadjärve, Lähte, Tartu, Alt-Laari, Peedu, Unipiha, Aakre, and Otepää in Tartumaa; Tilleoru, Rõuge, Karula, and Hinniala in Võrumaa; Viljandi and Tõrva in Viljandimaa. The most

[3] The fort and settlement in this complex have been described in the literature using different names.

thoroughly examined complexes include Iru, Kuusalu, Keava/Linnaaluste, Tartu, Unipiha, and Rõuge, where both the fort and the adjacent settlement have been excavated.

In addition, one can tentatively consider Tarakallas at Purtse, Joaorg at Narva, Varangu, Nurkse, and Kloodi, all in Virumaa, to be among the sites of the fort-and-settlement type. So far the precise nature of these sites is unclear because currently, datable finds are from only the fort or the settlement in such complexes, or the existence of one of the two is questionable.

In such complexes, settlements were typically located directly adjacent to forts. In the case of promontory forts, for instance, they mostly occupied the area in front of the fort's rampart (e.g. at Iru, Rõuge, and Alt-Laari). Some of these settlements can today be observed in the landscape as several separate patches of cultural layer (e.g. at Iru, Linnaaluste, and Kuusalu). Their size varies from a quarter of a hectare (Tõrva) to about a dozen hectares (Linnaaluste). The chronology and population of such fort-settlements and the location of buildings therein remain indeterminate because excavations have usually been small-scale (see also 7.2).

The most thoroughly excavated fort-settlement in north-western Estonia was the one adjacent to the fort at Iru, and is presently observable in at least three separate patches (Lang 1996a, 104–118). The largest of these is to the north-east of the fort, on a limestone plain, where an area of 300 m² has been excavated in two separate trenches. At the western foot of the fort, right on the bank of the Pirita River, there is a small patch of cultural layer, where an area of 96 m² has been investigated in four small trenches (Fig. 13; Lang 1996a, 104; Mägi 2007a). Thirdly, the settlement's cultural layer has also been observed on the south-eastern foot of the fort (Tõnisson 2008, fig. 41). The finds from the fort-settlement (e.g. Figs. 30; 53: 1; 70) are very similar to those found in the fort itself, primarily potsherds. Based on the find material, the settlement by the fort arose in the 7th century. The buildings at the western foot of the fort were abandoned at the end of the Viking Age together with the fort, but the settlement to the north-east of the fort continued throughout the Final Iron Age (Lang 1996a, 117f.).

The area of the Linnaaluste I settlement site near the fort at Keava, southern Harjumaa, is over 8 ha, but was once even larger, as part of the settlement site was destroyed as a result of gravel excavation. The site has been investigated in two smaller trenches with a total area of ca 39 m². Unfortunately the site has been seriously damaged by the farming activities that have taken place throughout the entire area for centuries: the cultural layer has been disturbed from top to bottom and in some places heaped into piles. Archaeologists were only able to examine the base of a *keris* stove that had been dug into the ground; ^{14}C dating has shown this to date from the 7th or 8th century (Fig. 21; Konsa *et al*. 2002). Excavation and surface survey have also yielded roughly 1500 sherds of Pre-Viking and Viking Age clay pottery. In addition, separated from the described site by a paludified kettle basin is a patch of cultural layer of about 100 × 40 m in extent (Linnaaluste III), which originates from a former smithy (Lang & Konsa 2004, 123). This was investigated through three excavation trenches with a total area of 52 m².

The vast settlement site situated adjacent to fort II at Pada, Virumaa, is the most extensively investigated Viking Age settlement site in northern Estonia, with 1800 m² of its surface area being excavated (Fig. 20; Tamla 1983). The settlement's cultural layer was thin, merely 30–40 cm; it only reached a metre in thickness above natural or man-made depressions. Excavations uncovered remains of *keris* stoves and hearths, which had been dug into the natural subsoil by as much as 15–20 cm, and indicate the presence of dwellings (see also 2.1.9). The majority of the find assemblage is pottery, but also found were

two iron scythe-knives (Fig. 61: 3), a clay weight for an upright loom (Fig. 89), a few penannular brooches (Fig. 95: 2–3), two decorative bone pins (Fig. 106), a bronze spiral finger ring (Fig. 130: 4), two skates made of bone (Fig. 71), weaving swords (Fig. 90), pendants (Figs. 118: 2–3; 119: 3, 7), whetstones (Fig. 52: 1), ship-building rivets, etc.

The most thoroughly investigated settlement adjacent to a fort in south-eastern Estonia is at Rõuge. The settlement was located directly east of the fort, right behind the moat (Fig. 8). The extent of the settlement site is ca 7000 m², of which roughly a third has been excavated (Tõnisson 2008, 326). Remains of clay floors and heating devices were uncovered in the cultural layer. Due to tillage, the ancient cultural layer was disturbed significantly and building remains were destroyed. However, the find assemblage obtained from the settlement is incredibly rich and diverse for the Estonian context (e.g. Figs. 39: 2; 51: 3; 52: 2; 54: 3; 55; 62: 1; 65: 2–3; 78: 2; 87–88; 91; 107: 2; 114: 4; 119: 4; 164: 9–10).

Other excavations in south-eastern Estonia include the settlements next to the forts at Aakre and Alt-Laari. At Aakre, the dark cultural layer, containing pieces of charcoal and potsherds, was 40–70 cm thick, and in places up to 90 cm (Aun 1975b). An excavation trench of 180 m² uncovered part of a building's base, somewhat recessed into the ground. Ruins of a stone-laid hearth with potsherds and animal bones scattered around it were found therein. At the settlement site next to the fort at Alt-Laari, the cultural layer had been displaced down to the natural subsoil in an area of ca 2300 m² due to the construction of a road and parking lot. At least 17 round or oval hearths filled with burnt stones, coal, and potsherds appeared in the natural subsoil. Their diameter varied from 40 to 180 cm, and their extant depth from 10 to 40 cm (Lillak & Valk 2009b). Radiocarbon dates were obtained from three hearths; one was dated to the Late Roman Iron Age, one to the Migration Period, and one to the Pre-Viking Age (Fig. 21).

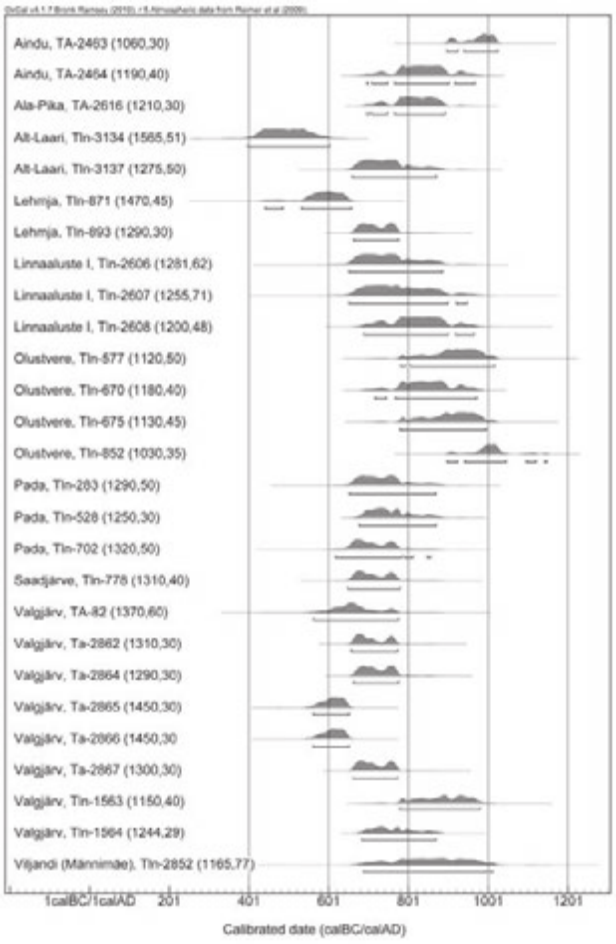


Fig. 21. *Radiocarbon dates from the settlement sites of the second half of the first millennium AD.*

It is difficult to make generalizations about the formation of fort-and-settlement complexes, because the excavation of both the fort and its adjacent settlement have been sufficiently thorough in only a few places. In any case, it is clear that fort-and-settlement systems arose in different ways. At Iru, for instance, the settlement began to develop in the 7th or 8th century at the foot of an already existing fort (Lang 1996a, 103). The reverse is the case at Rõuge, as the fort was established beside or even on top of a previously existing settlement (Jaanits *et al.* 1982, 260f.). The

radiocarbon date obtained from beneath the rampart of the fort, presumably from the cultural layer of the settlement site, suggests that a settlement may already have arisen at Rõuge in the Roman Iron Age (Lillak & Valk 2009a, table 1). The fort, on the other hand, was established in the second half of the 7th century or in the 8th century, which is evidenced by the radiocarbon dates of the earliest fire-damaged layer in the rampart (Fig. 14; Lillak & Valk 2009a). The settlement by the fort of Alt-Laari also arose in the Late Roman Iron Age (Lillak & Valk 2009b), while the fort itself was established only in the Pre-Viking or Viking Age, based on the ceramics found therein. Similarly, it has been hypothesized that there was first a settlement at Tõrva, while a fort was erected on the area it occupied later (Tõnisson 2008, 71). Pajulinn at Kuusalu and three settlement sites in the direct vicinity of the fort all appear to have been established simultaneously around the 9th century (Lang 1996a, 367).

The fort-and-settlement system collapsed throughout Estonia during the first half of the 11th century at the latest (see also 7.5). Based on currently available evidence it is difficult to determine at what point in time a fort or settlement fell into disuse. In most cases the settlement was vacated first. In several places where a settlement was abandoned, the fort was made even larger and more secure (e.g. at Keava, Tartu, and Otepää) or a new and larger fort was built a small distance away from the previous one (e.g. at Pada and Lohu). At Iru and Kuusalu the adjacent settlement persisted even into the Final Iron Age, long after the fort ceased to be active. Many fort-and-settlement complexes, mainly those in south-eastern Estonia, were completely abandoned, however (e.g. Unipiha, Peedu, Aakre, and Rõuge).

In addition to fort-and-settlement type centres, there are at least 11 known Pre-Viking or Viking Age forts in Estonia where no accompanying settlement has been found (Fig. 7): Padise and Ahisilla in Harjumaa, Rakvere in Virumaa, Kurista in Tartumaa, Vooru in Viljandimaa, Mõrgi and Urvaste in Võrumaa, Lihula and Soontagana in Läänemaa, and Kärla and Asva on the island of Saaremaa. It is notable that the cultural layer of these forts is shallow, and the forts were presumably not permanently settled (Padise, Ahisilla, Kurista, Mõrgi, Urvaste, and Kärla). Moreover, some of them are situated far from the other settlements that were known to exist at that time (Padise, Soontagana, and Kärla).

2.1.6. The fort and settlement of Jur'ev in Tartu

As described above (1.2.3), Tartu appeared in the written records in about 1030 when the Fort of Jur'ev was established there by the order of Grand Prince Jaroslav Vladimirovič of Kiev. This is an exceptional site in the context of the Estonian Iron Age, and deserves to be examined separately. An extensive area in and around the fort has been archaeologically investigated, offering quite a comprehensive understanding of the settlement history of Tartu in prehistoric times (Tvauri 2001).

A fort and an adjacent settlement were present in Tartu in the Pre-Viking Age at the latest. The find assemblage from the 8th–9th centuries is, however, so scarce that one cannot speak of Tartu as a centre of great importance at that time. Significantly more finds can be dated to the 10th century. The settlement was located on the plateau of Toomemägi hill in front of the fort on its western side and along the foot of the hill to the north and east of the fort (Fig. 22). Based on the artefact finds, the fort and settlement arose at more or less the same time. The archaeological record does not indicate whether the fort was in use around the year 1030. The East Slavonic chronicles do not mention a siege, only that the

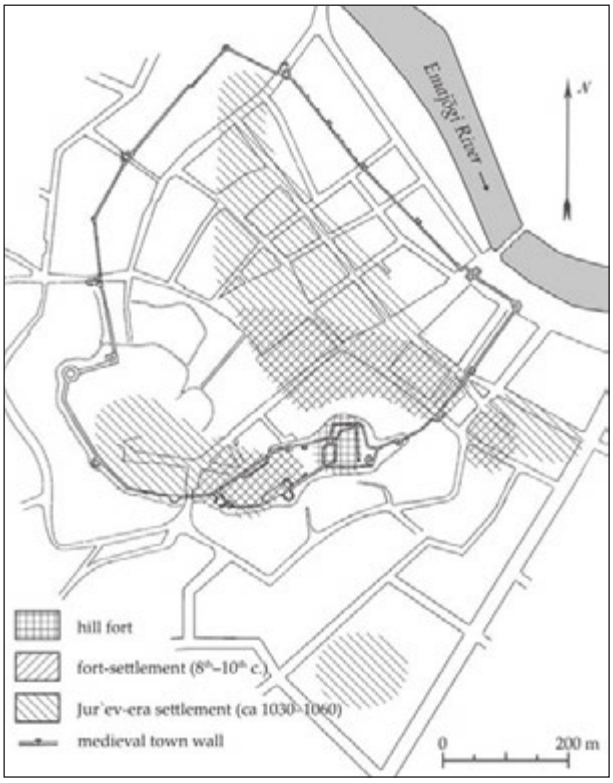


Fig. 22. *Location of the prehistoric fort and settlement site in Tartu.*

Chud were defeated. Thus it is possible that the fort, or at least the adjacent settlement, had already been abandoned by the time it was seized by Jaroslav, similarly to most fort-and-settlement complexes of the Viking Age in Estonia.

Most of Tartu's prehistoric cultural layer in both the fort and settlement arose when the area was ruled by the Grand Prince of Kiev. At the fort, a layer that contains extensive quantities of wheel-thrown earthenware characteristic of north-western Russia, and tentatively, the remains of a building in the courtyard, can be connected with that period. At the foot of the hill fort, a cultural layer of the prehistoric settlement of about 20 cm in thickness extends over an area of 800 m in length and up to 250 m in width. Additionally, a settlement area at least 300 m long and up to 150 m wide has been detected on the northern plateau of Toomemägi, and another with as yet undetermined boundaries was situated south of the fort (Fig. 22). The houses in the settlement are mentioned in the East Slavonic chronicles in connection with the events that took place in about 1060. Since a few human bones have been found in the south-eastern part of the Jur'ev-era settlement site, it has been suggested that this area hosted the Christian cemetery of the time, which had later been destroyed (Vissak 2000, 114).

Thus Tartu's extensive cultural layer reveals it to be a large settlement by the standards of the time. In comparison, the town's cultural layer from the 13th–14th centuries is only slightly larger. The town of Pskov's cultural layer from the early 11th century extends over an area about 600 m long and up to 400 m wide next to the fort. Across from the fort in Pskov, on the other side of the Pskova River, there is another settlement area about 300 m long and 100 m wide, in addition to two patches of cultural layer with a diameter of about 100–150 m some distance away (see Beleckij 1996, fig. 56).

The cultural layer of Tartu's Jur'ev era differs considerably from the earlier deposits of the site in terms of find material. It mainly contains wheel-thrown earthenware of north-western Rus origin (examined in greater detail below, 2.2.2.4), but other artefacts typical of Rus have been found as well. One *bi-conical spindle whorl made of pink slate* (Fig. 23: 1) was found in the fort, and six more in the layer of the settlement site. Elsewhere in Estonia, only two such spindle whorls are known: one from stone grave II at Maidla, Läänemaa (AM A 580: 2053), and the other as a stray find from Risti, Harjumaa (Trummal 1964, 69). The rock from which they were made is found in the vicinity of Ovruč north-west of Kiev in Ukraine. Pink slate spindle whorls appeared in the cities of northern Rus at the end of the 10th century, and were widespread until the 1240s (Kolčin 1958, 111; Rybakov 1965, 189f., 194–196). It has

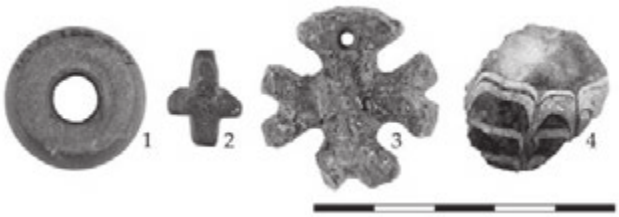


Fig. 23. *Finds of Rus origin from the Jur'ev-era settlement site in Tartu: 1 spindle whorl of Ovruč slate; 2 cross-pendant of Ovruč slate; 3 amber cross-pendant; 4 fragment of a glazed clay Easter egg (TM A 188: 204; 40: 317; 188: 1041; 70: 2115; photo: 1–3 Kristel Külljastinen, 4 Arvi Haak).*

been hypothesized that they were also used as a medium of payment (Mugurevičs 1965, 36).

Several objects of Christian origin from the 11th century have been obtained from the south-eastern part of the settlement site in the area of present-day Vanemuise and Vallikraavi streets. No such items have been found elsewhere in Estonia. The first that is worthy of mention is a small *cross made of Ovruč slate* (Fig. 23: 2). Such items appear in Rus beginning in the 10th century (Kolčin 1958, 111; Grozdilov 1962, fig. 53: 10; Nikolaeva & Nedošivina 1997, 173). A *cross-pendant made of bronze and decorated with enamel* and a *cross-pendant of amber* (Fig. 23: 3) have also been obtained from this part of the settlement, while another amber cross-pendant was found in the settlement layer north of the fort. Two fragments of *glazed clay Easter eggs* (Fig. 23: 4) have also been found in the area between Vanemuise and Vallikraavi streets. When intact, these hollow clay eggs were 3–4 cm long with a ball in the cavity that made a rattling sound. These eggs had brown and yellow glazing and are thought to originate from Kiev (Makarova 1966, 143f.). Such eggs have been found throughout eastern Germany, Poland, and the Baltic States, as well as in Gotland, Lund, and Sigtuna in Sweden in addition to the former territory of Kievan Rus. Clay Easter eggs were most common in Rus in the 11th century (Makarova 1966, 144; 1967, 44f.). The ritual use of eggs as a symbol of the resurrection of Christ was particularly widespread in Eastern Roman lands, whence Christianity spread to Rus (Lõugas 1981, 100; Šovkopljas 1980, 97f.).

Another notable object obtained from the south-eastern part of the prehistoric settlement in Tartu is a fragment of a *bronze axe-shaped amulet* (Fig. 24). Such amulets were widespread in Rus, mostly in the area around Kiev. They have also been found in the territory of the former Volga Bulgar state, and a few also in Denmark, Finland, Latvia, and Poland (Makarov 1992; Edberg 1999). Nine axe-shaped amulets or fragments thereof have been discovered in Sigtuna, Sweden (Edberg 1999). This is a Scandinavian type of object, found in Rus mainly in the 11th century, and less often in the 12th century. It appears to be an amulet worn by professional soldiers (Makarov 1992, 52). The axe was the symbol of St. Olaf, a popular saint among Scandinavians, and it has been suggested

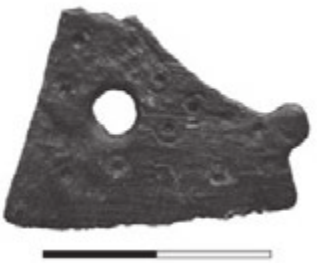


Fig. 24. *Fragment of a bronze axe-shaped amulet from the Jur'ev-era settlement site in Tartu (TM A 51: 1504; photo: Andres Tvauri).*

that axe-shaped amulets are connected with his cult (Roslund 1990, 57).

In the Jur'ev period, there was apparently a fort in Tartu that was subordinated to the Grand Prince, and a settlement or *posad* arose beside it. In northern Rus such centres began to appear in the 10th century and the pattern in which they arose was quite consistent: in ethnically Finnic lands, an urban settlement would develop next to a fort controlled by the Grand Prince of Kiev,

and officials, clergymen, merchants, and craftsmen came to live there. In that way, the centres became Slavicized. The closest example of such development is Pskov (see Beleckij 1996). Due to the paucity of sources, it is impossible to say how Tartu was governed and administered, and on what legal basis. The name of Jur'ev seems to hint towards Tartu's status at that time, as Rus rulers founded many cities and forts bearing their names. These were probably all originally established as the sovereign's personal domains (Rapov 1977, 222f.). Considering the fact that the 11th-century wheel-thrown earthenware found in Tartu was largely of the Pskov style, one can presume that the residents of the Tartu *posad* had close connections with Pskov. It is likely that at least some of the residents of Jur'ev came from Pskov.

2.1.7. Valgjärv lake settlement

The lake settlement in 33.1 ha Lake Valgjärv at Koorküla in southern Viljandimaa is, at least according to the currently available research, a unique archaeological site in Estonia. The settlement was built on stilts in the middle of the lake on a shoal, which is now 1–3 m under water (Fig. 25). A bridge constructed over piles connected the settlement with the shore (see 5.5.3).

Smaller underwater archaeological investigations have been performed repeatedly in Valgjärv over the years (Selirand 1960; 1965a; 1986; 1990; Rönnby & Kenas 1988; Roio 2003; 2007; Virtanen 2006; Liiva 2008), but it has not yet been possible to record the entire area of the settlement. Logs, posts, and piles up to 9 m long and 30 cm in diameter, some of which bear traces of burning, have been found in an area of about 700 m². Axe-carved carpentry joints were found at some of the log ends. Among these remains, sherds of hand-modelled clay vessels and abundant burnt hearthstones have been found. Radiocarbon dating places the settlement site to the 6th–9th centuries (Fig. 21), while dendrochronological dating identifies a date range of 656–809 (Virtanen 2006).

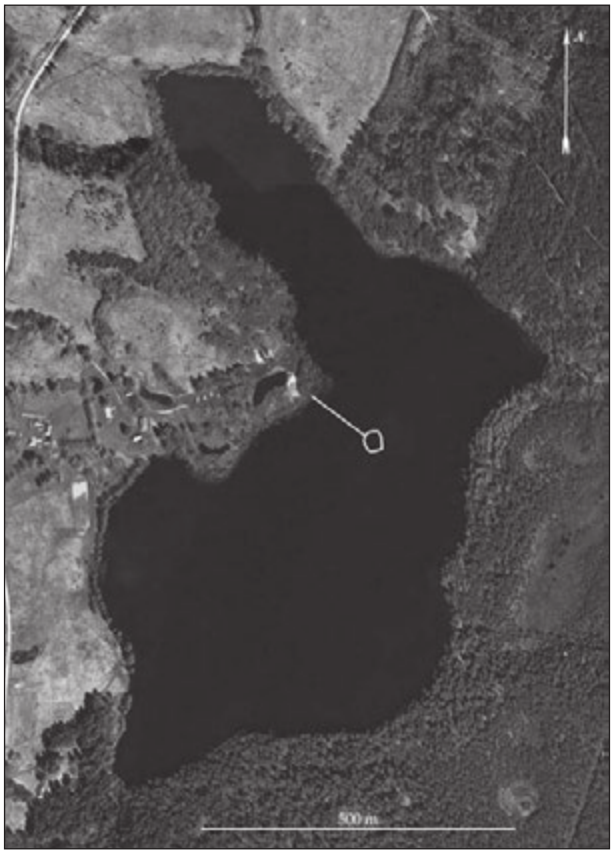


Fig. 25. *Location of the settlement site and bridge in Lake Valgjärv (photo: Estonian Land Board; location of the settlement site after Virtanen 2006).*

At least ten such settlements dated to the second half of the first millennium are known to have existed in the Vidzeme lakes in northern Latvia (Apals 1965). Of these, the Āraiši lake settlement has been most thoroughly investigated. Five phases of construction, the oldest from the 9th century, have been distinguished on the submerged islet that once stood in the lake. The buildings of the earliest phase were best preserved, in some places up to seven logs deep. The houses were fitted tightly to one another on a platform

made of rectangular logs, which was surrounded by a wooden palisade. A trackway of logs led from the shore to the settlement. The dwellings were all similar — log cabins about 5 × 4 m in size with a stove inside. Many buildings had a lean-to. The settlement was initially about 800 m² in size, while later its area expanded up to twofold. Nearly twenty buildings were simultaneously in use in the settlement (Apals 1971).

2.1.8. Other settlements

Most of the people in the second half of the first millennium lived in places other than forts or fort-settlements. Regrettably, few settlement sites from that period have been found (Fig. 26), and those that have been found have not been thoroughly investigated. Only three settlement sites are known from the Migration Period, and four from the Pre-Viking Age. Most of the settlement sites from the period under review, slightly less than 50 in total, date only from the Viking Age. Since no settlement sites from the period in question have been totally excavated, it is difficult to make definitive statements about their size. The determination of the size of the settlements is also hindered by the fact that several settlement sites from which Viking Age finds have been made continued to be inhabited even later. Given the relatively small surface area of settlement sites that had been abandoned by the end of the Viking Age, it is likely that there was usually only one household in them, and in rare cases, two or three (for more information, see 7.2).

During rescue excavations of the Migration Period settlement site at Jõelähtme in a meander of the Jõelähtme River in north-western Estonia, a 65 m long and 1–1.2 m wide trench that extended along the northern side of the old Tallinn–Narva Road was dug east from the stone bridge that crosses the Jõelähtme River. The find assemblage included a great deal of Pre-Roman Iron Age pottery, yet about a quarter of all of the potsherds originated from shallow vessels with burnished surfaces that can be dated to the 5th–6th centuries (Lõugas 1997, 158). Since no other research has been done at the settlement site, its size during the Migration Period is not known.

Another set of remains of what was possibly a Migration Period settlement has been found at the so-called Paemõis at Rõõsa village, eastern Saaremaa. Paemõis is a hummock 120 m long and 30 m wide which has a low ridge at one end and a bank 2.5 m wide and about 40 cm high at another. The site is now located about 100 m from the Maadevahe River, though it is possible that at the time it was situated on the riverbank. A test pit yielded a crossbow fibula and a bronze buckle dating from the 5th or 6th century. In the opinion of Marika Mägi, who organized the excavation, a fortified farm or chieftain's farm was situated there during the Migration Period (Mägi & Mägi 2002, 59f.).

There may also be a Migration Period settlement site beside the early *tarand* grave at Võhma, north-western Saaremaa. Excavations of the grave uncovered a cultural layer that yielded many burnt stones along with some grinding stones, fragments of whetstones, a fragment of a scythe or sickle blade, and numerous potsherds (Lõugas 1989). The ceramics that were found appear to date from the Migration Period (Valter Lang, oral report).

One of the most thoroughly investigated Pre-Viking Age settlement sites is located at Saha, east of Tallinn (Lang 1985a; 1996a, 236–238). The settlement was established on the west-north-west side of a shelving hillock. To the west of the settlement is a low moist meadow, and to the east and south are fields. The cultural layer can be found in an area of ca 100 m², but it was non-intensive and disturbed by ploughing through almost all of its depth (30–40 cm). Excavations uncovered a storage pit and four hearths, three of which were partly built on top of each other. Based on the

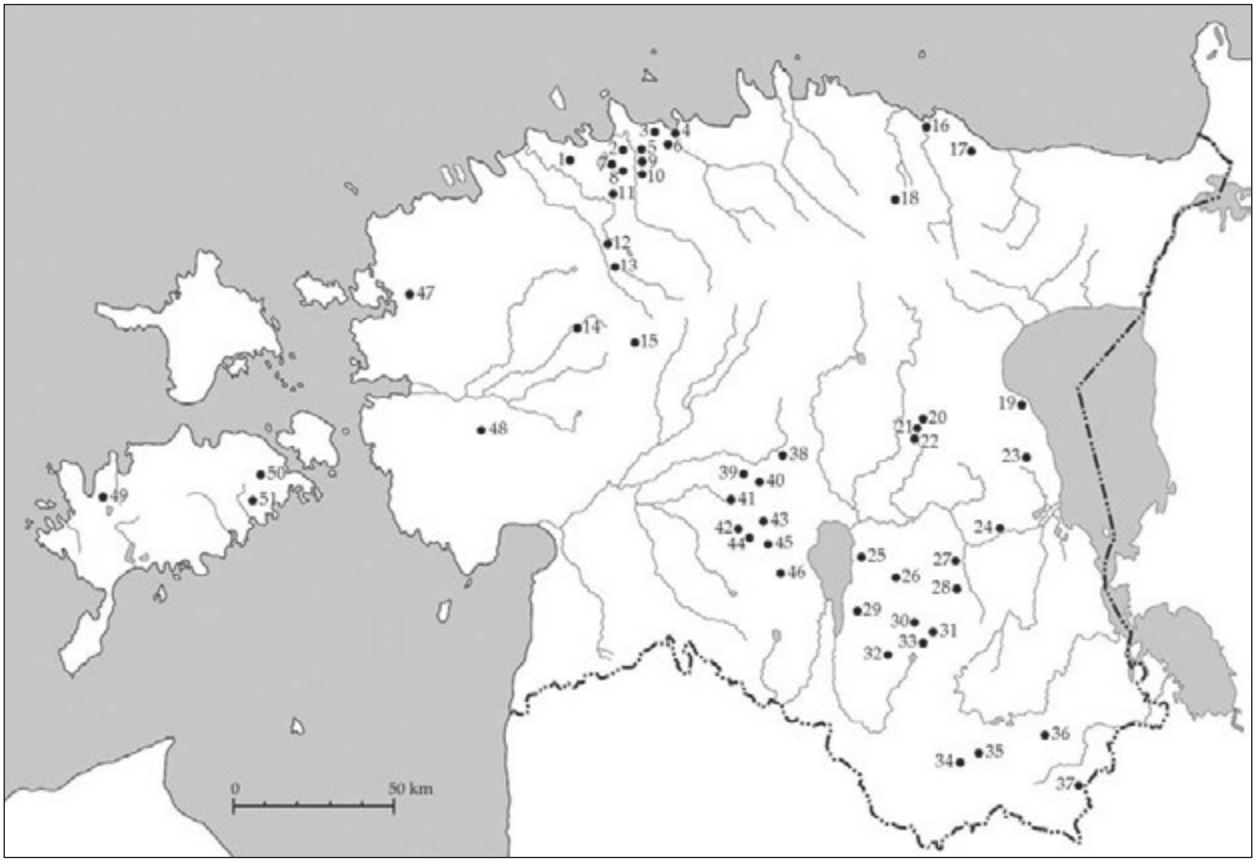


Fig. 26. *Distribution of the settlement sites without adjacent forts in Estonia in the second half of the first millennium AD. 1 Harku; 2 Väo; 3 Rebala; 4 Joa; 5 Saha; 6 Jõelähtme; 7 Mõigu; 8 Lehmja; 9 Lagedi; 10 Vaskjala; 11 Lähtse; 12 Angerja; 13 Seli; 14 Kabala; 15 Matsi at Nadalama; 16 Linnuse; 17 Pada-Kohina; 18 Tõrma; 19 Raatvere; 20 Rahivere; 21 Kudina; 22 Visusti; 23 Savastvere; 24 Sääsekõrve; 25 Kaarlijärve; 26 Majala; 27 Reola; 28 Suure-Kambja; 29 Lapetukma; 30 Päidla; 31 Ala-Pika; 32 Arula; 33 Kaarna; 34 Mähkli; 35 Roosiku; 36 Sooküla II; 37 Tserepi; 38 Venevere; 39 Olustvere; 40 Mudiste; 41 Kobruvere; 42 Mustivere; 43 Aindu; 44 Männimäe in Viljandi; 45 Verilaske I; 46 Pulleritsu I; 47 Veskimäe at Uugla; 48 Kibura; 49 Võhma; 50 Pöide (Kahutsi); 51 Paemõis at Rõõsa.*

ceramics finds, the settlement site has been dated to the 7th–8th centuries (Lang 1996a, 238).

Pre-Viking Age artefacts or radiocarbon dates have also been obtained from the settlement site at Lehmja near Tallinn and from the settlement sites at Olustvere and Mustivere in southern Viljandimaa (Fig. 21). These sites were also settled in the Late Iron Age and into the historic period, and therefore the earlier cultural layer of the Pre-Viking Age has been damaged and disturbed.

The settlement sites that are not related to forts and that have yielded Viking Age finds or radiocarbon dates through excavation or surface survey total around 50 in Estonia (e.g. Veskimäe at Uugla in Läänemaa, Lehmja near Tallinn, Ala-Pika in south-eastern Estonia, Männimäe in Viljandi, Olustvere and Aindu in Viljandimaa). Of these it is known that the settlements at Olustvere and Lehmja were founded in the Pre-Viking Age. Unfortunately, Ala-Pika is the only

archaeologically excavated Viking Age settlement site that was not also inhabited in the Final Iron Age or in the Middle Ages.

The settlement site at Aindu in Viljandimaa provides a good exemplar of a Viking Age settlement site. A cultural layer near a former spring was found in an area ca 50–60 m across. In the part of the settlement nearest the spring, the cultural layer was up to 1.2 m in thickness and consisted of black, sooty soil. The 227.5 m² excavation, established in the core of the settlement site, revealed the ruins of a *keris* stove, hearths, and remains of rows of foundation stones that had been laid below the walls of log buildings. Finds and radiocarbon dates (Fig. 21) suggest that the settlement was established in the 9th century and was in use until the Middle Ages (Valk 1994a; 1994b).

The settlement at Ala-Pika, about 7 km northeast of Otepää, on the southern bank of the Elva River, can be singled out as an exemplar of a Viking Age settlement site in south-eastern Estonia. The cultural layer is noticeably darker than the surrounding agricultural soil and contains burnt stones and potsherds in an area of 0.6–0.7 ha (Fig. 213). About 65 m² of the settlement has been excavated (Valk 1996; Tvauri 1997b). The cultural layer has been largely disturbed by ploughing and erosion. Some post holes and dispersed hearths made of granite stones have been found. Charcoal from the deepest part of the cultural layer originated from the 8th–9th centuries (Fig. 21).

2.1.9. Buildings

Relatively little source material is available to examine Middle Iron Age and Viking Age buildings. Remains of buildings in the form of hearths, floors, foundation stones, or brand remains or veins of rotten wood from former timber walls have been found at eight forts, five fort-settlements, and six other settlement sites.

The earliest dated remains of buildings from the period in question have been found at the settlement site near fort II at Pada, from beneath the layers of fort I which was later built at the same location (see Fig. 20). The contours of the rectangular foundation with a 5 × 4.5 m floor plan were visible as a row of sparsely placed limestone slabs (Fig. 27). In one corner of the building were the remains of a rudimentary *keris* stove (Tamla 1984, 361). A charcoal sample obtained from the house site was dated to the 7th–8th centuries (Fig. 21). The remains of eight stoves were discovered at the settlement site, which suggests the presence of dwellings there (Tamla 1983, 302).

Traces of a dwelling measuring 4.5 × 2.4 m have been found on the southern plateau of the fort at Iru, on the western edge of the hill (Lang 1996a, 72, fig. 22). The floor of the building had been sunk into the ground, and a large amount of 9th-century pottery was found where the building's

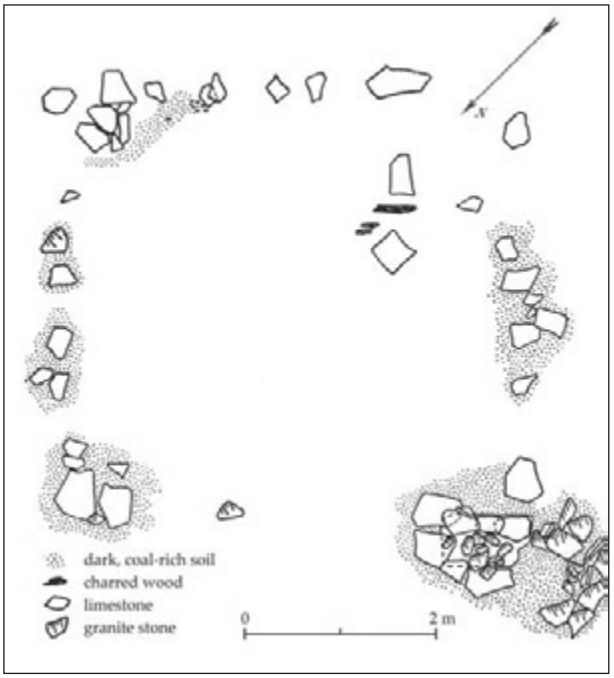


Fig. 27. *Outline plan of a building at the fort-settlement at Pada (after Tamla 1984).*

Fig. 28. *Reconstruction of an Iron Age dwelling house near the fort at Rõuge (photo: Viire Pajuste).*

stove once stood. The remains of another dwelling were uncovered in the cultural layer of the settlement site at the north-eastern foot of the fort. As in the case of the house mentioned above, many potsherds were found around the ruins of a stove that measured 3 m long and up to 1.5 m wide. The rows of foundation stones and remains of burnt timbers rendered the location of the building's walls visible (Indreko 1936, 150, figs. 11–12). The building was only partly excavated, and thus its dimensions remain unclear.

The best overview of southern Estonian Viking Age dwellings is provided by the excavation results of the fort at Rõuge (Schmiedehelm 1959, 158–161; Aun 1992, 27; Tõnisson 2008, 116–120). Its buildings were identifiable in the cultural layer on the basis of remains of clay floors, charred timbers, and clay daub (Fig. 15). It was possible to distinguish the remains of five or six rectangular buildings 5–6 m long and 4–5 m wide. Based on the charred timber remains, these were structures built of horizontal logs. Some of the clay floors had two layers, whereas others had more, which implies that they were repaired. The buildings had rudimentary *keris* stoves (Aun 1992, 27).

One of the more precisely dated dwelling places in southern Estonia is a 5.7 m long and 4 m wide building that was found at the settlement site at Olustvere. Here, blocks of granite that had served as a foundation for walls of horizontal logs were present. In the corner of the building lay the remains of a *keris* stove made of granite stones (Lavi 2005, 133f.). The radiocarbon date obtained for the building has been calibrated to the period of AD 716–971 (Fig. 21).

All existing data show that the people who inhabited Estonia during the Viking Age mainly lived in log cabins measuring 5–6 × 4–5 m (Fig. 28). Data on the Middle Iron Age buildings is very limited, but it is reasonable to suppose that similar log houses were the predominate dwelling type also in that period. Indirect evidence

that these buildings were horizontal log cabins is provided by the rarity of holes made for vertical posts at settlement sites. The log walls of the buildings may have rested on a row of stones, as in the case of the house remains found under the rampart of fort I at Pada. In most cases, however, the wall beams were placed directly on the ground. The bearing stress of a log building on the ground is so weak that a foundation is not necessary. As a moisture barrier, birch bark may have been placed between the ground and the lower logs of the wall. The shortcoming of a dwelling with a stone foundation may have been that cold air could enter the building from under the floor, reducing the building's ability to conserve heat. Wall beams resting directly on the ground tend to rot quickly in the Estonian climate, but a dwelling's heat-preservation was presumably considered to be more important than its durability. In addition, the lower wall beams of a log cabin can be exchanged (Lavi 2003, 152). As for the sunken-floor buildings, they are known only from the fort at Iru and fort-settlement at Aakre.

The remains of Middle Iron Age and Viking Age buildings that have been found do not allow definitive claims to be made about the number of rooms. Based on later Estonian ethnographic analogies, one can hypothesize that there was only a single heated room in the chimneyless log cabins of that time. It is possible that some buildings had an anteroom or unheated side rooms.

Buildings generally had earthen floors. In northern and western Estonia, where limestone is common, floors were sometimes made of limestone slabs. Such a floor was found in the above-described building uncovered in the settlement site at Iru, for instance (Tõnisson 2008, 144). Clay floors were rare, with those found in the dwellings at Rõuge being exceptional cases. One must also consider that clay layer beneath buildings may actually have been a moisture barrier beneath a wooden floor, or, possibly, the remains of wooden floors that were covered with a layer of clay (*ibid.*, 118).

Fig. 29. *Remains of a* keris *stove at the fort-settlement at Pada (photo: Toomas Tamla).*

No archaeological data are available about the roof structures of buildings. On the analogy of later ethnographic examples, it is rather likely that buildings generally had ridged roofing of split planks. Such roofs consist of planks placed on a supporting lath in two layers, with fir or birch bark inserted between the planks to improve water-resistance (Lavi 2003, 152).

Buildings were heated with rudimentary *keris* stoves, the remains of which (Fig. 29) have been found at the forts at Rõuge, Unipiha, and Tõrva, as well as the settlement sites at Pada, Iru, Linnaaluste (I), Saha, Aindu, and Olustvere. Judging from the oldest finds of such stoves (at Pada and Saha), they were introduced in Estonia in the 7th–8th centuries at the latest. In eastern neighbouring areas, *keris* stoves also appeared during the Viking Age at the latest. In this region, this is the oldest type of stove used in dwellings (Tõnisson 1981a, 43).

Viking Age *keris* stoves were mortarless stone structures up to 2 m long and roughly 1.5 m wide.

The earliest stoves had a round or oval-shaped floor plan, but as of the beginning of the second millennium AD, they were rectangular. The base of the firebox was made of granite stones or a large limestone slab. Stone walls surrounded the firebox, while the back wall was often formed of a large granite boulder. On top of the stove, larger loose granite stones were laid to form the *keris*. When the stove was heated, combustion gases escaped from between the rocks and heated them. The heat that was stored in the rocks continued to heat the room for quite a while after the fire had ceased to burn. The advantage of a *keris* stove over an open fire or clay vault stove was its heat retaining ability, which is important in a northern climate.

In addition to *keris* stoves, there were also a smaller number of vaulted clay stoves. The remains of a couple of such stoves were found in the settlement site at Rõuge. One of these survived as a round stove floor made of flat stones (Tõnisson 1981a, pl. IV); these remains enabled the determination of the diameter of such ovens to have been 1.2–1.3 m. The remains of what is presumed to be a vaulted clay stove have also been found at the settlement site adjacent to fort II at Pada, where a hearth-type structure covered by a 3–4 cm deep layer of clay and sand was unearthed (Tamla 1983, 302). Such Viking Age stoves are known to have existed in areas east of Estonia as well, and they were also used by the Livonians.

The earliest stoves were located in the centre of buildings; later stoves were placed in corners. This fact implies that the *keris* stove developed from open fireplace (Tõnisson 1981a, 47). The main purpose of stoves was heating, but the fire was also used for the preparation of food. In front of both *keris* and vaulted clay stoves, a small depression (*lee* in Estonian) up to 50 cm wide was generally made where food could be prepared on hot embers removed from the stove.

In addition to dwellings, various auxiliary buildings such as granaries, summer kitchens, smithies, etc., were used. There is unfortunately very little evidence of these. In the cultural layer of prehistoric settlements, the remains of dwelling houses with open hearths and summer kitchens are difficult to differentiate. As in the case of dwellings, auxiliary buildings were presumably mostly horizontal log structures. Since it was moisture resistance and not heat retention that was the most important feature of a granary, its walls and floor may have been built at such a height from the ground that each corner of the building rested on a larger stone. It is possible that the 10–20 cm thick layer of charred grain at the fort at Kuusalu originates from a granary. Under the grain, birch bark was found that would have served as insulation against moisture (Schmiedehelm 1939, 131; see also 3.1.3).

At forts and settlement sites, one can encounter holes dug in the ground, usually measuring 0.5–1 m in depth and 1–2 m in diameter. These holes were presumably mainly used to store food, being thus the predecessors of cellars. In such storage pits, the temperature and moisture levels remained more uniform than in above-ground storage spaces. Moreover, pits in the ground were suitable for the concealing of foodstuffs and property in the event of robbery and looting (Lavi 2003, 159).

Estonian Viking Age dwellings resemble the log cabins of other Baltic-Finnic peoples and Baltic tribes of that time. Excavations at the settlement sites of the Daugava Livonians, for instance, have shown that they also lived in small log houses measuring 3–5 × 2–4 m (Šnē 2005, 174). Comparable small log cabins or post-built houses also existed in the second half of the first millennium at forts in the Pskov region, for instance Izborsk, Kamno, and Pskov (Sedov 2002, 9–35; Plotkin 2009, 117, figs. 1–2; Beletski 2009, 403). The large post-built three-aisled long-houses built by Scandinavians (see Herschend 1989), on the other hand, differed altogether from the buildings of the eastern coast of the Baltic

Sea. One interesting phenomenon that should be mentioned, however, is that around the year 1000 at the latest, small dwellings of horizontal logs also began to be used in eastern Sweden, and this innovation may indeed have originated from the eastern coast of the Baltic Sea (Ramqvist 1992; Rosberg 2009).

2.2. Household tools and everyday items

Household tools and everyday items constitute the great majority of artefacts uncovered at forts and settlement sites, but they have also been found in great numbers in graves. A significant proportion of household tools are items related to food processing: stones for grinding grain and vessels for boiling and storing food. The fragility of pottery, the impossibility of recycling damaged pottery, and the durability of the sherds ensure that potsherds have generally been found at settlement sites several degrees of magnitude more frequently than other artefacts.

2.2.1. Grinding stones

All signs indicate that the main food of the inhabitants of Estonia in the second half of the first millennium was grain. To produce food from grain, it must be processed — husked, crushed, and ground. Rotary querns are not known from that time, and the grinding of grain and preparation of flour were performed with grinding stones (Fig. 30).

Handstones, which were applied on a base stone (a grinding slab) have been found at the forts at Kuusalu (Schmiedehelm 1939, fig. 80), Rõuge, and Pöide and at the settlement sites at Uugla, Aindu, Pada, and Iru, for instance. The settlement site at Iru has also yielded what may be a grinding slab (Fig. 30). A handstone and presumed grinding slab of sandstone have been found at Suusahüppemägi hill ['Ski Jump Hill'] not far from the prehistoric fort in Viljandi, where Viking Age and Final Iron Age layers are mixed (Valk 2000, photo 1).

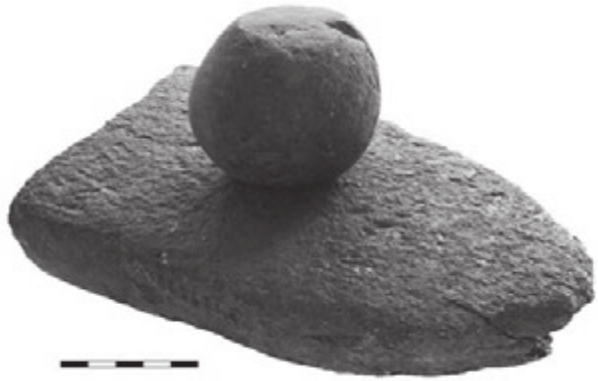


Fig. 30. *A grinding slab and a handstone from the fort-settlement at Iru (AI 3429: 857, 902; photo: Kristel Külljastinen).*

2.2.2. Pottery

Pottery is very common in the artefactual record of the second half of the first millennium in Estonia, especially in forts and settlement sites, where archaeological excavations have yielded tens of thousands of potsherds. Burial places also contain pottery, but in much smaller numbers than settlements. In investigating the pottery of that period, the fort-and-settlement centres at Iru and Rõuge are of decisive importance, as these have been extensively excavated and, as a result, large quantities of pottery have been obtained. At Iru, for instance, about 29,000 potsherds dated to the period in question have been found; this material has undergone thorough examination, and the results have been published (Lang 1985b; 1996a, 73–93).

The beginning of the Migration Period brought about changes in the existing pottery tradition in

Estonia and in neighbouring areas to the east and south. In south-eastern Estonia, the production of Late Textile Ceramics came to an end (Vasks 1991, 116–118; Beletskij 1996, 54; Laul 2001, 166–180; Lang 2007c, 135), and in northern, central, and western Estonia, Nurmsi-type ceramics disappeared by the mid-5th century (see Lang 2007c, 134f.). Carinated clay vessels, in which an incurved neck meets the lower part of the vessel at the heavily protruding shoulder, began to be produced in northern Latvia and south-eastern Estonia as early as the Late Roman Iron Age (see Lang 2007c, 135ff.). At the beginning of the Migration Period, carinated clay vessels also became the predominant type (making up two thirds of vessels) in northern Estonia, where they had already begun to be made in the Bronze Age, but comprised only one tenth of clay vessels in the Pre-Roman and Roman Iron Ages (Lang 1991, 52–54). In comparison with earlier periods, the middle of the first millennium AD saw improvement in the quality of ceramics throughout Estonia (Laul 1965, 346f.; Moora 1967b, 297; Lang 1991, 55).

Clay vessels of the Middle Iron Age and Viking Age can be divided into fine ware and coarse ware. The ratio of fine to coarse ware is very difficult to determine from the number or weight of the sherds. Fine ware is better fired and made of fabric with a uniform composition, and is thus more long-lasting. Further, the comparison is made difficult by the fact that coarse ware vessels were large pots, while fine ware included smaller bowl and cup-type vessels. It is also important to consider that coarse ware pots were used for cooking, which reduced their durability, while fine ware was probably used as serving vessels and thus lasted longer.

Despite this, it is to a certain extent possible to identify regional differences in the use of fine and coarse wares: whereas in northern and western Estonia fine and coarse wares were used almost equally, in south-eastern Estonia most of the potsherds of that period originate from coarse ware vessels. At the fort at Iru in northern Estonia, for instance, fine ware constituted 59% of the total number of potsherds, compared to 43% at the adjacent settlement site (Lang 1996a, 478). At Unipiha in south-eastern Estonia, however, fine ware made up 21% of sherds found in the fort, and 16% of those in the settlement (Aun 1975, 350). In comparing forts and their adjacent settlements, it seems that the proportion of fine ware is generally higher in forts. It must, however, be noted that the above cases do not allow drawing far-reaching conclusions. At Saadjärve in Tartumaa, for instance, 9.5% of the total quantity of sherds at the fort was of fine-grained pottery, while in the settlement that figure was 49.3%. On the other hand, the settlement's excavation trench measured only 44 m², and thus the high proportion of fine ware may have been a mere coincidence (Lavi 2002, 262).

All handmade pottery of the second half of the first millennium can be divided into two regional manufacturing traditions. Northern and western Estonia were characterized by the use of clay vessels that are referred to as Iru-type ceramics after the location where the greatest number of them was found, i.e. the fort-and-settlement at Iru (Lang 1985b; 1996a). Pottery that is characteristic of southern Estonia and the eastern part of central Estonia is similarly referred to as Rõuge-type ceramics after the location where the greatest number of them was found, i.e. the fort-and-settlement centre at Rõuge (Moora 1955, 59–62; Schmiedehelm 1959, 162–165; Aun 1976; 1992).

2.2.2.1. Iru-type pottery

The typology prepared for the pottery of Iru by Valter Lang (1996a) can be used as the foundation for classifying all clay vessels of northern and western Estonia in the second half of the first millennium.

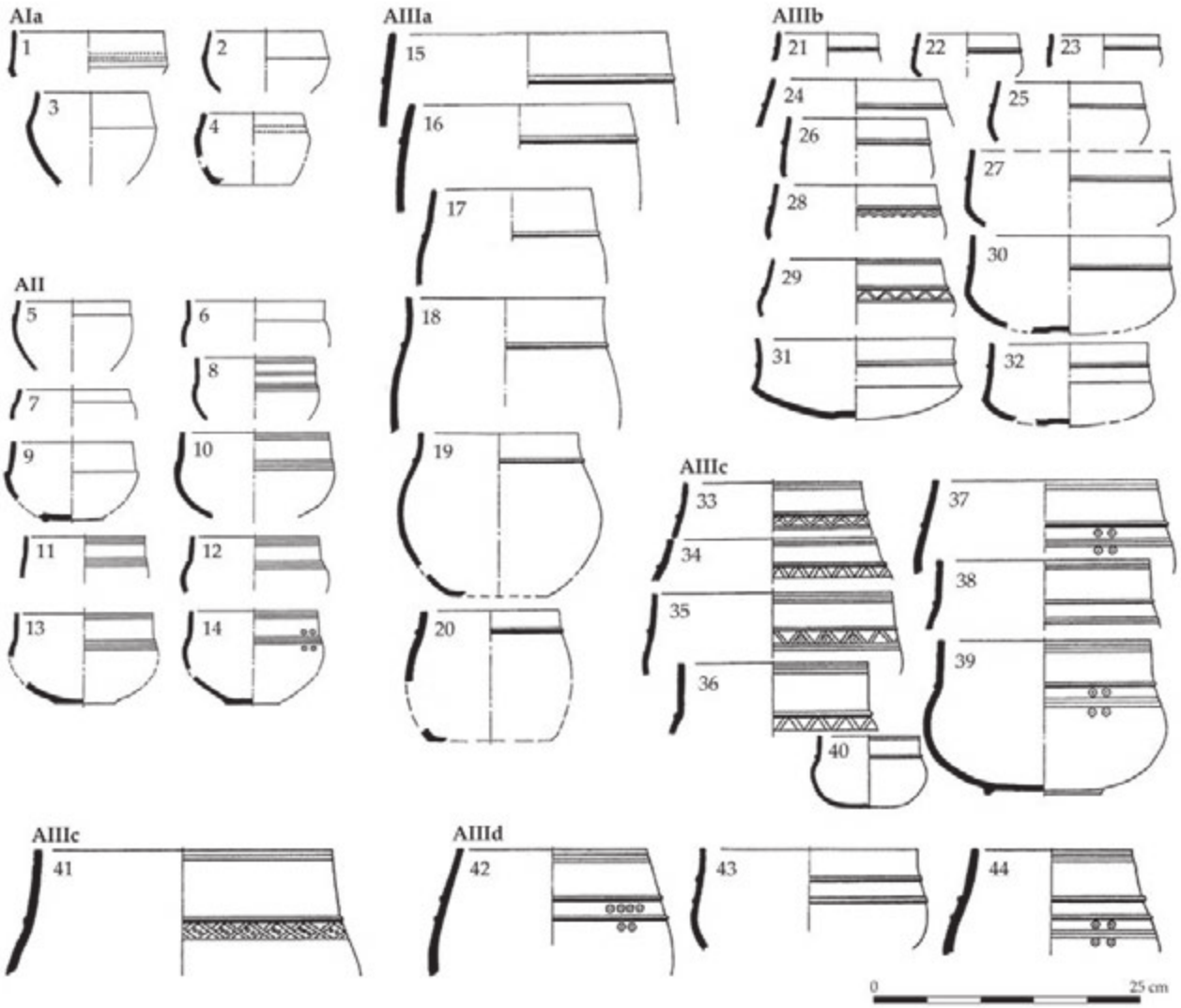


Fig. 31. *Reconstructions of fine ware clay vessels from the fort at Iru (after Lang 1996a, figs. 24–29).*

The basis of the typology of fine ware (labelled with A) is the transition from the vessel's upright, or, in some cases, slightly inverted rim to the more convex shoulder. There are three main options for this: carinated or even (type I), with a small step (type II), or with a raised ridge encircling the vessel between the neck and the shoulder (type III). A small number of vessels with atypical shapes are categorized under type IV. Fine ware vessels are made of fine-grained clay paste, have thin walls, and feature carefully smoothened or polished surfaces.

AI type vessels can be divided into two subtypes — AIa and AIb (Lang 1996a, 76f.). AIa ceramics of Migration Period northern and western Estonia are characterized by fabric containing a great deal of sand and/or fine stone debris, thin walls, and smooth, sometimes even burnished surfaces. These vessels are either carinated, with a concave rim, or they have a straight

vertical rim and a slightly bulgy shape (Fig. 31: 1–4). Their base is mainly flat, sometimes convex, and there may be a ridge encircling the bottom; a few vessels are decorated with rows of pin or stick impressions or small circles in the area of the carina (Fig. 32). The exemplars of such pottery may be found on the south-eastern coast of the Baltic Sea and the lower reaches of the Vistula River, and similarly-shaped pottery was used on Gotland (e.g. Nerman 1969, nos. 754–785). Lang uses the term 'Salenieki-style ceramics' to refer to this type of pottery (see Lang 2007c, 135f.).

Fine ware of the AIa sub-group appeared at northern and western Estonian sites at around the middle of the 5th century. The majority of the pottery found in Migration Period burial places in northern and western Estonia (e.g. Lepna, Proosa, Lagedi, and Ilumäe II) can be classified into this sub-category. At the fort at Iru, the AIa type of fine ware continued in use until the 8th century (Lang 1985b; 1991, 55f.; 1996a, 76).

Sub-type AIb includes bowls in which the transition from neck to shoulder is almost imperceptible. The diameter is greatest at the convex shoulder, and the base is mainly rounded. Most of the vessels are decorated. Such vessels are very common in archaeological sites from the 8th–10th centuries in northern Estonia. Contemporaneous equivalents can be found from sites in Saaremaa and south-western Finland, but also in Birka, central Sweden (Lang 1996a, 74–76).

The *AII type* (Lang 1996a, 78–81) includes cups with a small right-angled step at the junction of the neck and shoulder (Fig. 31: 5–14). The diameter is usually greatest at the smoothly curving shoulder section, and the base is normally flat. Such vessels are found at 8th–10th-century sites in both north-western and northern Estonia and in Saaremaa.

The characteristic feature of the *AIII type* of vessel is the raised ridge on the vessel's neck (Lang 1996a, 82–86). This type has been divided into four sub-types. AIIIa includes relatively large,

Fig. 32. *Potsherd of Iru AIa type from the stone grave-field at Proosa (TLM 15109: 207; photo: Kristel Külljastinen).*

tall pots with a raised ridge on the neck, and all of the pots of this sub-type probably had a flat base and lacked impressed decoration (Fig. 31: 15–20). Such vessels found at Iru have been dated to the 9th and the beginning of the 10th century. The only exact equivalents of such vessels have been uncovered at Pada, at fort II (Tamla 1984, pl. XIV: 5). The AIIIb sub-type comprises shallow dish-shaped bowls with a ridge on the neck; the bases are convex or altogether round, and there is often a cavity on the underside of the base (Fig. 31: 21–32). This type of vessel was in use in the 8th–10th centuries, while the exemplars from Iru that have a cavity in the base have been more precisely dated to the second half of the 9th century, based on the find context and parallels from neighbouring countries (Lang 1996a, 83). The cavity in the base also occurs on the contemporaneous vessels in south-western Finland (see Hirviluoto 1963, 48; Lehtosalo-Hilander 1982a, 82f., table 5). The AIIIc sub-type includes vessels that are relatively taller than those of sub-type AIIIb, and have one ridge at the junction of the neck and shoulder (Fig. 31: 33–41). They are further distinguished from sub-type AIIIb by the stronger curve of the shoulder and the flat base. These vessels typically have decoration consisting of lines and

ring-and-dots (Fig. 33), and they have been dated to the 10th and early 11th centuries. Sub-type AIIId contains vessels that exhibit two parallel ridges between the neck and shoulder (Fig. 31: 42–44). Most of them probably had flat bases, although vessels with convex bases do occur. Apart from Iru, nowhere in northern Estonia have vessels with several ridges been found. Based on the find context at Iru fort, such vessels were made in the first half of the 10th century.

The *AIV type* consists of a small group of vessels that in terms of shape resemble contemporary coarse ware vessels, but are considerably smaller and modelled of fine fabric. Such vessels were presumably made in different places at different times, and defining a more precise chronology for them is impossible (Lang 1996a, 87). The dating of these vessels is based mainly on the dates of corresponding types of coarse ware. Examples of such vessels include a beaker from the Kehra hoard (*tpq* 979), found in north-western Estonia (Fig. 178). The beaker has a height of 12.5 cm and a diameter of up to 7.5 cm. A sherd of a vessel with the shape, surface finish, and decoration similar to that of the Kehra beaker has been uncovered at the burial site at Kõola in northern Tartumaa. Very similar vessels have been found in areas inhabited by Daugava Livonians (Cimermane 1974, fig. 6).

The relief decorations on fine ware vessels, usually on the shoulder and rim sections, are a significant expression of distinctive local inventiveness and also an attribute that helps with the dating of items. *Horizontal parallel lines* (e.g. Figs. 31: 10–14, 33–39; 33) are a very common decoration on the northern Estonian fine ware of the late first millennium. This motif was introduced in the 7th or 8th century, and continued in use until the end of the Viking Age (Lang 1996a, 76). *Wave decoration* (e.g. Fig. 31: 28) mainly appeared on Viking Age fine ware in northern Estonia during the 9th century and perhaps even in the early 10th century (*ibid.*, 78). This decorating motif has

Fig. 33. *Clay vessel of AIIIc type from the fort at Iru (AI 4117: 75; photo: Andres Tvauri).*

close counterparts in Finland and Sweden. *Zigzag zones between horizontal lines* consisting of double or triple criss-crossing grooves (e.g. Fig. 31: 29, 33–36) were a very common motif in northern Estonia in the 8th–10th centuries (*ibid.*, 77). The fields between the zigzags may have been decorated with *pricks of a pin or a pointed stick*. Such decorations also appear on the Viking Age pottery of the Åland Islands (e.g. Kivikoski 1963, pl. 39: 9–10). *Lattice decoration* appeared at the very end of the Viking Age, and probably developed from the zigzag pattern (Lang 1985b, 204). The earliest clay vessels decorated in this way are known from the fort at Iru (Fig. 31: 41). On these, the lattice pattern is formed from the intertwining of two zigzag lines.

Vessels with *parallel cord impressions* on the shoulder appear in the vicinity of Tallinn and along the coast of Virumaa in the 7th–8th-century find contexts (Schmiedehelm 1973, fig. 4: 6–7; Lang 1996a, 75), for instance at the settlement sites of Kuusalu I, Joa, and Kaberla. Later on this decoration motif disappeared, but it was reintroduced in the second half of the Viking Age in the surroundings of Kuusalu, apparently as a Finnish influence (Lang 1992b, 81f., fig. 2). In

south-western Finland, cord decoration occurred on clay vessels during the Late Roman Iron Age, although it only became common at the beginning of the Pre-Viking Age (Carpelan 1980, 191) and then continued until the end of the Viking Age. Cord decoration also appears on the Viking Age pottery of the Åland Islands (e.g. Kivikoski 1963, pls. 4: 1, 19: 1).

Less often found at the Middle Iron Age sites of north-western Estonia are vessels that have *wide horizontal grooves made by finger impress* on the neck. Greater numbers of such vessels have been found at the fort-settlement at Kuusalu and the settlement at Rebala, while single sherds have been gathered from the settlement sites at Lagedi, Joa, and Kaberla, and at the burial site at Rohu, Virumaa. Fine ware vessels decorated in this manner have been found in south-western Finland (e.g. from the burial ground at Kalmumäki in Kalanti). Similar vessels can also be found among the handmade pottery of Rjurik's Fortress (Rjurikovo Gorodišče) at Novgorod, alongside other Baltic-Finnic-style handmade pottery (Plokhov 2006, fig. 2.1: 10). In Lang's opinion, the presence of such pottery in northern Estonia reflects Finnish influences, and dates from the end of the Viking Age (Lang 1992b, fig. 3; 1996a, 76).

Ring-and-dot decoration is a distinctive means of decoration that, in the Viking Age, is only found on pottery from Iru (Fig. 33). Ring-and-dot designs are usually combined with horizontal lines, or less often, zigzags, but never appear on vessels with wave, cord, or lattice decoration, which indicates that these means of decoration are different in date. Fine ware with ring-and-dot decoration has been dated to the period around 850–950 (Lang 1996a, 80).

Iru-type fine ware mainly spread in northern and western Estonia, including the territory of Harjumaa, where pottery of that type has been found at the settlement sites of Linnaaluste at Keava, near the fort. The boundaries of the distribution are difficult to define, because sites from that period in inland areas have been poorly examined. At least the pottery of the settlement site at Aindu, northern Viljandimaa, belongs to the Iru type.

The closest counterparts of Iru-type fine ware are found at sites of south-western Finland, the Åland Islands, and the Daugava Livonians (see Kivikoski 1963, pls. 12: 8, 19: 1, 39: 9–10; 1973, nos. 651, 653, 655; Lehtosalo-Hilander 1982a, 76–84; Cimermane 1974; 1980). Vessels from this area, made according to a relatively uniform tradition of Viking Age fine ware, even ended up in international trading centres such as Birka and Rjurik's Fortress at Novgorod (Arbman 1940, pls. 224–228; Plokhov 2006, fig. 2.1: 10). The high quality, ample decoration, and occurrence in larger centres and burial places suggest a relatively elite background for this type of pottery.

The coarse-grained pottery (B) of the Middle Iron Age and Viking Age in northern Estonia includes large pots for cooking and storing food, which have coarse sand and in many cases even stone debris mixed into their fabric. The surfaces of such vessels are generally less carefully finished, and the firing is of a poorer quality than that of fine ware. Valter Lang (1996a) has classified the coarse ware of Iru into four main types.

Carinated pots or pots that simply have accentuated shoulder sections have been classified as the *BI type* (Lang 1991, 56f.). Sub-type BIa includes pots whose upwardly widening body turns through a sharp carination into an incurved neck (Fig. 34: 1–3). Sub-type BIb is made up of vessels that are similar to those described above in terms of overall shape and proportions, but lack a clear carination at the junction of neck and shoulder; in other words, these pots have round shoulders (Fig. 34: 4–6). In northern and western Estonia, carinated coarse ware appeared in the Late Bronze Age and continued thereafter into the 8th century. Then a change ensued in overall pottery design: just as the carinated sub-type AIa of fine ware developed into round-shouldered

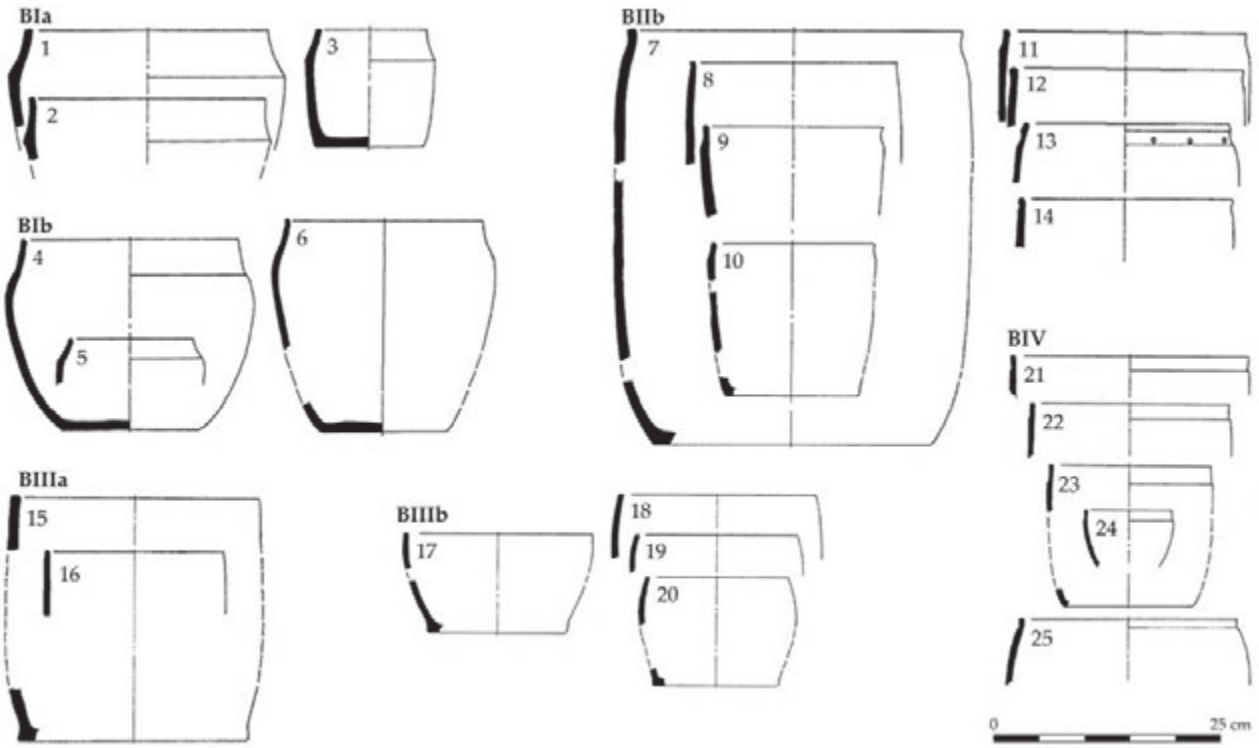


Fig. 34. *Reconstructions of coarse ware clay vessels from the fort at Iru (after Lang 1996a, figs. 33–37).*

bowls of sub-type AIb, thus in coarse ware, carinated BIa vessels were most likely replaced by round-shouldered BIb pots (Lang 1991, 56; 1996a, 89). In areas of north-western Rus settled by Baltic-Finnic peoples, the use of carinated coarse ware continued until the end of the first millennium. Russian archaeologists refer to that type of pottery as 'Ladoga-type' pottery (see Plohov 2002, 145–149 and citations therein).

Type BII includes pots with curved rims and can be divided into two sub-types. Sub-type BIIa includes vessels with slightly flared rims, which in the 9th and 10th centuries were still quite rare in northern Estonia (Lang 1996a, 90); such vessels with concave necks only became common at the beginning of the second millennium (Tvauri 2005, 71–78, 83f.). Sub-type BIIb consists of vessels with upright walls and a shallow horizontal groove just below the lip (Fig. 34: 7–14). Sherds of such pots can be found in large numbers at archaeological sites from the 8th to the early 11th century in northern and western Estonia and in south-western Finland (Lang 1996a, 90).

Type BIII (Lang 1996a, 92) also has two subtypes. Sub-type BIIIa are simple vessels with vertical walls and the greatest diameter at the vessel's mouth (Fig. 34: 15–16). Such vessels were used in the second half of the first millennium throughout northern Estonia. More precise dating of individual vessels is not yet possible with currently available methods. Sub-type BIIIb includes pots with curved walls whose greatest diameter is below the mouth (Fig. 34: 17–20). Such vessels were already present in the *tarand* graves of northern Estonia. In the second half of the first millennium, such simple vessels were

manufactured in various parts of Estonia, as well as in Finland and Sweden *(ibid.)*.

Of *type BIV* vessels, only a few fragments have been found in Estonia, at the fort of Iru. This type is distinguished by the uppermost couple of centimetres which have been compressed to thin the lip (Fig. 34: 21–25). Such vessels have been found in Birka (Selling 1955, pls. 60: 9–10, 61: 5), the oldest layers of Novgorod (Smirnova 1976, type IV), and the barrow burials around Lake Ladoga (Smirnova 1976, 7f.). Their scarcity in Estonia appears to imply that they were imported, but, on the other hand, one cannot overlook the great similarity of this type BIV with the AII type of local fine ware with a step (Lang 1996a, 93).

The Iru type of coarse ware has mainly been found in the excavation of fort-and-settlement complexes (e.g. Iru, Kuusalu, Keava, and Pada). However, the harbour site at Tornimäe on the island of Saaremaa has also yielded such pottery in relatively large numbers. The nearest counterparts of Iru-type coarse ware were in use in south-western Finland as well as on the southern coast of Lake Ladoga and in the lower reaches of the Volhov River in north-western Russia.

In conclusion it can be said that Iru-type pottery probably evolved from the earlier local pottery manufacturing traditions of northern and western Estonia. The Migration Period fine ware bore influences from Gotland and the south-eastern coast of the Baltic Sea (see Lang 1991; 2007c, 135f.). The following centuries, however, saw the development of clearly distinctive fine and coarse wares characteristic of northern and western Estonia. The main feature of the evolution of the shape of vessels was that the carination disappeared from both fine- and coarse-grained pottery during the 7th–8th centuries, and was replaced with a round-shouldered shape (Lang 1991, 56). Iru-type fine and coarse wares disappeared from use throughout its area of distribution at the end of the 10th century or at the beginning of the 11th century at the latest.

2.2.2.2. Rõuge-type pottery

Rõuge-type clay vessels originate from Pre-Viking Age and, primarily, Viking Age sites of fort-and-settlement type. Similarly to the contemporary pottery in northern and western Estonia, Rõuge-type pottery can clearly be divided into fine and coarse ware.

At present it is impossible to be certain how this pottery tradition developed, because no southern Estonian sites have been investigated that both date exclusively or primarily from the Migration Period and contain a considerable quantity of pottery. For instance, the pottery of the fort at Hinniala is rather fragmentary; all that can be concluded in this case is that due to its robust design it resembles the pottery of *tarand* graves, and differs from that of Viking Age settlements and forts (Valk 2007, 60f.). A little more Migration Period pottery has been uncovered at the settlement site next to the fort of Alt-Laari, in two hearths that have been radiocarbon-dated to the Migration Period (Lillak & Valk 2009b). The sherds come from coarse-grained vessels with striated surfaces, which resemble the striated pottery used in south-eastern Estonia during and before the Roman Iron Age. The only burial place that can be considered in this context is Läätsa at Verevi in the north-eastern coastal region of Lake Võrtsjärv, although unfortunately all of the sherds found there were likewise quite small and since they mostly originated from the walls of vessels it is difficult to determine the shape and size of the vessels. Despite this, the potsherds obtained from this stone grave can clearly be divided into coarse and fine ware. The coarse ware pots had flat bases, upright or bulgy sides, and slightly inverted rims (Aun 1970, 60, fig. 4: 1). Fine ware was represented by only a few sherds. One of these was from the vessel's concave rim section, and displayed a decoration of a double diagonal row of small but deep notches pricked in the clay (*ibid.*, fig. 4: 2); a few sherds from black

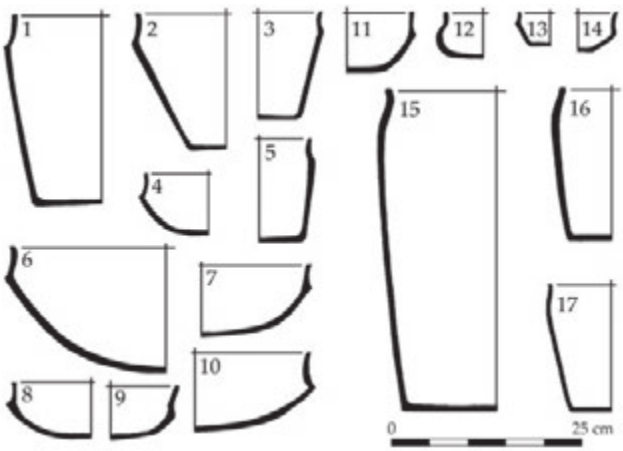


Fig. 35. *Reconstructions of Rõuge-type fine ware (1–14) and coarse ware (15–17) clay vessels from various sites in south-eastern Estonia (after Aun 1976b, figs. 2 and 4).*

Fig. 36. *Rõuge-type fine ware pot from the fort at Otepää (AI 4036: I 614, 621, 646; photo: Andres Tvauri).*

vessels with smooth surfaces were also present. Valter Lang (2007c, 136) has hypothesized that Rõuge-type fine ware developed on the basis of the 3rd–4th-century pottery type that can be found in northern Latvian and south-eastern Estonian *tarand* graves.

In terms of design and decoration, *Rõuge-type fine ware* (Fig. 35: 1–14) has a relatively uniform appearance. These vessels are either shallow bowls with rounded bases or bucket-shaped pots with flat bases; nearly all of them feature carinated shapes and upright rims. Some fine ware bowls are quite large. One carinated bowl found at Rõuge fort (AI 4040: 2300), for instance, has a diameter of about 35 cm at its mouth, and a height of 12 cm; the corresponding measurements of a similar vessel from the same site (AI 4040: 3472) were 33 and 11 cm. The largest bowls of Rõuge-type fine ware found at the fort at Tõrva and at the Valgjärv lake settlement have roughly the same measurements.

Rõuge-type fine ware vessels were generally well fired, and were baked black. The surfaces of the vessels were carefully smoothened, in most cases burnished ('bald'). Decoration is rare on such vessels. If present, it mostly consists of small depressions or notches with round bases which form lines, patterns of triangles and rectangles, or small circles in a row (Fig. 36). It is precisely this decoration that is a distinctive feature of Rõuge-type fine ware. In the east, the spread of such decoration ends at the eastern border of Võrumaa, as such ornamentation very rarely occurs on the tableware found in the forts of Setumaa (Aun 2003b, 121; 2009a, 78). To the west, cavity decoration has been encountered on the fine ware found at the forts at Tõrva and Vooru and at the Valgjärv lake settlement. The northernmost known sherds of fine ware with cavity decoration have been found north of Viljandi, at the settlement site at Mustivere.

A few of the Rõuge-type fine ware vessels bear decoration of straight or wavy lines (Aun 1976b, pl. VIII: 2, 5, 9). Zigzag and lattice decoration are also far less common than in northern and western Estonia. Cord imprinting was used, although very rarely. A single or double horizontal cord impression is usually located directly below the vessel's lip (*ibid.*, pl. II: 5) or on the carination.

Rõuge-type fine ware was used in south-eastern Estonia until at least the early 11th century, as

demonstrated by carinated bowls from the cemetery at Kalmetemägi at Siksälä, in the south-eastern corner of Estonia, which were found together with an early wheel-thrown pot (Laul & Valk 2007, fig. 25). A fine-grained carinated bowl coupled with an early type of wheel-thrown pot has also been uncovered in the inhumation cemetery at Õvi on the northern bank of the Emajõgi River. Later fine ware bowls lack carination (Tvauri 2005, 83f.).

The fabric of *Rõuge-type coarse ware* in south-eastern Estonia includes coarse sand or rock debris. These are usually large pots of simple workmanship, which were used primarily for the preparation and storage of food. The vessels are mainly bucket-shaped, i.e. with flared walls and no carination, and have flat bases (Figs. 35: 15–17; 37). This coarse kitchenware of south-eastern Estonia was more crudely made than its northern and western Estonian counterpart. The vessels' surfaces are mostly undecorated, though patterns of small cavities do occur.

Rõuge-type pottery often includes pots with a row of small holes just below the lip (Fig. 37). The holes penetrate the wall and have been made during moulding.[4] It has been assumed that foodstuff, for instance grain, was kept in such containers, since the holes would permit air to enter the lidded vessel, preventing the contents from getting mouldy (Moora 1955, 61). Rõuge-type perforated coarse ware has been found mainly in south-eastern Estonia, but also in Viljandimaa and northern Tartumaa. In the east, contemporaneous forts have produced coarse ware of relatively similar shape and design (see Beletskij 1980; Lopatin 2007), but perforations below the lip are very rare (Aun 2009a, 78). Very small quantities of Rõuge-type perforated pottery are known from the forts at Izborsk, Pskov, and Kamno in the Pskov region, and consequently the label of 'Kamno-Rõuge-type pottery' has sometimes been used to refer to it (Beletskij 1996). The holes are not, however, a phenomenon that is unique to Rõuge-type vessels. Some pots of Iru BII type also have such holes in the rim, for instance the vessels found at the fort at Iru and at the settlement at Pada (Lang 1996a, fig. 35: 5; Tamla 1983, pl. XII: 1). Sherds with a hole in the rim section have also been found on the island of Prangli off the northern coast of Estonia, and at the fort at Salevere, Läänemaa. Further, the Livonian fort at Ķenteskalns, Latvia, has yielded coarse ware with holes in the edge (Aun 1975a, 349).

Rõuge-type coarse ware spread in southern Estonia, the eastern part of central Estonia, and to a certain extent to the east, into the western part of the Pskov Land. The fact that this type of pottery has not been found in the Final Iron Age find assemblages suggests that it disappeared from use in the early 11th century.

Fig. 37. *Rõuge-type coarse ware pot from the fort at Otepää (AI 4036: I 1918; photo: Andres Tvauri).*

[4] This phenomenon differs from the holes drilled in the edge of a baked vessel (for instance, in the Viking Age pottery from the fort at Kuusalu: Schmiedehelm 1939, fig. 85), which were presumably made so that the vessel could be suspended or equipped with a handle.

2.2.2.3. Rare handmade pottery

Burial urns found in Pre-Viking Age barrows of eastern and south-eastern Estonia (see 6.1.5) are noteworthy finds. Such urns have been uncovered, for instance, in the barrows at Loosi (Fig. 38), Lindora, Rõsna-Saare, and Kõnnu. These are large flat-bottomed pots of very rough workmanship made of coarse-tempered clay. The sides of the vessels are either completely upright or slightly curved in their uppermost section. One pot found at Kõnnu and another at Suure-Rõsna have a slightly carinated shape, and a vessel that was in one of the barrows at Arniko probably had a ridge at its shoulder (Brotze, 564). The vessels are undecorated, apart from the one from Kõnnu, which is covered with distinctive notches. These burial urns cannot be used to generalize about the overall pottery tradition of the people that buried their cremated dead in barrows because their settlement sites have not yet been investigated in Estonia, and consequently it is unclear whether the urns were ordinary utensils that were also used for burial, or special burial urns. In the opinion of Russian archaeologist Nikolai Lopatin (2003), the model for the cremation-barrow pottery of both Estonia and the Pskov region is the pottery of the 3rd–5th centuries to the south, in the areas along the upper reaches of the Daugava and Lovat rivers. On the other hand, close counterparts to the urns of cremation barrows can be found among Iru-type coarse ware.

Fig. 38. *Burial urn from the barrow cemetery at Loosi (ÕES 10; photo: Andres Tvauri).*

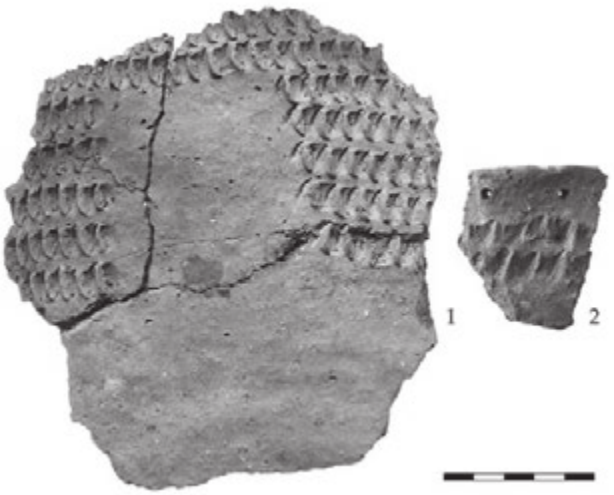


Fig. 39. *Potsherds with pinched decoration: 1 Olustvere, settlement; 2 Rõuge, fort-settlement (AI 4998: 3509; 4100: 462; photo: Andres Tvauri).*

The *pinched decoration* which sometimes appears on coarse ware indicates southern influences. Such décor is made by pinching a moist clay surface with the fingers (Fig. 39). The pinches may cover all or part of the surface of the vessel. The firing of such vessels is noticeably superior, and there are fewer coarse inclusions in the fabric than in most Rõuge-type coarse ware vessels. Pinched vessels are mostly pots with upright or slightly flared rims.

Sherds of such vessels have been found most abundantly in southern Estonia, although some are also known from a few northern Estonian

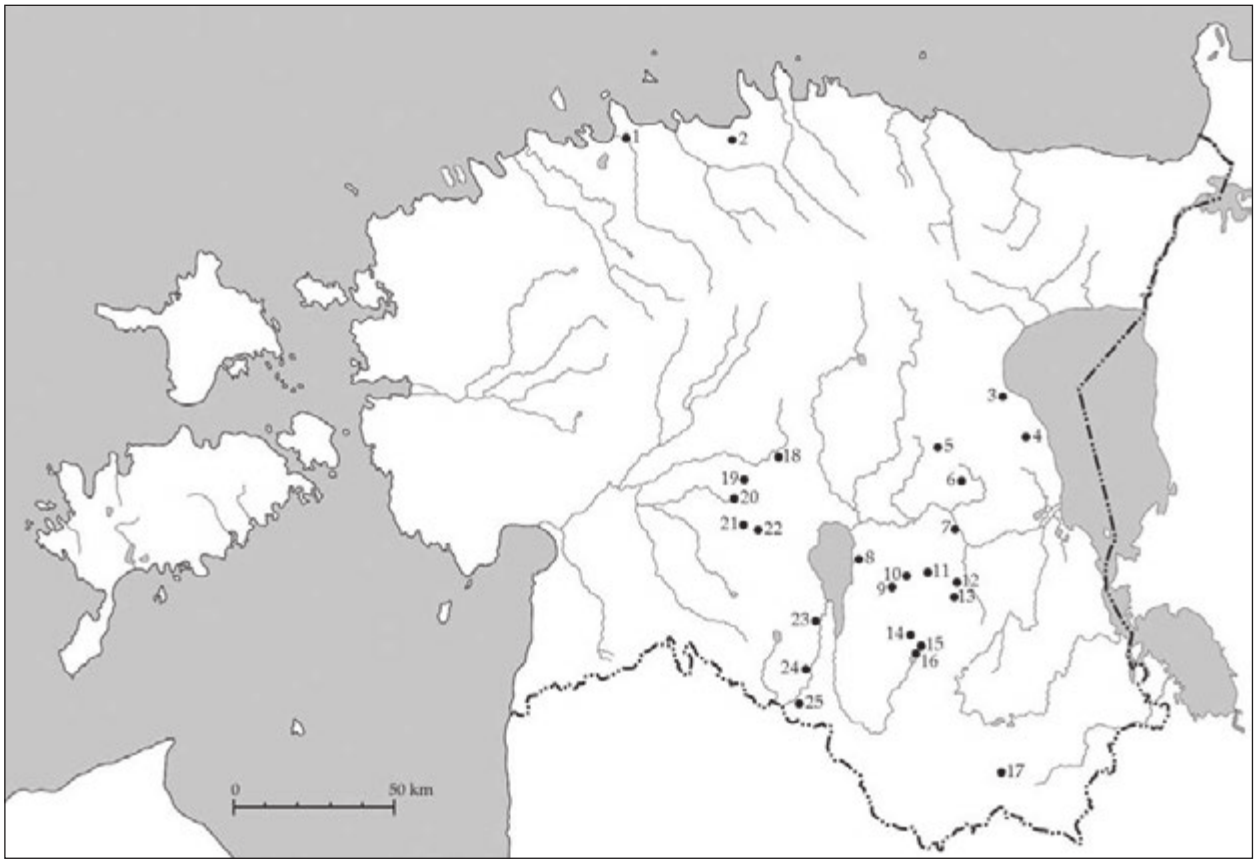


Fig. 40. *Distribution of pottery with pinched decoration in Estonia. 1 Iru, fort-settlement; 2 Kuusalu, fort; 3 Raatvere, settlement; 4 Alasoo, grave; 5 Raigastvere, grave; 6 Saadjärve, fort and settlement; 7 Tartu, fort; 8 Kaarlijärve, settlement; 9 Majala, settlement; 10 Peedu, fort; 11 Unipiha, fort and settlement; 12 Suure-Kambja, settlement; 13 Paali, grave; 14 Päidla, settlement; 15 Kaarna, settlement; 16 Otepää, fort; 17 Rõuge, fort and settlement; 18 Venevere, settlement; 19 Olustvere, settlement; 20 Kobruvere, settlement; 21 Mustivere, settlement; 22 Männimäe in Viljandi, settlement; 23 Vooru, fort; 24 Tõrva, fort; 25 Valgjärv, lake settlement.*

sites (Fig. 40). Most sherds originate from forts and settlement sites, but the excavation of graves has also produced a few pieces. Normally, the quantity of potsherds with pinched decoration found is very small. Better preserved pinched sherds, for instance those found at the forts at Otepää and Rõuge (Aun 1992, pl. VII: 1, 4, 6; Fig. 39: 2), reveal that one pot may have had both pinched decoration and holes in the rim section. This means that there is no reason to consider vessels with pinched ornamentation to be imported, but they are instead part of the tradition of Rõuge-type pottery.

Pottery with pinched decoration was made in central Europe in as early as the Bronze Age. In Estonia one such sherd was found in the Late Bronze Age stone-cist grave at Muuksi, which too dates from that time (Vassar 1938, fig. 20: 6). Despite this, the model that inspired the corresponding pottery style in Estonia in the mid-first millennium should be sought elsewhere, as throughout the Pre-Roman and Early Roman Iron

Ages no such pottery occurred on Estonian territory or in the near vicinity. Coarse-grained clay vessels with pinched decoration began to be used in larger numbers in areas inhabited by the Baltic peoples, more precisely in what today is north-eastern Poland, where these vessels are dated from the later 4th to the mid-7th centuries (Bitner-Wróblewska 1994, 223, fig. 6). Similarly, pottery with pinched decoration entered into use in Lithuania during the Migration Period, although to a more limited extent (Kazakevičius 2003, 111–116; 2004, figs. 6–7). Such vessels also appear in the Pskov region (e.g. Aun 2009, fig. 5: 5) and in Latvia, although as in Estonia they occur in very small quantities in comparison with other coarse ware. Although pinched decoration has been considered to be mainly characteristic of Baltic tribes (see Cimermane 1980), it also spread to areas inhabited by Finno-Ugrians. Such decoration has been found on pottery at the Daugava Livonians' cemetery at Laukskola (Tõnisson 1974, pl. XXXI), and it is a characteristic feature of the mid- and late-first-millennium pottery of the Djakovo Culture spread around the upper reaches of the Volga River (Rozenfel'dt 1974, 149f.). At least one pot with pinched decoration has been found in a grave in Birka, eastern Sweden (Arbman 1940, pl. 256: 1), and one sherd of a similar vessel was uncovered at the fort at Rapola, Sääksmäki, Finland (Kivikoski 1973, no. 393). Pinched pottery was made until the end of the Viking Age. For instance, one such vessel has been found in the cemetery at Zalahtov'e on the eastern bank of Lake Peipsi; this particular grave could be dated to the early 11th century on the basis of the other grave goods (Hvoščinskaja 2004, pl. XLI).

Single sherds of pottery with *nail incisions* have been found at the forts at Tartu (Tvauri 2001, fig. 40), Peedu, Otepää, and Rõuge, at the settlement at Tserepi, Setumaa, and at settlement I at Verilaske, Viljandimaa (Fig. 41). Clay pottery decorated in this manner has also, for instance, been found in northern Latvia (Moora 1938, 557, fig. 82: 1).

Fig. 41. *Potsherd with nail incisions from settlement site I at Verilaske (TÜ 458: 4; photo: Kristel Külljastinen).*

The forts and settlements of the second half of the first millennium in Estonia have yielded small quantities of *rusticated ware*. The surfaces of such vessels were smeared with liquid clay after initial firing, and then fired again. Occasional sherds of such pottery have been discovered at the fort at Rõuge in south-eastern Estonia (Aun 1992, 47, pl. VII: 8) and at the fort at Iru and the settlements at Saha and Lagedi in north-western Estonia (Lang 1996a, 238). In the first millennium AD, rusticated ware was common above all among Baltic tribes (Daugudis 1966). This was coarse everyday pottery which has not been found in graves. Rustication, as it provided an additional protective layer on the exterior of vessels, was probably

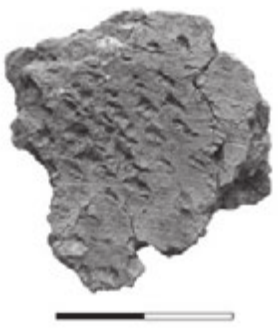


Fig. 42. *Potsherd decorated with notches from the fort-settlement at Unipiha (AI 4474: 269; photo: Kristel Külljastinen).*

applied to protect cooking pots from crumbling when placed on a fire.

Excavations at the forts at Unipiha, Otepää, Tartu, and Rõuge have produced some sherds of coarse-grained vessels that are covered with dense *notches* made by a pointed object (Fig. 42). At Unipiha, these were found in a context dated to the 9th–10th centuries. Equivalents of such pottery are known from the fort in Pskov and the forts of eastern Latvia (Aun 1992, 47 and citations therein).

Miniature vessels form a separate group. The greatest numbers of these have been uncovered at the forts at Otepää and Rõuge, and at least one is known from the fort at Tõrva. These vessels usually have a height of 4–5 cm and a diameter of 5–6 cm. Some of them have flat bases, while others have rounded. Miniature vessels may have been toys, or they were used for cultic purposes; it is also possible that they were used to store medicines or cosmetics (Aun 1992, 51).

2.2.2.4. Slavic-type wheel-thrown earthenware

At the end of the Viking Age, i.e. in the first half of the 11th century, Slavic-type wheel-thrown earthenware was introduced in the eastern part of Estonia. This type of pottery is best characterized by pots that have a curving rim and shoulder section, with the greatest diameter at the shoulder section. Other shapes of vessels are rare in this class of pottery. The distinctive manner of decorating was to make straight or wavy lines, as well as indentations and comb impressions, on the outer face of the vessel with a stick or comb-like object while the potter's wheel was spinning.

Slavic-type wheel-thrown pottery developed in western Slavic areas in the eastern part of central Europe, primarily in Bohemia and Moravia, and in the middle reaches of the Danube River since the Roman Iron Age, under the influence of Eastern Roman pottery traditions. In the early

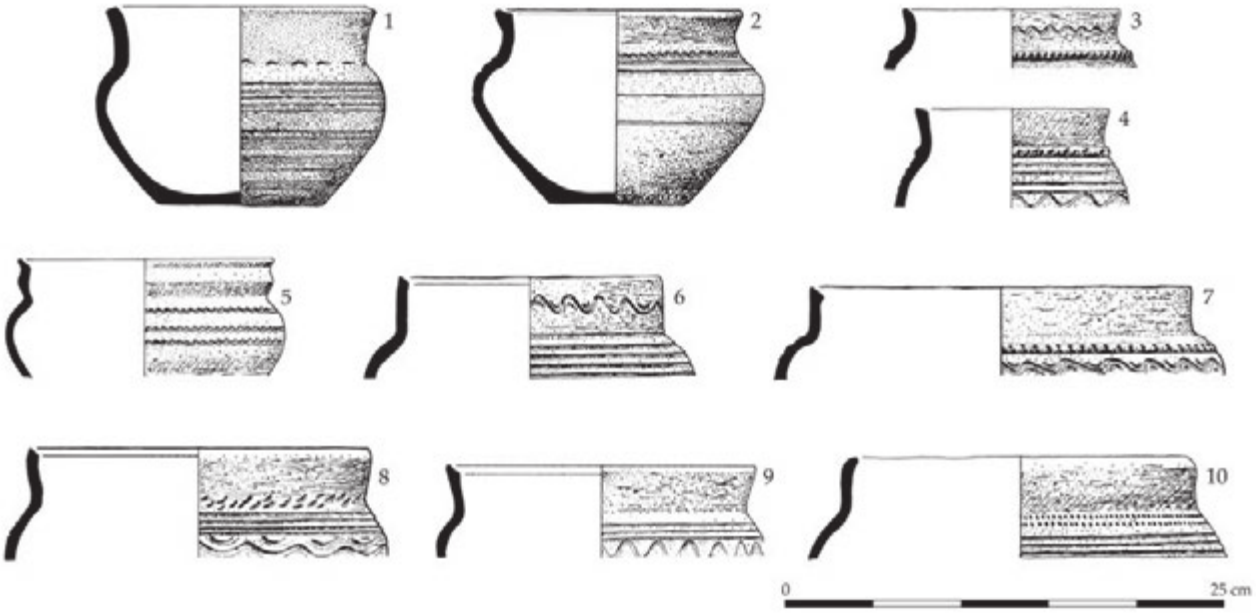


Fig. 43. *Slavic-type wheel-thrown pottery of the Pskov group 1: 1 Õvi, grave; 2 Lahepera, grave; 3–5, 8, 10 Tartu, fort; 6–7, 9 Tartu, settlement (AI 3790: 14; ÕES 2053: 34; TM A 14: 454; 15: 1218; TM 1556: 415; TM A 51: 2059/2; 42: 1910; 14: 430; 55: 524; 15: 1253; drawing: Andres Tvauri).*

Middle Ages, wheel-thrown pottery spread throughout areas inhabited by Slavs and many of their neighbouring peoples, reaching in the 7th or 8th century the southern coast of the Baltic Sea. From the Slavic areas around the Baltic, this type of pottery spread to the north and north-east. In the last couple of decades of the 10th century, imported Slavic clay pots were introduced in the eastern part of Denmark, in Gotland, and in the surroundings of Lake Mälaren. In Sigtuna, Slavic-type pottery began to be produced locally at the end of the 10th century. During the early 11th century, this type of pottery began to be produced and used in Scania and Gotland (Roslund 2001, 232–237).

In north-western Rus, wheel-thrown pottery reached Staraja Ladoga and Rjurik's Fortress at Novgorod between AD 920 and 950 (Gorjunova 2002, 62). The earliest types of wheel-thrown pottery in north-western Rus are indeed found exclusively in these two centres of trade and handicrafts, alongside local handmade pottery. In the earliest layers of the town of Novgorod, which have been dated to the mid-10th century, wheel-thrown pottery is predominant (Plohov 2002, 141). The oldest wheel-thrown pottery in the centres of north-western Rus differs noticeably from contemporaneous pottery in southern Rus, and is clearly a representative of the types of Slavic pottery that were widespread on the southern coast of the Baltic Sea (Smirnova 1974; Gorjunova 1982; 2002; Malygin & Gajdukov 2001; Seničenkova 2002).

Wheel-thrown pottery spread to Estonia from north-western Rus in the first half of the 11th century (Trummal 1960, 27–29; 1964, 94f.; Moora 1966, 127). Early wheel-thrown pottery in Estonia most closely resembles pottery from Pskov. The oldest Estonian vessels are representative of the Pskov group 1, which is generally dated to the end of the 10th century and to the 11th century (Sedov & Beleckij 1991, 16f.; Harlašov 1994, 69). The rims of this type of pottery are either long and upright

Fig. 44. *Slavic-type wheel-thrown clay pot of the Pskov group 1 from the inhumation cemetery at Raatvere (AI 5295: XXVII 244; photo: Andres Tvauri).*

or short and slightly flared; the edges are sharp (Figs. 43–44). In some cases the rims are curved. Decoration is abundant and diverse, including deep horizontal lines as well as wavy lines, notches, and impressions made with a comb-like stamp. The shoulder area often displays ridges, which may bear notches or impressions of a comb-like stamp. The decoration covers vessels from the rim almost all the way to the base. Vessels similar to those of Pskov group 1 were also used at that time in Novgorod (Smirnova 1956, figs. 1–2; Gorjunova 1997; Roslund 2001, 131).

In Estonia, most of the pottery of the Pskov group 1 originates from the fort in Tartu and the prehistoric settlement in its direct vicinity (Fig. 43: 3–10). These specimens are connected with the period from about 1030 to 1061, when the site accommodated a fort of the Grand Prince of Kiev. Further, pottery of this group has been uncovered in the cemetery at Raatvere, northern Tartumaa, as a grave inclusion in an inhumation burial of the first half of the 11th century (Fig. 44). A vessel of the same type has been found in the cemetery at Lahepera near the western banks of Lake Peipsi (Fig. 43: 2). A pot with an upright rim

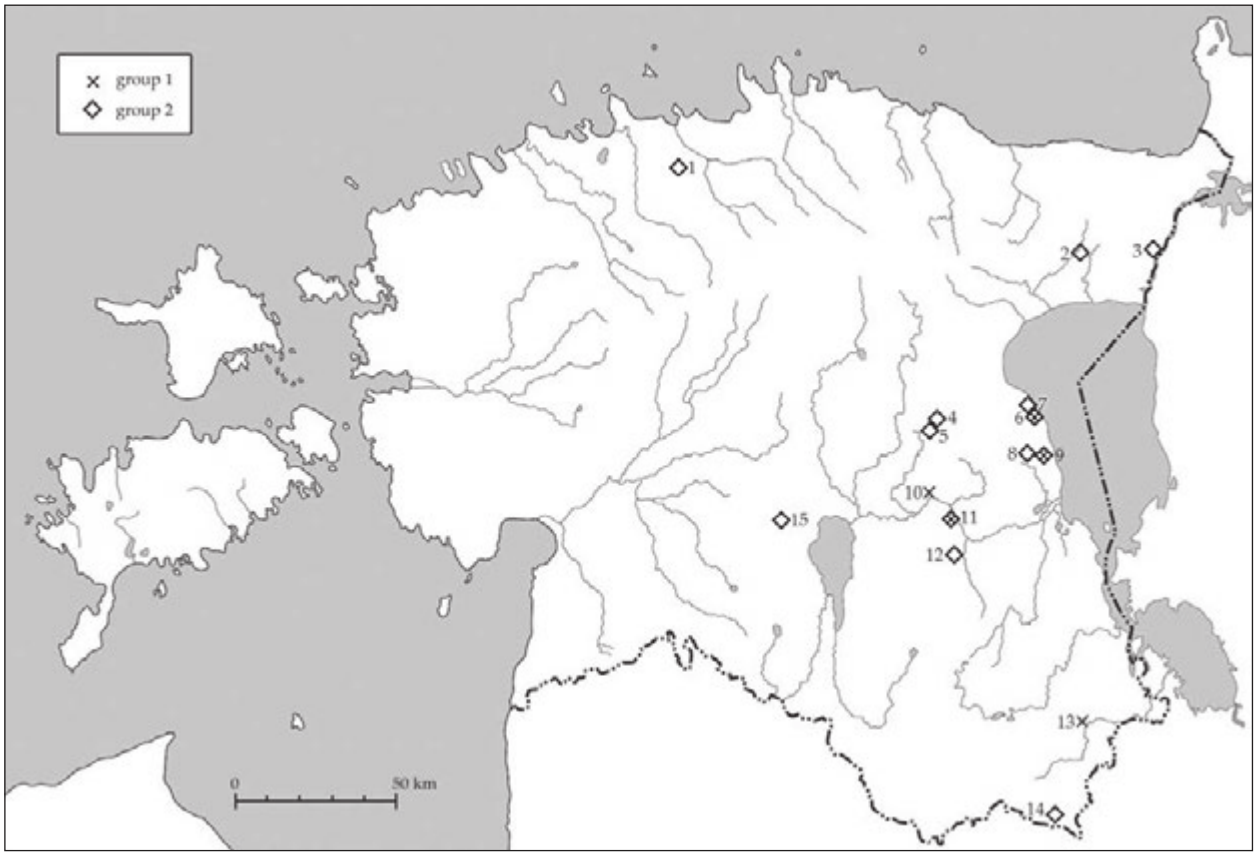


Fig. 45. *Distribution of groups 1 and 2 of the Slavic-type wheel-thrown pottery in Estonia. 1 Raasiku, grave; 2 Jõuga, grave; 3 Kuningaküla, grave; 4 Rahivere, settlement; 5 Kudina, settlement; 6 Raatvere, settlement; 7 Sääritsa, settlement; 8 Savastvere, settlement; 9 Lahepera, grave; 10 Õvi, grave; 11 Tartu, fort and settlement; 12 Reola, settlement; 13 Lindora, grave; 14 Siksälä, grave; 15 Kuude, grave.*

has been uncovered in the cemetery at Õvi on the northern banks of the Emajõgi River (Fig. 43: 1), where it was in a burial dated to the beginning of the 11th century (Mägi-Lõugas 1995b, 524f.). A similar vessel was found in a female burial in barrow 7 at Lindora, Võrumaa (Laul 1979, 374, pl. VI: 1).

Since wheel-thrown pots are absent at the fort at Rõuge, which was occupied until the end of the 10th century, one must conclude that at that time this pottery was not yet common in south-eastern Estonia. Nor does it occur in other south-eastern Estonian fort-and-settlement centres of the late first millennium. Therefore, wheel-thrown pottery must have appeared here not before the collapse of the centres of fort-and-settlement type at the beginning of the 11th century. It is difficult to say whether or not group 1 pottery spread to eastern Estonia from centres of north-western Rus before the conquest of Tartu in about 1030. The pot found at Õvi differs from corresponding pottery from Tartu, and this may suggest that the pot had reached Estonia earlier. Since the Õvi burial assemblage from which the vessel under review originates has been dated to the beginning of the 11th century, one may tentatively take this date as

the start of the spread of group 1 pottery in eastern Estonia. The use of this type of pottery ended before the 12th century began, as no such vessels are known to have existed in a definite 12th-century find context in Estonia. In the Pskov region this type of pottery also disappeared from use by the end of the 11th century at the latest.

The area of distribution of group 1 wheel-thrown pottery was quite limited in Estonia (Fig. 45). Such pottery is only found on the west bank of Lake Peipsi and along the Emajõgi River; while the greatest quantity has been uncovered in Tartu, a single vessel has been found in the barrow cemetery at Lindora, right by the border to Setumaa. The absence of this group of pottery from the main south-eastern Estonian Viking Age and Final Iron Age settlement areas on the territory of prehistoric Ugandi and historical Võrumaa is noteworthy. This shows that in the period in question, influences from Pskov and Novgorod initially spread along the Lake Peipsi and Emajõgi River waterways. It is impossible to say for sure whether the sherds of group 1 vessels found in Estonia originate from imported or from locally produced vessels. It seems more likely that the oldest Estonian clay vessels shaped on a potter's wheel were brought from Pskov or Novgorod, since, in comparison to the presence of wheel-thrown pottery of the type group 2, very little group 1-type pottery has been found in the prehistoric layer of Tartu, or, for instance, in the graves on the western bank of Lake Peipsi.

The next chronological group of wheel-thrown pottery in Pskov is group 2, which is dated to the 11th–12th centuries, with occasional vessels of this type dating to the early 13th century (Harlašov 1994, 69). The rims of vessels of this group curve smoothly outwards; sometimes the edge of the rim has been flattened with the fingers during moulding (Fig. 46). The main differences with group 1 are in the area of decoration: these vessels predominantly have horizontal and wave-shaped lines made with a three- or four-toothed

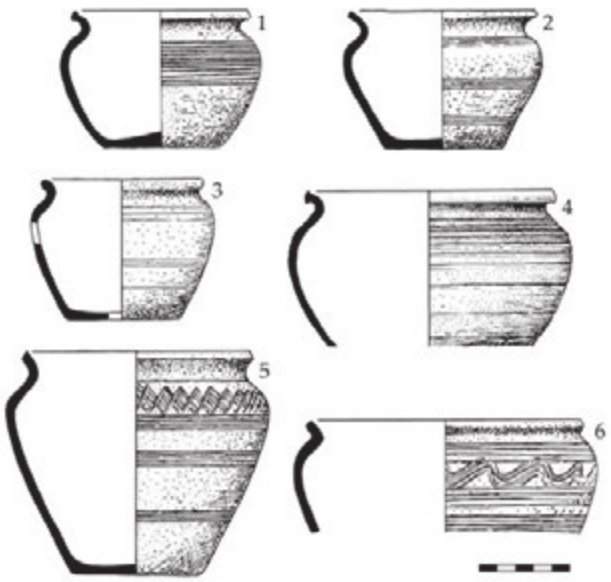


Fig. 46. *Slavic-type wheel-thrown pottery of the Pskov group 2 from graves: 1–3 Lahepera; 4 Raatvere; 5 Siksälä; 6 Kuude (ÕES 1978: 17; ÕES 1978: IV/10; AI 4977: 58; AM A 447: 46; AI 5101: 662; VM 30: 17; drawing: Andres Tvauri).*

comb stamp. The decoration had been applied to the vessel while it was rapidly revolving. Raised ridges and simple stamping are uncommon for this group of vessels. In decorating the vessels, dense horizontal lines were drawn on the vessels' shoulder and side, often almost all the way down to the bottom. In decorating the sides, the comb-shaped stamp was often drawn more quickly downwards, and as a result the line ornamentation on the side is sparser and grouped. In the region between the vessel's shoulder and side, a wavy line was drawn with the same comb stamp. In comparison with the earlier tradition, the changes in ornamentation are generally of a technological nature, i.e. the decoration methods characteristic of hand-turned potter's wheels are no longer found. In addition to Pskov, this type of pottery was also used in Novgorod in the period under review (see Smirnova 1956; Gorjunova 1997).

Group 2 wheel-thrown pottery spread more extensively in Estonia than group 1 vessels (Fig. 45). Nevertheless, the majority of corresponding finds still cluster in the Lake Peipsi and Emajõgi River region: vessels of this type have been found in the mid-11th-century inhumation cemeteries at Raatvere (Fig. 46: 4) and Lahepera (Fig. 46: 1–3), and the prehistoric layers of the fort and settlement in Tartu contain massive quantities of this type of pottery. Further, occasional rim fragments have been found at a few settlement sites in northern Tartumaa (Tvauri 2005, 44f.). Pottery of this group has also been uncovered at the cemetery at Siksälä on Estonia's eastern border (Fig. 46: 5); group 2 vessels in burial places at Kuude, Viljandimaa (Fig. 46: 6), and at Raasiku, northern Estonia, are even more notable finds in terms of their location.

There have been no finds of group 2 pottery in Estonia that could be dated to before the 1030s. Thus the broader distribution of this pottery type in Estonia can be associated with the so-called Jur'ev period in Tartu. Although group 2 pottery is very abundant in the prehistoric layer of Tartu, this type of vessel is not common at the fort in Otepää, for instance. The fort at Lõhavere, which was established in the second half of the 12th century, completely lacks this group of pottery, which indicates that by that time, group 2 vessels were no longer used. In conclusion, group 2 vessels mainly spread in Estonia during the 11th century, and perhaps also during the first half of the 12th century.

2.2.3. Metal vessels

In the Viking Age at the latest, metal vessels began to be used in wealthier households. In contrast to pottery, metal can be reused, and consequently all that remains of cauldrons are the occasional iron handles and loops. Such items have, for instance, been found at the settlement site at Rõuge.

At present, only one *iron cauldron* has been found at a Viking Age site in Estonia. It was uncovered in grave VIII at the cemetery at Raatvere, eastern Estonia, which dates to the first half of the 11th century (see 6.1.9, Fig. 208). The cauldron's diameter is 43–45 cm at its uppermost section, and it stands 24 cm high. The vessel was made of sheets of iron 11–12 cm wide, 40–50 cm long, and ca 0.3 cm thick which were riveted together. The walls of the cauldron consist of three horizontal strips of sheet iron, and the base was made of a cup-shaped plate measuring 13–14 cm in diameter. The gaps between the sheets were most likely sealed with clay. The handle was forged of a strip of iron 2 cm wide, the ends of which had been beaten to make them thinner and then bent into hooks. The handle was attached to the cauldron with loops. The Raatvere cauldron differs from Scandinavian cauldrons, which are usually riveted together from vertical iron sheets. Thus it has been presumed that this cauldron was the work of local smiths (Lavi *et al.* 1998, 327).

Fig. 47. *Fragments of a silver vessel of Eastern Roman origin from Varnja (DM I 1365/ADs 269; photo: Ester Oras).*

Two *silver vessels* of Byzantine origin are extraordinary finds in Estonia. Both items were found in Tartumaa: one of them from a probable *tarand* grave at Kriimani, south of the Emajõgi River, and the other (Fig. 47) as a stray find from under a stone at Varnja, on the banks of Lake Peipsi. It is possible that the latter vessel originated from a burial site destroyed by modern use. Both vessels consisted of a footstand and a bowl with a broad lip. The Kriimani vessel is decorated only with two rows of raised knobbles along the edge of the bowl, while the edge of the Varnja vessel features incised zigzags, stylized plant ornamentation, and two rows of embossing. The latter vessel was impressed with four stamps on its bowl, which were intended to prove that it was a product of an official imperial workshop. In the territory of the former Roman Empire, similar small containers (*acetabula* in Latin) were used to serve sauce. Although the vessels found in Estonia have no exact counterparts elsewhere, their shape, decoration, and control stamps suggest Byzantine territory as the place of their production, and date the vessel to the late 5th or early 6th century. Considering that both vessels were found in inland Estonia not far from the waterways leading to the east and south, it may be that they arrived directly from the south (Quast & Tamla 2010). It is impossible to say for sure whether these items, so exceptional in the Estonian context, ended up in the (assumed) burial places as grave goods, sacrifices, or hoards, or whether they were left behind after some ritual feast performed at the grave.

2.2.4. Vessels made of wood or bark

Based on ethnographic sources and the find assemblages from medieval Estonian towns, one can presume that wooden and bark vessels were extensively used in prehistoric households. The Estonian climate and the burial traditions of the time do not, however, favour the survival of items made from organic matter. The only remains of such vessels in the period in question are known at grave VIII at Raatvere, where a fragment of a small box made of birch bark and sewn together with bast-fibre string were found under the above-mentioned iron cauldron (see 2.2.3). Pieces of the edge of a small wooden bowl were also found at the same location (Lavi *et al.* 1998, 324).

2.2.5. Lid of a small antler box

Fragments of a lid of a small round box made of antler have been found in barrow 3 at barrow cemetery I at Rõsna-Saare, northern Setumaa, on the south-eastern border of Estonia. These were found in a cremation burial that included the bones of an adult woman, a juvenile 15–20 years of age, and child of 8–10 years of age. The lid had originally been about 4 cm in diameter and decorated with an incised ring-and-dot ornament. The accompanying finds — fragments of a bone comb — confirm that the lid of the box can be dated to the first half of the 7th century. Analogous finds have been made at sites in Holland and north-western Germany of the 7th century, for instance (Aun 2009a, 93; 2009c, 358–360).

2.2.6. Wooden hook

A well-preserved wooden hook with a hole and a groove for the attachment of a string has been recovered from the Valgjärv lake settlement (Fig. 48). A similar object with a string in its hole was uncovered in the 13th-century deposits in Novgorod (Kolčin 1968, pl. 76: 1). An exact counterpart to the Valgjärv hook was found at the 9th–10th-century lake settlement at Āraiši, northern Latvia; that hook also had a remnant of the

Fig. 48. *Wooden hook from the Valgjärv lake settlement (AI 6632: 45; photo: Andres Tvauri).*

string in the hole. Proceeding from ethnographic evidence, the Āraiši find has been interpreted as part of a pulley system that was used to reach bee hives in trees (Apals 2000, figs. 1–2). This explanation is not credible, however, because the hook is too weak to bear the weight of an adult. The wooden hook from Valgjärv may have been used to hang a bucket of water on a yoke, for instance.

2.2.7. Fire-making devices

The earliest known fire-starting devices in Estonia are *oval fire-striking stones*, which were mostly made of quartzite. Grooves and notches are found on the surface of the stones, as a knife blade or other sharp iron object would have been struck against the fire-stone to create a spark.

About 100 fire-striking stones have been found in Estonia, mostly as stray finds. The finds have mainly been made in forested and marshy areas where Iron Age sites are not known to have existed, for instance at the Pärnu River basin and the vicinity of Hargla in Võrumaa (Jaanits *et al.* 1982, 291). A sharp-pointed oval fire-striking stone has been discovered on Ruhnu Island in the Gulf of Riga (Kriiska & Tamla 1997, fig. 4), which is the farthest island from the mainland in

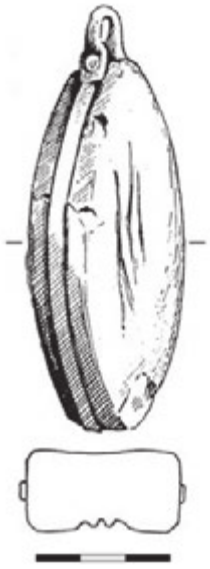


Fig. 49. *Fire-striking stone from the barrow cemetery at Lindora (AI 4039: 9; Schmiedehelm 1965, fig. 8: 1).*

Estonian waters. Some fire-stones have been uncovered in burial places, several of them in the cremation barrows of south-eastern Estonia, such as at barrow 10 in barrow cemetery II at Rõsna-Saare (Aun 1980b, 370) and at a 7th–8th-century burial at the barrow cemetery at Koseveski[5] (Selirand 1965b, fig. 5: 2). The fire-striking stone found at barrow 16 at Lindora had a metal band and loop so that it could be hung from a belt (Fig. 49). Fire-stones have also turned up in stone graves such as Lehmja-Loo I and Peetri at Mõigu in north-western Estonia. Fire-stones may already have been placed in these stone graves in the Roman Iron Age.

Fire-striking stones can mainly be encountered in Scandinavia, Finland, and the Baltic States. This artefact type most likely originates from the region around the lower reaches of the Vistula River, from where it spread west and north during the Roman Iron Age (Salo 1990b, 49). In Finland, the oldest of such stones has been dated to the Early Roman Iron Age, while the latest ones are from the 8th century (Kivikoski 1973, 168f., no. 72; Salo 1990b, 49). Latvian finds also belong to this period (Moora 1938, 569–574, fig. 84: 2). Similarly to Estonia, a significant number of fire-stones in Finland have been found in areas where archaeological sites are not known to have existed. The finds in Finland have, however, been made on arable land, which provides grounds to infer that the fire-stones were connected with slash-and-burn fields established on

[5] In earlier literature, this barrow group is usually referred to as the 'barrows in Kose forest'.

Fig. 50. *Fire-steels: 1–2 Lahepera, grave; 3 Paluküla, hoard; 4 Konguta, grave; 5 Uugla II, grave (ÕES 1984: 87; 2053: 27; AI 2483: 24; 2516: 25; AM A 528: 25; photo: 1–2, 5 Kristel Külljastinen, 3–4 Andres Tvauri).*

wastelands during hunting and fishing expeditions (Hackman 1905, 241–252; Meinander 1950, 134–136; Salo 1990b; Taavitsainen 1990, 50f.; see also 6.3). In this context it is appropriate to note that the oval fire-striking stone in the above-mentioned barrow at Koseveski was coupled with an iron hoe (Selirand 1965b, fig. 5; Fig. 59: 1).

During the Pre-Viking Age at the latest, fire began to be made by striking a fire-steel and pieces of flint. The most common type of fire-steel in Estonia in the Middle Iron Age and the Viking Age was the *fire-steel with rolled-back ends*, which had a triangular bit inside (Figs. 50: 1; 143). Such steels have been found in some easily-dated burials, for instance the Iila inhumation burial from the second half of the 10th century (Mägi-Lõugas 1995b, 522) and inhumation graves of the early 11th century at Raatvere (Lavi & Peets 1985, pl. XVI: 3). In addition, they have been found at fort sites and settlement sites, for instance the settlement beside the fort at Rõuge. In Latvia, fire-steels with rolled-back ends were in use as early as the 6th century (Moora 1938, 549), and in Finland they were common throughout the Pre-Viking and Viking Ages (Lehtosalo-Hilander 1982a, 72f.). In Novgorod such fire-steels were used until the end of the first quarter of the 12th century (Kolčin 1959, 103, fig. 85).

Other types of fire-steels are scarce in the Pre-Viking and Viking Age contexts. An *oval fire-steel* has been found, for instance, at the fort at Pöide, Saaremaa (Lõugas & Mägi-Lõugas 1994b, 391, pl. XV: 5), in the stone grave of Pajusi, Läänemaa, and a male burial of the early 11th century in the cemetery at Lahepera, not far from the Lake Peipsi (Fig. 50: 2). In Finland, the oval fire-steel is the oldest and most widespread type of fire-steel, introduced in the early 7th century and common until the end of the Iron Age (Lehtosalo-Hilander 1982a, 73). The hoard found in Paluküla, north-western Estonia, contained a *wedge-shaped fire-steel with an openwork central section* (Fig. 50: 3), and a damaged grave near Konguta, Tartumaa, yielded a *wedge-shaped fire-steel with cast bronze decoration and a loop* from which to hang it (Fig. 50: 4). Wedge-shaped fire-steels can be found in Scandinavian burials from the 7th–9th centuries, for instance in Birka, but this is a rare type even there (Arbman 1940, pl. 145; Hårdh 1984; Nordahl 2001, 17). Only one fragment of a *fire-steel with bronze upper section portraying two horse riders* is known, from the Final Iron Age stone grave II at Uugla, Läänemaa (Fig. 50: 5). In this fragment, a strongly stylized horse with a rider on its back can be seen. Most such fire-steels have been found in south-western Finland in the find context of the first half of the 10th century, although they can occasionally be encountered also in the area that stretches from southern Norway to the Kama River basin in the east and to the lower reaches of the Daugava River and Gnëzdovo in the south (Lehtosalo-Hilander 1982a, 73f., fig. 21).

Fig. 51. *Knives (1–3) and a sheet bronze band for fastening the handle of a knife (4): 1 Ojaveski, grave; 2 Kehra, grave; 3 Rõuge, fort-settlement; 4 Lihula, grave (AM A 349: 422; AI 3584: 2; 4100: 3078; AM A 478: 203; photo: 1–2, 4 Kristel Külljastinen, 3 Andres Tvauri).*

Small pieces of *flint* used to strike fire have been found in several forts and adjacent settlements, but also at the inhumation cemetery dated to the first half of the 11th century at Lahepera.

2.2.8. Knives

The knife is the most common everyday object and tool in the Middle Iron Age and Viking Age sites. Many of the knives show signs of extensive wear or are broken. Knives with diverse shapes and sizes were apparently forged by all smiths for different purposes. The knives of the era in question generally have a tang for attaching the handle; what varies with the knives is the shape of their backs and the transition from blade to tang. The handles were made of wood or bone, and do not survive. Close equivalents to the Estonian finds can be found throughout neighbouring countries.

Knives where *the transition from blade to tang is smooth and the back is curved* predominate at archaeological sites from the Migration Period. Such knives have, for instance, been found at the burial sites of Lepna, Lehmja-Loo IV, Kurna IA, and Ojaveski (Fig. 51: 1). Knives that have *a curved back and a step at the transition from blade to tang* have been found in the stone grave of Proosa not far from Tallinn (Lang 1996a, 192), in the Kirimäe burial in western Estonia (Schmiedehelm 1924, figs. 22–26), and the Lindora barrows in south-eastern Estonia (Schmiedehelm 1965, fig. 8: 7), for instance. Characteristically, the handle of a Migration Period knife was fastened with a teardrop-shaped sheet metal band (Fig. 51: 4). Knives where *the transition from blade to tang is smooth and the back is straight* can be encountered in the find context of the Pre-Viking Age and the earlier part of the Viking Age (Lang 1996a, 99f., pl. XXVI: 3). Knives of the later Viking Age generally have *a straight back and steps on either side at the transition from blade to tang* (Fig. 144). Sometimes the backs of Viking Age knives are bevelled and the blades bear stamped ornamentation (Fig. 51: 2).

Knives with decorated iron handles are rare finds, and only four have been found in Estonia: one each at the forts at Otepää and Rõuge, and two at the settlement site at Rõuge (Fig. 51: 3). The knives are 14–15.7 cm long, and their handles have decoration consisting of lines, often intersecting to form diagonal crosses. It has been assumed that these may have been imported items (Peets 2003, 249). No precise equivalents are known, but analogous knives from later periods are considered to have been used in surgical operations (Kolčin 1959, 56, fig. 43).

2.2.9. Whetstones

Whetstones are common finds at Pre-Viking and Viking Age sites. On the basis of material, shape, and presumed function, these can be divided into two types.

Large whetstones, mostly made of sandstone have different sizes and shapes, usually with an irregular rectangular cross-section (Fig. 52: 1). Such whetstones are often so worn in their middle sections that they resemble an hourglass, and some have even broken in half. These whetstones are made of rocks that are found throughout Estonia, which may be an indication of their local origin. Such whetstones are common at forts and settlement sites. They were presumably used to sharpen larger edged tools, for instance axes and scythes.

Smaller whetstones made of fine-grained rock often have a flat shape and a small hole (Fig. 52: 2). These whetstones are mostly made of gneissic rock. They were probably attached to a belt through the hole, since they have been found near the waist area in inhumation burials along with belt parts, knives, and fire-strikers (Lavi & Peets 1985, pl. XVI: 10; Mägi-Lõugas 1995b, pl. IV: 4). Such perforated whetstones have also been found at the fort at Unipiha (Aun 1975a, fig. 4: 6),

Fig. 52. *Whetstones: 1 Pada, fort-settlement; 2 Rõuge, fort-settlement; 3 Salme I, grave (AI 5082: 268; 4100: 332; SM 10601: 20; photo: 1–2 Andres Tvauri, 3 Mirja Ots).*

and at the settlement sites adjacent to the forts at Aakre and Rõuge, etc. Whetstones of this type were presumably used to sharpen knives or scissors.

A *long and carefully made whetstone of fine-grained rock with a quadrate cross-section* has been found in boat burial I at Salme, Saaremaa (Fig. 52: 3). Such whetstones turn up in graves of nobles in the Pre-Viking and Viking Age eastern Sweden (Arne 1934, 49, pl. 21: 15, fig. 23a; Lindquist 1936, fig. 105). A similar object has, for instance, been uncovered in the chamber-grave at Käräjämäki in Eura, south-western Finland, which has an abundance of grave goods, including a sword and other weapons. Pirkko-Liisa Lehtosalo-Hilander (1984b) has proposed that this impressive whetstone belonged to a military leader. Such whetstones are generally found together with swords in male burials, which probably indicate that they were used to sharpen swords.

2.2.10. Combs

No combs from the Migration Period have yet been found in Estonia, while excavations at Pre-Viking and Viking Age sites have yielded at least 12 combs or fragments thereof by the beginning of 2010. The combs are single-sided, i.e. with only one row of teeth, and consist of plates of bone attached by metal rivets. Proceeding from Kristina Ambrosiani's work (1981), Heidi Luik has divided combs found in Estonia according to whether they have broad or narrow connecting plates (Luik 1998a, 12). Combs with broad connecting plates that were discovered at the settlement site at Iru and in boat burial I at Salme (Fig. 53: 1–2) have been dated to the Pre-Viking Age (Luik 1998a, 23; Konsa *et al.* 2008), while three combs with broad plates, found at the forts at Saadjärve and Rõuge, and at the settlement site at Mustivere, date from the Viking Age. Seven Viking Age combs have narrow connecting

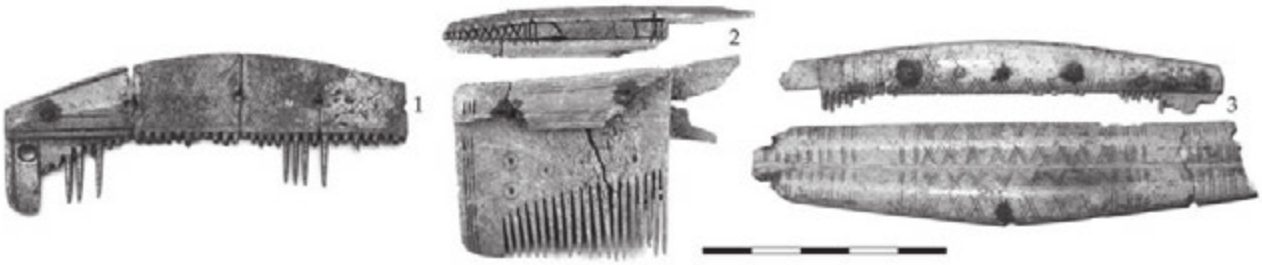


Fig. 53. *Combs and a comb case: 1 Iru, fort-settlement; 2 Salme I, grave; 3 Iila, grave (AI 3429: 259–260; SM 10601: 272; AI 3358: 317; photo: 1 Peeter Kraas, 2 Marge Konsa, 3 Andres Tvauri).*

plates; find sites include the burial places at Käku and Viltina on the island of Saaremaa, the Iila burial, the forts at Rõuge and Tartu, and the settlement site in Tartu, the latter yielding two combs. The comb of the Iila burial was in a case made of bone (Fig. 53: 3).

In comparison with the majority of neighbouring countries, few combs have been found in Estonia. This has been explained by the practice of cremation burials, which destroyed the combs. Further, the placing of combs in graves has been considered to be a Germanic custom, which was not very widely followed on the eastern coast of the Baltic Sea. The scarcity of combs has also been seen to be related to the absence of urban centres, as in other countries combs and the remnants of their manufacture have often been found in the cultural layer of urban centres, such as Birka, Hedeby, and Staraja Ladoga (Luik 1998, 140). The scarcity of combs, and the absence of production remains and partly-finished items in Estonia suggest that combs were imported products, brought from Scandinavia or north-western Rus (*ibid.*, 140f.).

2.2.11. Tweezers

In Estonia, tweezers, often coupled with razors, appeared in graves in as early as the Bronze and Pre-Roman Iron Ages. They have not been found in burial sites of the Early Roman Iron Age, but at the end of the Roman Iron Age tweezers once again appeared in graves. In the Migration Period, tweezers were common grave goods.

Tweezers of the Migration Period were generally made of bronze, had broad ends, and were in numerous cases ornamented. Such tweezers have been found throughout Estonia, for instance in the burial sites of Proosa, near Tallinn (Deemant 1978b, pl. VII: 2), Jäbara B and E in Virumaa (Schmiedehelm 1955, figs. 19: 14, 23: 15), and Paju (Tamla & Jaanits 1977, fig. 2: 4) and Lepna on the island of Saaremaa. Bronze tweezers with a cross-shaped pendant were unearthed in the stone grave at Ojaveski, Virumaa (Fig. 54: 1). The silver tweezers found at Lepna (Mägi 2004, fig. 8)

Fig. 54. *Tweezers (1, 3 bronze, 2 iron): 1 Ojaveski, grave; 2 Rõsna-Saare II, grave; 3 Rõuge, fort-settlement (AM A 343: 342; AI 5032: VI 24; 4100: 7702; photo: Andres Tvauri).*

are a rarity. Iron tweezers of a Migration Period date have been uncovered for instance in the stone graves of Proosa (Deemant 1977, pl. VIII: 6; 1978a, pl. X: 5) and Peetri at Mõigu (Tamla, Ü. 1977, fig. 2: 7), and at the fort at Hinniala (Valk 2007, fig. 13: 3).

As for Pre-Viking and Viking Age burial sites, only Lindora (Schmiedehelm 1965, fig. 8: 4) and Rõsna-Saare I and II barrow cemeteries (Aun 1980b, pl. IX: 10) have produced tweezers. The two former specimens are made of bronze, and the latter of iron (Fig. 54: 2). A pair of bronze tweezers with narrow ends (Fig. 54: 3) has been uncovered at the fort-settlement at Rõuge, which is the only settlement site that has produced tweezers definitely dating to the period under review.

Fig. 55. *Rim lock key from the fort-settlement at Rõuge (AI 4100: 297; photo: Andres Tvauri).*

2.2.12. Locks and keys

Locks and keys are scarce in the archaeological record of the second half of the first millennium in Estonia. *Iron keys for wooden rim locks* have been found at the settlement site at Aindu, the fort-settlement at Rõuge (Fig. 55), and Varetemägi stone grave at Ehmja (Mandel 1984, pl. XI: 7). Such keys were used between AD 600 and 1000, and they have been found in large numbers in Scandinavia and Novgorod (see Petersen 1951, 465f.; Arwidsson & Berg 1983, pls. 4, 19: 2–3; Horošev 1997, pl. 7: 3–7).

Small iron push key spring locks were used in northern Europe since the Viking Age to lock chests and boxes. In Estonia, no spring locks have been found in a definitively Viking Age find context. On typological grounds, the *lock with a box-shaped body* (Aspelin 1884, no. 1965) found somewhere in Kaarma parish, Saaremaa, can be considered as probably dating from the Viking Age, as similar locks were used in the 10th–11th centuries in Scandinavia and Rus (Kolčin 1959, 78). As for keys, a *push key with a round bit* found at the Viking Age cemetery at Piila, Saaremaa, can be mentioned (Fig. 195: 8). Spring locks and their push keys continued to be used in the Final Iron Age, as demonstrated by, for instance, the keys found in Novgorod, where push keys with round bits are of the type that was used from the 10th to the early 13th centuries (Kolčin 1958, figs. 1–2).

2.2.13. Nails

Iron nails are rare finds at archaeological sites from the second half of the first millennium. The abundant find assemblage of the fort and fort-settlement at Rõuge, for instance, includes only a few iron nails. Nails began to be used more often in the Final Iron Age in buildings, furniture, and various other objects. The size and shape of nails depended on their function, and it is impossible to date them on the basis of their appearance.

Since the later part of the Viking Age, nails were used in coffins. Grave VIII at Raatvere (Fig. 208) contained eight or nine iron nails, which belonged with the coffin, judging by their position and the traces of wood found on them (Lavi 1986b).

2.3. Summary

From the Migration Period forts in Estonia, only a few burned remains of wooden structures, identifiable by radiocarbon dating, and occasional artefact finds survive. The paucity of finds would appear to suggest that Migration Period

forts were not permanent dwellings, and were perhaps no more than defensive structures. The Pre-Viking Age witnessed the rise of many new permanently-settled forts in northern and south-eastern Estonia. Further, settlements began to arise alongside forts, resulting in the formation of centres consisting of a fort and adjacent settlement, whose heyday was in the Viking Age. Such combinations of a fort and settlement were particularly characteristic of northern Estonia, eastern central Estonia, and south-eastern Estonia. Most fort-and-settlement centres were abandoned in the first half of the 11th century.

The majority of the population lived, however, in individual farms throughout the period under review. It is possible that in the final Viking Age, the most densely inhabited regions in the coastal areas of north-western and northern Estonia saw the rise of villages, i.e. settlement units with several farms and a collective field. The size and social background of various settlement units, including forts and adjacent settlements, will be discussed in greater detail in Chapter 7.

In the second half of the first millennium and even later, inhabitants of Estonia dwelled in small log cabins measuring 5–6 × 4–5 m, which were heated with rudimentary *keris* stoves since the Pre-Viking Age at the latest. The buildings were used as both dwellings and threshing barns. The dwellings of the Estonian Pre-Viking and Viking Ages resembled the contemporaneous cottages of other Baltic-Finnic and Baltic peoples, and differed greatly from the large buildings used in Scandinavia. There were undoubtedly other buildings on farms, such as granaries, summer kitchens, etc., which have probably survived in the form of fireplaces found outside dwelling houses, as hardly anything else would have remained of these light structures.

The majority of surviving household items relate to the processing and storage of food, for instance grinding stones and clay pottery. Hand-moulded pottery was used in Estonia throughout the period, and can be divided into two main groups by function: firstly, smaller carefully made and finished serving dishes, i.e. fine ware, and secondly, larger vessels with coarser-grained fabric for cooking and storing food. Fine ware was mostly burnished and in many cases decorated with relief ornamentation.

The handmade pottery of the second half of the first millennium can be divided into two manufacturing traditions. Iru-type pottery was characteristic of western and northern Estonia. Typical examples of this type of fine ware are bowls with vertical or curved walls (or, before the 8th century, carinated walls), which were generally characterized by raised ridges, a step at the junction of the neck and shoulder, horizontal grooves made by dragging the fingers against the surface, and line, zigzag, or cord ornamentation. Most of the Iru-type coarse ware comprises pots with vertical or slightly outwardly-curved walls, the upper section of which sometimes has a slightly curved profile; up to the 8th century, coarse ware also included large carinated pots.

Rõuge-type pottery was characteristic of Pre-Viking and Viking Age south-eastern Estonia and its neighbouring areas. Fine ware of this type mainly includes carinated bowls and pots whose characteristic décor consists of geometrical patterns made up of small hollows in the upper part of the vessel; line or wave decoration is rarely found. Coarse ware of the Rõuge type is characterized by crudely finished pots with upright sides and slightly bent rims. One distinctive feature is the presence of perforations below the lip, and in some vessels pinched decoration turns up. In the second quarter of the 11th century at the latest, Slavic-type wheel-thrown earthenware came into use in the eastern part of Estonia.

Other everyday items such as knives, whetstones, tweezers, combs, keys, and fire-starting devices have been found in dwellings and graves. All of these items represent types that have counterparts throughout neighbouring areas.

Chapter 3

Main Sources of Sustenance

The main source of sustenance of the residents of Estonia in the second half of the first millennium was the cultivation of land, and to a lesser extent, animal husbandry. Agricultural production was the mainstay of the Iron Age economy, and other branches of the economy were of secondary importance. In some regions, hunting and fishing may have possessed some importance as a source of sustenance.

The most direct evidence of land cultivation consists of the remains of fields and crops. The remains of crops are found as macrofossils at archaeological sites and as pollen in bog and lake sediments. Information concerning the practices of animal husbandry, hunting, and fishing is mainly derived from the study of animal bones. Evidence of subsistence practices also includes the remains of tools that were used in tillage, animal husbandry, hunting, and fishing.

3.1. Land cultivation

3.1.1. Remains of fields

Prehistoric fields in Estonia are mainly recognizable in the landscape by the heaps of stones which were removed from fields, and by the baulks that separated one plot of land from another. It was only in the 1980s and 1990s that prehistoric fields began to be sought systematically, and as a result relatively few are known. They have mostly been discovered in western and northern Estonia, where limestone lies close to the surface and fields are therefore full of stones. In southern Estonia, where the upper part of the bedrock is Devonian sandstone, clearance of stones was unnecessary; consequently, only a few fossil fields have been identified there. Those that have been found have not yet been investigated, and hence their date is unknown. Field remains that indisputably date to the Middle Iron Age and/or Viking Age are only known in four places in northern Estonia (Ilmandu, Tõugu, Võhma, and Uusküla), and one place in western Estonia (Kaseküla; Figs. 2–4). More fields from this time probably exist among the discovered fossil fields, but usually excavations are required in order to be able to assign a date to ancient fields.

Some of the field remains from the period in question are visible today in the form of clearance cairn fields. Such cairn fields arose as the result of tillage from the Late Bronze Age, at the latest, onwards to modern times (Lang 2007b, 293ff.; 2007c, 96ff.). These are plots of cultivated land between which many sod-covered clearance cairns, 3–5 m in diameter and a few dozen centimetres in height, are situated. Besides cairns, a few low baulks of stones and soil may

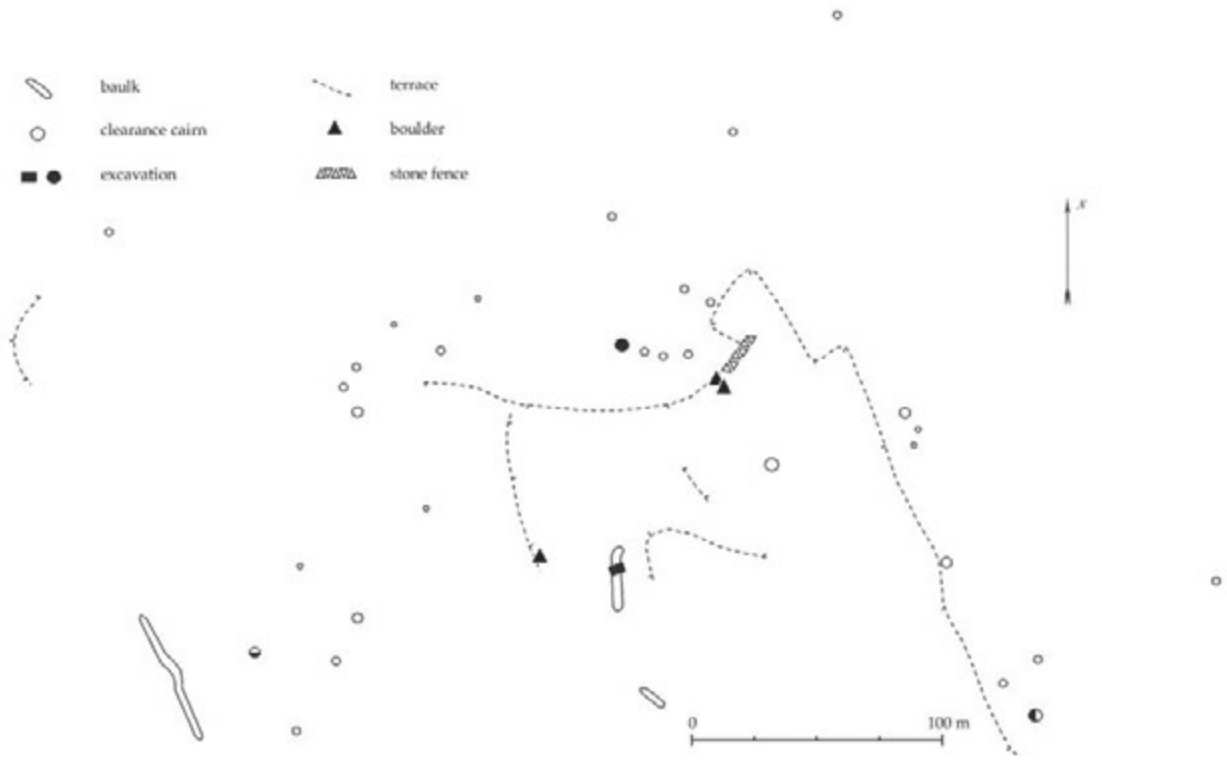


Fig. 56. *Cairn fields: eastern part of cluster II at Ilmandu (after Lang* et al. *2004, fig. 3).*

be encountered in such fields. To protect against animals, the fields may have been surrounded by light wooden fences during crop cultivation, but no traces of these survive (Lang 2007c, 96).

In clearance cairn fields it is generally impossible to determine the size and shape of the field plots used during a specific period. Fields of clearance cairns are a result of centuries of land cultivation, and the cairns and baulks that today form a definite set may in fact have emerged in completely different times. Individual fields were only cultivated for a few years, after which they were left fallow or to become afforested. The rotation cycles of furrowing or slash-and-burn agricultural techniques caused the land between clearance cairns to be tilled repeatedly, and accordingly, the boundaries of field plots probably changed.

The central and north-western parts of the prehistoric field agglomeration at Ilmandu, west of Tallinn, can be considered as cairn fields (Lang *et al.* 2004). On the limestone plain, severely damaged by recent land reclamation, smaller groups of numerous clearance cairns, accompanied by a few field baulks and features reminiscent of terraces resulting from ploughing, were discovered. In the centre of the complex (Ilmandu II), four cairns and two baulks were excavated (Fig. 56); the charcoal gathered from one of the cairns was radiocarbon-dated to the period of the early 5th–mid-7th century, whereas the charcoal from one of the baulks indicated the date range from the later 7th century to the end of the 9th century (Fig. 57). In the north-western cluster of the fields at Ilmandu (Ilmandu III), six clearance cairns were excavated. Radiocarbon dating of the charcoal samples demonstrated that in this cluster, the fields were continuously cultivated from the 4th–6th centuries to the 11th–12th centuries (Fig. 57). South-east of the discussed field clusters are the remains of fields cultivated in the Pre-Roman

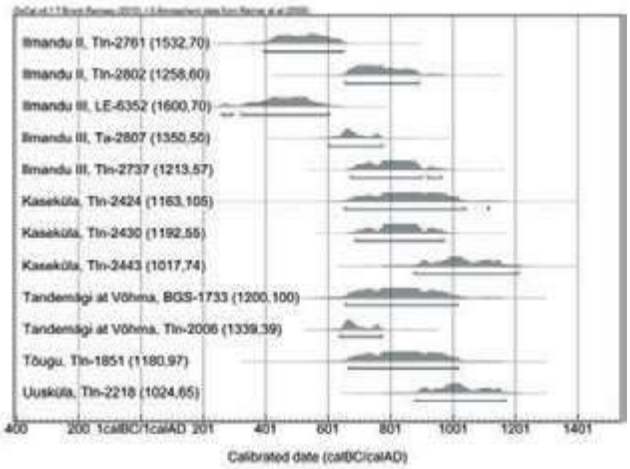


Fig. 57. *Radiocarbon dates from the field remains of the second half of the first millennium AD.*

Iron Age and in modern times (Lang *et al.* 2004, 75–79; Kaldre 2007, 18f.).

At Kaseküla, Läänemaa, a 10 ha area of cairn fields with 78 cairns 2–6 m in diameter (mostly 2.5–3.5 m) and six baulks was investigated. Twelve of the clearance cairns were either partly or completely excavated and a 5.6 m² sample trench was made in one baulk. A thin soil layer was found beneath all of the excavated cairns. Since the soil contained a very small quantity of charcoal, one could presume that a field was present here before the stones were heaped together, i.e. clearance cairns did not arise on slash-and-burn fields but on permanent fields. The little charcoal that could be gathered yielded three radiocarbon dates, falling roughly in the 8th–12th centuries (Fig. 57; Lang 2000b).

At Tõugu, western Virumaa, a small group of clearance cairns had survived at the edge of the nearby burial field. Small stones had been thrown around larger boulders. The charcoal gathered from beneath the bottom stones in one heap has been radiocarbon-dated to the 8th–10th centuries (Fig. 57; Lang 2000a, 228).

The oldest strip fields in Estonia date from the Viking Age. These are long and narrow fields separated by baulks, which are still visible today (Lang 2007b, 306–309). This division of fields would only become more widespread in Estonia during historical times. The earliest data of such field systems is known at Tandemägi in Võhma, Virumaa, where a group of clearance cairns and a few long parallel field baulks survived (Fig. 58). The position of the baulks and arrangement of cairns frequently in rows indicate the presence of strip fields; moreover, the position and orientation of the fields match the location of the strips shown on a map from the early 19th century. One cairn and one baulk were excavated at Tandemägi, and the charcoal that was obtained beneath both of these was radiocarbon-dated to the 7th–10th centuries (Fig. 57; Lang 2000a, 235f.). A 40 ha area of similar field remains has been investigated at Uusküla, Virumaa. The tillage of these strip fields began at the end of the Viking Age at the latest (*ibid*., 241; Fig. 57).

The appearance of strip fields firstly in Virumaa can be easily explained. This region has some of the most fertile soil in Estonia, and was densely inhabited even in the earlier periods of the Iron Age. Since the strip field system reflects the division of agricultural land among members of village communities (see Lang 1996a, 496), Valter Lang has presumed that in the last quarter of the first millennium the earlier individual farms began to develop into villages, at least in the more densely inhabited parts of Virumaa (Lang 2000, 246). Secondly, the formation of strip fields in Virumaa was favoured by the fact that the landscape in that part of the country is quite flat. As a result, large arrays of fields were present there as early as in the Iron Age. In contrast, the landscape of central and southern Estonia is more hilly and dissected by bogs and bodies of water, and as a result fields were dispersed, and isolated farms dominated the settlement pattern even in historical times (Troska 1998, 257).

A third type of field, namely block-shaped fields, may have been used in the second half of

the first millennium. In Virumaa (at Iila, Vasta, and Kutsala) and on the island of Saaremaa (at Võhma and Pidula), field systems have been found that from the surface resemble the block-shaped fields of the Bronze and Pre-Roman Iron Age. These feature rectangular field plots surrounded by clearance cairns and baulks, but the field enclosures are larger and the baulks reach higher than usual in the so-called Baltic and Celtic fields (see Lang 2007c, 96–105). Valter Lang has proposed that such block-shaped fields date from the Middle Iron Age (Lang 2007a, 214; 2007b, 304–306).[6]

No prehistoric fields have yet been found in southern Estonia. It is likely that altogether different remains of fields should be sought in the hilly landscape of south-eastern Estonia than on the limestone flatland of northern and western Estonia. The slopes of hills in south-eastern Estonia (for instance at Rebasemõisa in the Karula Uplands or at Ala-Pika in the Otepää Uplands) sometimes feature terraces that have evolved over centuries as a result of erosion caused by ploughing. One could probably find organic material underneath these terraces which could help determine the date of these features. Such research has not yet been performed, and therefore the development of agriculture in south-eastern Estonia must be investigated mainly using palynological data.

Due to the peculiarities of the soil and relief of the Otepää, Karula, and Haanja Uplands, it is presumed that in the first half of the first millennium the most productive means of cultivation here was slash-and-burn cultivation (Ligi 1963, 166; Laul & Kihno 1999). Based on the spread of *tarand* graves, optimal settlement density for slash-and-burn agriculture had been achieved by the Roman Iron Age, and competition for land arose

Fig. 58. *Field remains at Tandemägi, Võhma (Lang 2000a, fig. 106).*

(Konsa 2005, 20). Since a long time is required for a slash-and-burn field to recover, a farm that practised this type of farming had to be much larger than a farm that subsisted on permanent-field agriculture, roughly 54–183 ha. Moreover, numerous lakes and bogs reduce the quantity of arable land in this rolling landscape. Further growth in population could therefore only take place by improving the efficiency of land use, in other words increasing the extent of permanent fields and reducing slash-and-burn cultivation. This process is also observable in pollen diagrams. The cornflower pollen (*Centaurea cyanus*) found in the 6th-century deposit of the Hino basin, Haanja Uplands, indicates a sub-species of rye that was not cultivated on slash-and-burn fields, and thus is one of the signs of permanent

[6] Recently obtained radiocarbon dates from the prehistoric fields at Salevere, Läänemaa, seem to confirm this hypothesis (Helena Kaldre, oral report; see also Kaldre *et al.* 2009).

fields (Laul & Kihno 1999, 12; Konsa 2005, 20). The beginning of permanent fields around the 6th century can be inferred from the pollen diagrams from both the Haanja and Otepää Uplands (Laul & Kihno 1999, 12, fig. 3; Laul 2001, 208–210).

3.1.2. Agricultural tools

Agricultural tools known from the second half of the first millennium comprise iron hoe blades, ard-shares, and cutting tools such as scythe-knives, scythes, and sickles. Most finds have come from graves, while forts and settlements have produced an insignificant quantity of this group of items. Since cultivation and animal husbandry were the main means of subsistence, it is clear that agriculture-related items are numerically under-represented in the archaeological record. This is partly due to the fact that most of the work of crop cultivation and cattle raising was done outside the settlement. Further, most agricultural tools were made of wood, and their metal parts were too large to be discarded or lost. When an ard-share or scythe broke or wore down, its metal was typically used to forge a new object.

3.1.2.1. Hoe blades

Only a few iron hoe blades from the second half of the first millennium have been found in Estonia, and these were found exclusively in the south-eastern and eastern part of the country. These hoe blades have a similar appearance to that of the narrow-bladed axes of the period (see 4.2.4), including the shaft-holes for attaching a handle. Two types of hoe blades have been found: those with a broad proximal end and a wedge-shaped working edge, and those with a narrow proximal end and transverse edge.

The only hoe or a mattock with a broad proximal end and wedge-shaped distal end (Fig. 59: 1) was found at Koseveski on the western bank of Lake Peipsi, in a barrow with a probable date of 7th–8th centuries (Selirand 1965b). Hoes of the second type have been found in the stone grave at Hannuste, Võrumaa, along with a Middle Iron Age spearhead (Laul 2001, 163, fig. 67: 3) and at the Otepää hill fort. Some hoes with transverse blades are stray finds, for instance the one found on the banks of Lake Väike-Apja in south-eastern Estonia (Fig. 59: 2).

In the territories of Baltic tribes, hoe finds are more numerous. In Semigallia, hoes have been found in 5th–10th-century find contexts, including female burials (*Žiemgaliai*, nos. 678–681). A hoe with a transverse blade and a narrow proximate end has, for instance, been found at the fort at Izborsk, on the Russian side of Setumaa (Sedov 2002, fig. 26: 4).

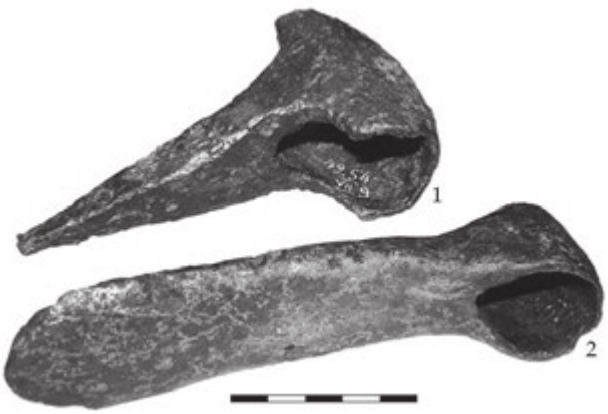


Fig. 59. *Hoe or mattock blades: 1 the barrow cemetery at Koseveski; 2 stray find from the banks of Lake Väike-Apja, Võrumaa (AI 4254: VII 9; TÜ 819; photo: Andres Tvauri).*

3.1.2.2. Ard-shares

All of the few ard-shares found in Estonia that have been dated to the second half of the first millennium are from hook ards, the oldest known

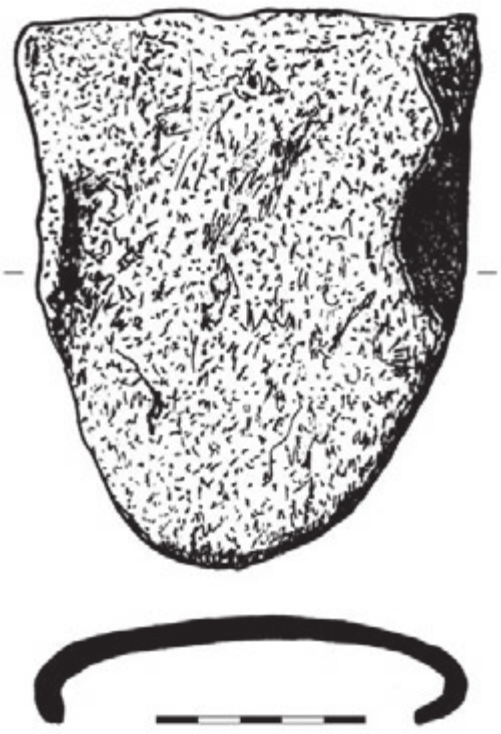


Fig. 60. *Iron ard-share from the fort in Tartu (TM A 14: 7; drawing: Andres Tvauri).*

type of ploughing tool found in this region (Moora 1968, 247).

A fragment of a 0.5–0.6 cm thick iron ard-share has been found at the Iru fort-settlement (Lang 1996a, fig. 45: 1). This settlement was mainly occupied during the 7th–11th centuries, and sporadically in the 11th–13th centuries. In the opinion of Valter Lang, the object is among the earliest plough ends in Estonia (*ibid.*, 116).

Parts of three iron ard-shares have been found at the fort of Tartu (Tvauri 2001, 147). The best preserved share had an even body with edges bent backwards (Fig. 60). The length of the blade is 14 cm, its width from above 10 cm, and the thickness of the iron is 0.7 cm. According to the typology of eastern European ploughing tool blades presented by Juri Krasnov (1987), the Tartu ard-share is of type IA2, which has representatives found in Novgorod and Beloozero, as well as in Staraja Ladoga, for instance. Shares of this type found in Novgorod were dated to the 10th century and the respective find from Beloozero to the 12th century on the basis of their find context (Krasnov 1987, 31, 203). Rafael Minasjan, who has investigated the rise of plough-based cultivation in north-western Russia, considered the Tartu ard-share to date from the 10th or 11th century, as in his opinion it is connected with the 1030–1060 layer of the fort of Tartu (Minasjan 1983, 84). Two shares that very closely resemble the Tartu ard-share are stored at Viljandi Museum (VM 2182, 2190). Unfortunately all that is known about these is that they were found in the town of Viljandi.

Although all of the shares that have been found so far are from hook ards, there is indirect evidence that in as early as the end of the Viking Age a new type of plough with a two-pronged ard-head — the forked plough — was used in Estonia. The division of fields into long narrow strips, instead of more or less square patches, indicates that the ploughing tool had to be able to turn the soil. Ever since the Bronze Age, fields had been ploughed in Estonia with hook ards, which in contrast to forked ploughs did not turn the turf over, but merely split it. As a result, it was necessary to plough crosswise in two traverse directions. Strip fields, however, consisted of long and narrow parcels that would have been impractical to plough with a hook ard. Thus it appears likely that the establishment of strip fields is an indication of the spread of the forked plough in the last quarter of the first millennium (Lang 2000a, 248; 2007b, 314). The forked plough was extraordinarily well suited to Estonian conditions, as demonstrated by the fact that it continued to be the main ploughing tool on the Estonian mainland until the mid-19th century. Since the forked plough was well suited to being pulled by horses, the exploitation of horses as work animals spread with the use of this type of plough (ERL, 30f.).

Fig. 61. *Scythe-knives (1–3) and a scythe (4): 1 Proosa, grave; 2 Tornimäe, harbour; 3 Pada, fort-settlement; 4 Raudi, grave (TLM 15109: 123; AI 4338: 975; 5082: 898; TÜ 811: 2; photo: Kristel Külljastinen).*

3.1.2.3. Scythe-knives and scythes

Silvia Laul and Evald Tõnisson have distinguished scythe-knives as a separate type of ancient Estonian harvesting tools (Laul & Tõnisson 1991, 78–80). In terms of the position of the blade and tang, they resemble prehistoric scythes, yet are considerably shorter, with blades up to 18 cm long (Fig. 61: 1–3). Like scythes, scythe-knives have a broad, flat tang with a turned end to form a fastening pin. It is possible that they were also utilized as billhooks or pruning knives. The scythe-knife from the 5th–6th-century stone grave at Proosa, Harjumaa, is among the examples that can be relatively precisely dated (Fig. 61: 1; Deemant 1978a, 81f.). The scythe-knives found at, for instance, the fort at Asva (Lõugas 1967b, fig. 6: 2) and the harbour site at Tornimäe (Fig. 61: 2), both in Saaremaa, and at the settlement site at Pada (Fig. 61: 3), Virumaa, belong to the Viking Age find context. Equivalents to Estonian scythe-knives are known from Gotland, Latvia, and Lithuania, but not from neighbouring areas to the east (Laul & Tõnisson 1991, 80).

In the Estonian Middle and Late Iron Age context, roughly a hundred scythes have been found at more than 60 find sites. Among these, it is difficult to distinguish earlier specimens from later ones, because scythes are often found in the cultural layer of forts and settlements or in stone graves that have been used through lengthy periods of time (Laul & Tõnisson 1991, 84). The scythes of the time had a narrow and curved blade, and were much larger than scythe-knives, reaching up to 50 cm in length (Fig. 61: 4). They were introduced in the middle of the first millennium. Such items have been found near Tallinn at the burial places of Saha D and Viimsi I of the 5th–6th centuries (Laul & Tõnisson 1991, 85; Lang 1996, pl. LIX: 10, fig. 59: 5), for instance. Scythes have also been found in several Viking Age burial sites, for instance the male burials at Raatvere (Fig. 208) and Õvi. Scythes may have been used in harvesting both hay and grain.

3.1.2.4. Sickles

In the second half of the first millennium, small sickles with blades only 10–12 cm long were used in Estonia. Their tangs and the proximate ends of the blades follow the same direction, whereas the distal part of the blade is heavily curved (Fig. 62). The earliest of such sickles come from the Migration Period or Pre-Viking Age find context, for instance from barrow cemetery II at Rõsna-Saare, south-eastern Estonia (Aun 1985b, fig. 2). Several finds of sickles in stone graves, at settlements at Rõuge (Fig. 62: 1) and Pada (Tamla 1983, pl. XIV: 4, 8), at forts at Otepää (Fig. 62: 2) and Soontagana, and at other sites attest that small sickles were used until the Final Iron Age, when arc-shaped sickles appeared (Laul & Tõnisson 1991, 82). Similar sickles were used in the 6th–12th centuries in Latvia (Graudonis 1985, 30f.; *Žiemgaliai*, nos. 691–698).

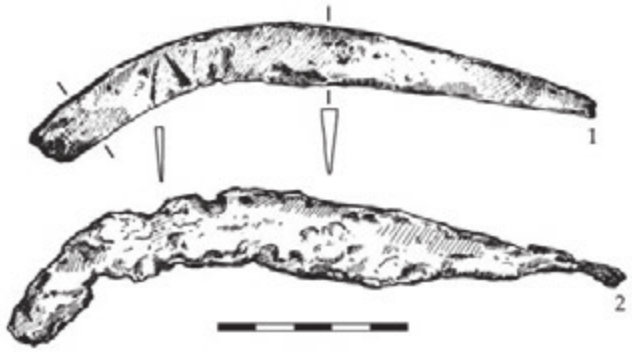


Fig. 62. *Sickles: 1 Rõuge, fort-settlement; 2 Otepää, fort (AI 4100: 9155; 4036 I: 1921; Laul & Tõnisson 1991, fig. 10).*

3.1.3. Palaeobotanical data

The most direct evidence of cultivated plants is the discovery of grain at forts and settlements. The excavation of graves and fields of the second half of the first millennium has so far not documented the remains of cultured plants.

The largest find of grain in Pre-Viking and Viking Age sites in Estonia was uncovered at the fort at Kuusalu (Pajulinn), where a 10–20 cm thick deposit of carbonized grain held at least 45 m² of the excavation. The grain presumably came from a burnt granary. It contained primarily barley, but also some wheat, rye, and peas (Schmiedehelm 1939, 131f., fig. 81). Relatively large quantities of carbonized barley, wheat, and pea seeds, as well as a little rye, have been found by the inner side of the northern rampart at the fort at Iru. Here the grain had probably been stored in clay vessels which broke when the fort was burning (Vassar 1939, 67). Charred barley and broad beans were also found beneath the ruins of the southern rampart at Iru (Indreko 1936, 167, fig. 23). Further, carbonized barley grains were encountered in one of the building remains excavated at the fort at Rõuge, where grains had been stored in a clay vessel (Schmiedehelm 1959, 159).

Occasional cereal grains have been found at other settlement sites from the period in question, for instance at Aindu (Valk 1994b, 388). At the Linnaaluste I settlement site near Keava fort, carbonized barley grains were found in what was probably a storage pit, which was dated to about AD 690–970 on the basis of the charcoal obtained there (Fig. 21; Konsa *et al.* 2002, 76).

The analysis of pollen found in bog and lake sediments offers significant data on ancient agriculture and land use. At present, over 400 pollen diagrams have been prepared for Holocene sediments in Estonia, though only a few of these allow conclusions to be drawn about human activity (Poska *et al.* 2004, 41; Koff 2007). The more thoroughly investigated regions where pollen diagrams with radiocarbon dates, sufficient resolution, and indicators of human influence have been prepared in greater numbers, and in which the corresponding information has been contrasted with results of archaeological research, include the island of Saaremaa, Läänemaa, the lower reaches of the Pirita River, Vooremaa in

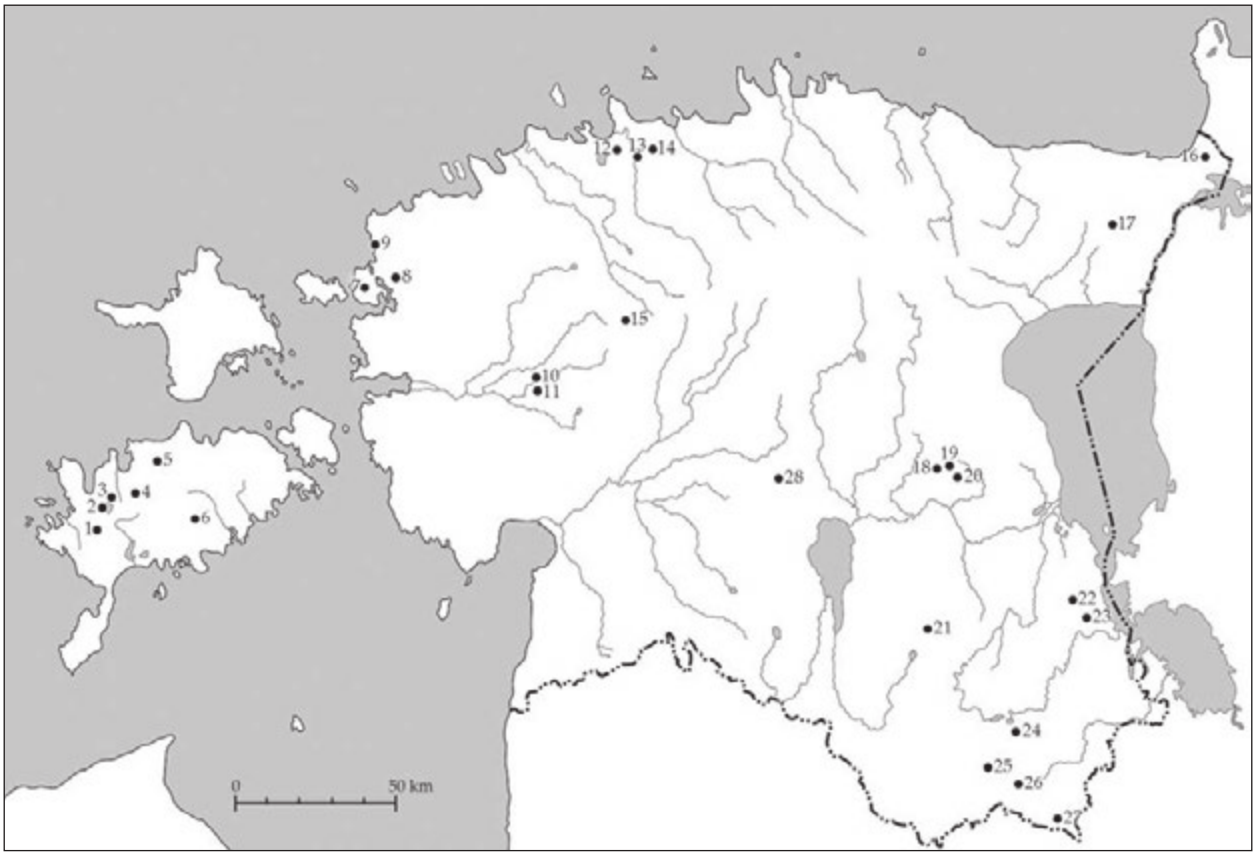


Fig. 63. *Pollen-analysed sites relevant to the present study. 1 Pitkasoo; 2 Karujärv; 3 Mudajärv; 4 Pelisoo; 5 Surusoo; 6 Kaali; 7 Elbiku; 8 Niibi; 9 Paslepa; 10 Kiilaspere; 11 Velise; 12 Tondi; 13 Saha-Loo; 14 Maardu; 15 Keava; 16 Leekovo; 17 Kurtna; 18 Pikkjärv; 19 Raigastvere; 20 Soitsjärv; 21 Ala-Pika; 22 Kalsa; 23 Toolamaa; 24 Verijärv; 25 Tõugjärv at Rõuge; 26 Külajärv at Plaani; 27 Hino; 28 Parika.*

northern Tartumaa, and the Haanja Uplands (Fig. 63; see Saarse & Königsson 1992; Pirrus & Rõuk 1988; Poska 1994; Poska *et al.* 2004; 2008; Veski 1996; 1998; Veski & Lang 1996; Lang & Kimmel 1996; Lang 1996b). In addition, smaller-scale palynological studies conducted for archaeological conclusions have been performed at the Ala-Pika settlement on the Otepää Uplands (Kihno & Valk 1999) and in the vicinity of Keava fort and adjacent settlement sites in north-western Estonia (Heinsalu *et al.* 2003).

In the Iron Age, as had been the case ever since the later Stone Age, the main cultivated grass in Estonia and elsewhere in northern Europe was barley (*Hordeum*), the pollen of which is found in all pollen spectra where there are any traces of crop cultivation whatsoever. In Estonia, barley predominates among both macrofossil grain finds and cereal pollen of the period. Two species of barley were cultivated in the Iron Age: two-row barley (*Hordeum distichone*) and four-row barley (*Hordeum vulgare subsp. tetrastichum*). The barley found at the fort at Kuusalu was mostly two-rowed, with the four-row variant being less common (Schmiedehelm 1939, 131f.); the barley found at the fort at Rõuge was presumably

of the four-row form (Schmiedehelm 1959, 159, 173). Four-row barley was less demanding of soil type and could be sown later than two-row barley, and therefore the former yielded greater crops in poorer conditions. Two-row barley was, however, considered to be better for beer brewing, at least in the 19th century (Moora 1980, 7). Merovingian and Viking Age sites in Finland contain only four-row barley (Huurre 2003, 47). In Scandinavia and Finland, close examination of barley grains has revealed that different variants of four-row barley grew there, for instance naked barley (*Hordeum vulgare var. nudum*) (*ibid*.). There are no corresponding research results concerning Estonian grain finds.

Wheat (*Triticum*) has been cultivated in Estonia ever since the beginning of crop cultivation in the Late Stone Age (Lang 2007c, 33). Smaller quantities of wheat grains have been found at forts of the second half of the first millennium, though it is unclear whether the wheat grew on fields as a separate culture or among barley. In Finland, wheat grains found at Viking Age sites demonstrate that besides common wheat (*Triticum aestivum*), at least emmer (*Triticum dicoccum*) and club wheat (*Triticum compactum*) were grown at that time (Huurre 2003, 47). In Estonia, such a detailed study has not been done.

Rye (*Secale cereale*) was common in all of Europe by the beginning of the Christian era, but it grew as a weed on barley and wheat fields. As grain cultivation moved north, the importance of rye as the most frost-resistant cultivated grass increased until the point where it began to be cultivated as a separate crop (Barker 1985, 46; Behre 1992; Lempiäinen 2005, 110). The results of palynological research show that almost throughout Estonia, rye came to be cultivated as a separate crop in about the 6th century AD (Poska *et al.* 2004, 47), and in north-western Estonia perhaps even earlier, in the Roman Iron Age (Veski & Lang 1996; Heinsalu & Veski 2010, 87, fig. 4). In the pollen spectrum of Lake Ala-Pika in the northern part of the Otepää Uplands, rye appeared more or less permanently in about AD 600 (Laul & Kihno 1999, 12). In the Haanja Uplands, the extensive retreating of forests and the spread of rye cultivation similarly began in about the middle of the first millennium: in the surroundings of Lake Külajärv at Plaani in about AD 500, and around Lake Verijärv in AD 700 (Niinemets 2008, 66). In Scania too, for instance, in the 8th century, the proportion of rye began to increase rapidly at the expense of barley (Pedersen & Widgren 2004, 383). It is possible that the spread of rye cultivation was accelerated by the climatic catastrophe of AD 536, as the latter may have caused both barley and wheat crops in fields to fail, while rye, as a less demanding cereal, at least produced seed grain. It may have been as a result of this that pure rye seed was first obtained over an extensive area.

Similarly to rye in northern and eastern Europe, oat (*Avena sativa*) was a weed growing among barley and wheat before it turned into a cultivated crop (Barker 1985, 46; Zohary & Hopf 1994, 73–78). As an undemanding cereal possessing high nutritive value, oat had been cultivated in Estonia ever since the Late Stone Age (Lang 2007c, 33). In the Estonian Iron Age find context, however, no oat grains have been found. The uninterrupted presence of oat pollen in the sediments of Lake Maardu, near Tallinn, for instance, nevertheless proves that oat was cultivated throughout Middle Iron and Viking Ages. At the end of the Viking Age, oat cultivation even seems to have somewhat intensified, at least in the surroundings of Maardu (see Veski & Poska 2004, table 2, fig. 5). Since oats have always been used as fodder for horses, this may be a sign that in the later half of the Viking Age, more horses began to be raised in north-western Estonia, or at least were more often used as work beasts. The relative importance of oats in Estonia in the second half of the first millennium is difficult to assess due to lack of data, but in eastern Sweden,

for instance, oat remains were approximately one-seventh of that of barley at that time (e.g. Pedersen & Widgren 2004, 384). Similarly, in the 10th–11th-century layers of the fort at Izborsk, rye, barley, and wheat grains outnumbered the grains of oats. Oat grains were 23 times less in number than barley grains, which were the most numerous among the grains (Kirianova 1981, table).

Legumes were a significant source of protein in the diet of Iron Age people. Peas (*Pisum*) were present at that time, as demonstrated by Viking Age peas found at the forts at Iru and Kuusalu (Vassar 1939, 92; Schmiedehelm 1939, 131). Unfortunately, it is not clear whether these were field peas (*Pisum arvense*) or garden peas (*Pisum sativum*). The oldest peas in Estonia, which were carbonized, were found in the Early Roman Iron Age *tarand* grave at Mäletjärve, south-eastern Estonia (Moora 1980, 20f.). Macrofossils that attest the presence of peas since at least the first centuries of the first millennium are also known in Finland (Huurre 2003, 49). In Sweden, peas have been cultivated since the Late Stone Age (Welinder 2004, 74). A close relative of the pea is the lentil (*Lens culinaris*), one of the oldest cultivated plants. An impression of a lentil seed has been found on a Migration Period clay vessel in Finland (Huurre 2003, 49), and lentils are present in the oldest — i.e. 10th-century — layers in Novgorod (Kir'janov 1959, 323) and in the 10th–11th-century layers of Izborsk fort (Kirianova 1981, table). It is likely that lentils were also cultivated in Estonian territory in the second half of the first millennium. The broad bean (*Vicia faba*) is an ancient cultivated plant that in Sweden, for instance, was cultivated as early as in the Stone Age (Welinder 2004, 74). In Estonia, carbonized broad beans have been found beneath the ruins of the middle rampart of Iru fort, in a Viking Age find context (Indreko 1936, 167, fig. 23). In Finland too, broad beans have been found in the context of the second half of the first millennium (Huurre 2003, 49). Traditionally, peas and lentils were cultivated in fields, whereas beans were grown on garden plots near the farm building (Moora 1980, 22).

The results of linguistic research suggest that the turnip (*Brassica rapa rapa*) is one of the oldest cultivated plants in northern Europe, comparable in age to barley. Turnips were grown on slash-and-burn fields alongside cereals. Unfortunately, there are no palaeobotanical remains of turnip cultivation, because turnip was harvested before it could blossom and bear fruit, and consequently neither its pollen nor seed reached bog peat or lake sediments or archaeological sites. In the Iron Age, turnips were presumably the second most important foodstuff after barley, and the main source of vitamin C for several months of the year (Ahokas 2002).

The earliest pollen of flax (*Linum usitatissimum*), cultivated as a fibre plant, is known from the sample taken from Lake Külajärv at Plaani, in a sediment that developed around AD 800. This fits with the opinion that flax has been cultivated in Estonia since at least the 10th century (Niinemets 2008, 67). Since flax pollen only spreads over very small distances, it cannot be excluded that the cultivation of this culture may also have begun much earlier. The oldest fragments of linen textile in Estonia have been found alongside the Villevere hoard, which dates from the Migration Period (see 4.3.5). During the Viking Age, a new cultivated species to enter the Estonian pollen spectrum was hemp (*Cannabis*), which was used as a raw material in making rope (Kukk *et al.* 2000). In later periods, hemp seeds were also used as food (Moora 1980, 20).

3.2. Cattle raising

Bones survive quite well in Estonian soil. The most reliable information about animals that were bred and raised for food is provided by the osteological assemblages of forts and settlement sites. However, settlements of the Middle

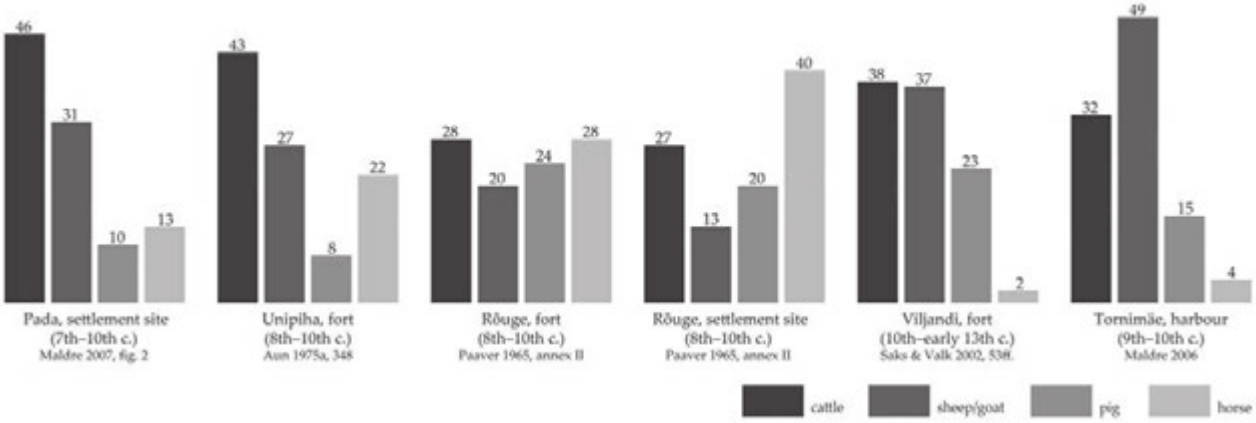


Fig. 64. *Percentages of bone fragments of the main domestic animals at selected forts and settlement sites.*

Iron Age have been investigated far too poorly to draw any conclusions on the basis of the animal bones found there. From that time, the osteological assemblages of only a few burial sites in Läänemaa have been studied in greater detail (see also 6.1.11). In the stone grave at Lihula, dated to the Migration Period, 39% of the animal bones were from cattle, 34% from sheep or goats, 17% from pigs, and 5% from horses; occasional dog and chicken bones were also present (Maldre 2003, 276). The animal bone assemblage of the Pre-Viking Age burial site II at Keskvere provides rather similar proportions: 36% of the total bone number was of sheep or goat, 25% of cattle, 19% of pig, 8% of horse, and 2% of dog (*ibid.*)

Viking Age forts and settlements have been investigated more extensively, yet the animal bones found there have been studied in only a few cases. The main domestic animals were probably cattle, sheep, pigs, and horses (Fig. 64). The northern Estonian osteological record is dominated by cattle bones (Schmiedehelm 1939, 132; Tõnisson 1992, 86; Maldre 2007, fig. 2), whereas sheep bones seem to be predominant on the island of Saaremaa (Maldre 2006). A somewhat different picture of the species composition appears in the forts and settlement sites of south-eastern Estonia, which are characterized by a greater proportion of horse bones (Trummal 1964, table 1; Paaver 1965, annex II; Aun 1975a, 348; Maldre 1996; 2004; 2006; 2007; Saks & Valk 2002).

Cattle (*Bos taurus*) had a very important role in ploughing, as draught animals, and in fertilizing fields and also as sources of meat. Work animals were mainly oxen. Judging from the bones found in the 10th–13th-century cultural layer from the fort or adjacent settlement in Viljandi, the cattle of that time were small and had a thin build, with withers reaching an average height of 100 cm, a short body, average-length heads, and short horns (Saks & Valk 2002, 53). Contemporaneous cattle in Rus were of the same withers height (Černecov *et al.* 1985, 226), while in Scandinavia the withers of Iron Age cattle were a little higher, about 110 cm (Pedersen & Widgren 2004, 337). The bone record from the settlement site at Pada reveals that about one-quarter of cattle were slaughtered before reaching the age of two, and 30–50% before four years of age. In the opinion of osteologist Liina Maldre (2007, 65–68), this age pattern indicates that cattle were primarily dairy and work animals, although they were presumably also raised for their meat. It is not likely that milk cows were kept in the Iron Age, however, as the features of the cow breeds of that time and the conditions in which they were kept indicate

that cow milk was mainly used as food for calves (Saks & Valk 2002, 53).

It is very difficult to distinguish the bones of sheep (*Ovis aries*) from those of goats (*Capra aegagrus hircus*). In the record of the settlement site at Pada, among the bones that allowed species determination sheep predominated, while proportion of goats was probably quite small. Sheep were raised for both meat and wool, while goats were primarily raised for their milk and hides. Based on the 10th–13th-century sheep bones found in Viljandi, the sheep of that time were small, similar to present-day Estonian native sheep (Saks & Valk 2002, 54). Most sheep were slaughtered before they reached the age of three and a half. The almost complete absence of lamb bones in the record of the Pada settlement site, for instance, can be explained by the fact that lambs provide very little meat (Maldre 2007, 68–70).

Pigs (*Sus scrofa domestica*) were raised for meat and hides. The Viking Age and Final Iron Age pig bones from Viljandi allow inferring that the pigs of the time were small, and had slender bodies and wedge-shaped skulls (Saks & Valk 2002, 54). Judging from the bone record of the settlement site at Pada, almost all pigs were slaughtered before they reached the age of three and a half (Maldre 2007, 70f.).

In the period under review, horses (*Equus caballus*) were certainly used for riding, as demonstrated by the bridle bits and other details of bridles that appear in graves from the Migration Period onwards, complemented with stirrups since the Viking Age (see 4.4.2). The exploitation of the horse as a work animal could not have been effective before the collar was introduced, as a horse without a collar is able to pull only light burdens. The horse collar was invented in northern China or in the territory of Mongols. In the Byzantine Empire it may have been introduced in as early as the 6th century, whereas in Europe the spread of collar did not begin before the 11th century (Needham & Ling 1965, 304–315). At approximately the same time, i.e. the end of the Viking Age, the first strip fields emerged in Estonia, which may indicate the introduction of the forked plough whose shape is more suitable to ploughing with a horse than the hook ard. This, as well as the intensification of oat cultivation observable in the above-mentioned pollen diagram of Lake Maardu, may mean that at the end of the Viking Age horses began to be used as work and draught animals.

The anatomical structure and degree of damage of the horse bones found at the settlement site at Pada resembles those of cattle bones, which may indicate that horse meat was used for food (Maldre 2007, 72–74). Examination of the bone assemblages of Latvian Middle Iron Age hill forts resulted in the same conclusion (LA, 165). Strictly speaking, the discovery of shattered horse bones in forts and settlement sites is not, however, definitive evidence that horse meat was used for human consumption: it may well have been used as food for dogs or pigs (Saks & Valk 2002, 54). On the other hand, burial sites in Läänemaa contain occasional unburned horse bones (Maldre 2003), which probably ended up in graves as meat, i.e. as grave goods or as remnants of commemorative meals, suggesting that horse meat was used as food (see also 6.1.11). Horse meat was also eaten in Viking Age Sweden, a fact supported by written sources (Wigh 2001, 117f.).

The 10th–13th-century horse bones from Viljandi were from horses of small stature that resemble later horses of the native Estonian breed, which were used for both riding and as work and draught animals (Saks & Valk 2002, 54). Although the evidence is meagre, it appears that the horses' withers height increased over time. At the end of the prehistoric period, most horses had a height of 128–136 cm at the withers (Maldre 1998, 215).

Chickens (*Gallus gallus*) are believed to have been raised throughout the Middle Iron Age and Viking Age. Two bones, probably chicken, have been found at the Migration Period stone grave

at Lihula (Maldre 2003, table 1). Based on the 10th–13th-century chicken bones from Viljandi, the chickens of that time were much smaller than their present-day counterparts (Saks & Valk 2002, 55).

Changes that took place in animal husbandry in the period in question are difficult to observe. The reason is that forts' cultural layers are mixed, and it is generally impossible to connect bones with specific settlement stages. It is likely that the animal husbandry practised in at least Estonian coastal areas resembled the corresponding practices in eastern Sweden at that time. The osteological assemblages gathered on the eastern coast of Sweden and on the islands of Gotland and Öland reveal an increase in the relative importance of sheep farming during the first millennium AD. The main reason for this is considered to be the need to increase food production to meet the needs of an increasing population, and sheep, as less demanding than cattle in terms of feed, suited well for this purpose. Another reason that has been mentioned is the increase in the demand for wool (Pedersen & Widgren 2004, 367–369).

No remains of Viking Age or earlier byres or other shelters built to protect livestock have been found in Estonia. It would indeed be extremely difficult to identify such a structure, as prehistoric wooden structures generally left very few traces in the ground. The cattle bones found in Viljandi were predominantly those of young animals, which indicates the slaughter of young animals in the autumn, and that only a small herd was kept through the winter (Saks & Valk 2002, 53). Nevertheless, even a small number of animals required protection from the cold and wolves in the winter. It is likely that the animals may even have been kept in dwellings, at least in colder and moister winter periods. The warmth emitted by the animals and the manure fermenting on the floor also provided warmth for the people, and helped economize on wood for fuel. The extremely uneven wear of the teeth of adult horses and cattle in Viljandi is of interest here, as it indicates the lack of high-quality feed in the winter period. The animals were probably not given hay, but instead feed that was difficult to chew, perhaps leaf fodder of dried branches of deciduous trees or straws of rye (*ibid*., 54).

Artefact finds that are connected with the animal husbandry of the period are extremely rare. Scythes were presumably used in hay making as well as harvesting, and scythe-knives and small sickles may have been utilized in the making of leaf fodder. Iron cow-bells, which are directly connected with cattle raising, are usually found in Final Iron Age graves. Only the cow-bell found in the male grave at Õvi, near Tartu, can be dated to the very end of the Viking Age, i.e. the first half of the 11th century on the basis of accompanying finds. Such cow-bells made of thin sheet iron were common throughout the forested zone of eastern Europe. The cow-bells of Novgorod, at least, were originally covered with a thin copper coating (Kolčin 1959, 76). The cow-bells found in Estonia do not have traces of copper, and thus it has been presumed that they were manufactured locally (Selirand 1974, 97).

3.3. Hunting, fishing, and forest produce

3.3.1. Hunting and fishing tools

Hunting tools comprised spears and bows. Various traps were definitely employed in hunting, but no traces of these have been found.

Spears used in hunting were presumably identical to spears used in battle, at least in the period discussed in this book (see 4.4.1.4). A few spearheads have a find context that indicates that the object may have been lost on a hunting trip. For instance, a spearhead of Petersen type E was found lying right under a layer of moss in the forest

Fig. 65. *Fish hooks and a troll from the fort (1) and the fort-settlement (2–3) at Rõuge (AI 4040: 3427; 4100: 616; 4100: 5942; photo: 1, 3 Andres Tvauri, 2 Kristel Külljastinen).*

at Tõrvase, south-eastern Estonia (Fig. 163: 1). Remains of wood in its socket and the presence of a rivet used to attach the spearhead show that a complete spear was left at the find site. Searches at the site and in its surroundings have not uncovered any other signs of human activity.

Of bows and arrows, only arrowheads have been found (see 4.4.1.5). Similarly to spears, no clear distinction was apparently made between bows and arrows used for war and hunting. As an exception, a broad barbed arrowhead from the settlement site next to the fort at Rõuge (Fig. 164: 10) seems to have been better suited for hunting than battle. Also, bone arrowheads may have been employed primarily on hunting expeditions.

The only fishing tools that have been found from the discussed period are iron fish hooks and trolls. These have been found at the forts at Iru, Aakre (Aun 1975b, pl. VIII: 5–6), and Otepää (Aun 1992, pl. XXII), as well as from the fort and the settlement site at Rõuge (Fig. 65).

3.3.2. Bones of wild animals and fish

The main evidence of hunting is provided by the bones of game animals. The bones of wild animals at several archaeological sites in Estonia show that in at least some places, hunting was an important means of subsistence throughout the Viking Age.

Of large game, there were many elks (*Alces alces*), bears (*Ursus arctos*), and lynxes (*Lynx lynx*) in Estonia, whose populations were supplemented by migration from the east, where the land that today is north-western Russia was sparsely populated and heavily forested. The open landscapes that arose during the first millennium AD as a result of human activity and the slight warming of the climate favoured the (re)migration of southern species like wild boar (*Sus scrofa*), roe deer (*Capreolus capreolus*), and red deer (*Cervus elaphus*) to Estonia (Kukk *et al.* 2000). Judging from the archaeozoological data, European bison (*Bison bonasus*) were quite common in southern Latvia and Lithuania in the second half of the first millennium. Bison bones are less common in the bone records of northern Latvia, and in Estonia these have only been found at the fort and settlement at Rõuge (17 and 2 bones respectively) and the 10th–13th-century cultural layer in Viljandi (at least 3 bones) (Maldre 1996, 307; Saks & Valk 2002, 55). This shows that at least in the forests of southern Estonia even bison were available for hunting in the discussed period.

The proportions of wild animals in osteological assemblages seem to vary between different regions of Estonia. In the bone record of the settlement site at Pada in the near-coastal region of Virumaa, the bones of domestic animals constituted 97%, seal bones 2%, and wild animal bones only 1% of the total. Moreover, most elk bones are fragments of antler with traces of working, or

fragments of antler artefacts, and may originate from separate antlers gathered from the forest. A few bones in the Pada archaeozoological assemblage are of wild boar, wolf (*Canis lupus*), beaver (*Castor fiber*), and hare (*Lepus* sp.) (Maldre 2007, 74f.). Judging from these figures, in the coastal zone of Virumaa, hunting was a completely insignificant means of acquiring food in the period under review.

In southern Estonia in the Viking Age, hunting was more common, as can be seen in the bone assemblage from the fort at Rõuge, where bones of wild animals constitute as much as 57% of all of the identified animal bones (Paaver 1965, table 105). Beaver bones represented 26.5% of all bones, thus even more than elk bones, which were 22.9% of the total. Other animals were wild boar (2.5%), pine marten (*Martes martes*) (1.8%), bear (1.4%), and European bison (1.2%). In addition, a few bones of roe deer, water vole (*Arvicola amphibius*), squirrel (*Sciurus vulgaris*), badger (*Meles meles*), otter (*Lutra lutra*), and hedgehog (*Erinaceus europaeus*) were present (Schmiedehelm 1959, 162).

Of the animal bones gathered from the Viking Age layer of Viljandi fort, a full 20% were beaver bones (Rammo & Veldi 2005, 105). Beaver pelts were greatly valued throughout the world at that time, and they were likely exported from Estonia, presumably mostly to the Orient (Leimus & Kiudsoo 2004). The relatively poor state of preservation of beaver bones in Estonia and Latvia has been explained by the eating of beaver meat (Calkin 1962, 121). The remains of other fur-bearing animals are definitely underrepresented in the osteological assemblages of forts and settlements, because the carcasses of those animals were mostly left in the forest after they were skinned. Only the nail of a lynx was found in the 10th–13th-century layer of Viljandi, for instance; this presumably ended up in the fort or settlement along with the paw that was still attached to the pelt (Saks & Valk 2002, 57).

As the few goose (*Anserinae*) and partridge (*Perdix perdix*) bones found in Viljandi show, wild birds were also hunted (Saks & Valk 2002, 57).

Sea produce seems to have been little consumed by the inhabitants of Estonia in the later first millennium. The only place where a relatively large number of seal bones have been found is at a harbour site at Tornimäe on the island of Saaremaa, which at that time was located right by the sea (Maldre 2006; Mägi 2005b, 72). Sea fishing did not have any considerable importance either, as is demonstrated by the shortage of fishing tools and fish bones and scales at coastal archaeological sites of the period. Notable quantities of fish bones have only been found at Tornimäe, already mentioned above (Mägi 2005b, 72), yet even there only species of limnetic or sub-saline coastal waters were represented. Fish bones of Tornimäe were clearly predominated by perch (*Perca fluviatilis*) with fewer bones from ide (*Leuciscus idus*) and northern pike (*Esox lucius*); a few bones of pike perch (*Sander lucioperca*) were also present (Lõugas 2008, 28).

In the first millennium, the development of fishing slowed down both on the Estonian coast and islands. This trend appears to have emerged in the Late Neolithic, when the salty stage in the development of the Baltic Sea, i.e. the Litorina Sea, became the sub-saline Limnea Sea (Lõugas 2001). In contrast to southern Sweden and Denmark, in whose waters the above-mentioned process did not change fish biomass as much as in the eastern part of the Baltic Sea, all along the coast from Poland to Estonia, sea fishing seems to have almost disappeared during the Iron Age. Sea fishing only recovered its previous importance in the Middle Ages, when better nets came into use.

Fishing preserved its importance, however, in inland bodies of water in southern Estonia (Lõugas 2001). Fish bones have been found in almost all of the excavated settlement sites and forts that date from the second half of the first

millennium (Aun 1992, 146), yet very little bone identification has been attempted. The fish bones gathered and identified from the settlement adjacent to the fort at Aakre, for instance, provide an overview of which species of fish were caught and eaten. The bone record included 91 bones of northern pike, 48 of bream (*Abramis brama*), and 11 of tench (*Tinca tinca*), with other fish represented by only occasional bones (Aun 1992, 146). Northern pike, bream, and tench are all common fish in Estonian inland waters, and remain today highly valued for food. With these data one must take into consideration that the bones of smaller fish were consumed together with the fish, that the survival of fish bones differs from one species to another, and that the bones of large fish are easier to find and thus are over-represented in the archaeological record.

3.3.3. Forest produce

Besides the meat and skins of wild animals, forests and other natural landscapes offered crayfish, bird eggs, honey, hazelnuts, berries, various edible herbs, aments, and cambium. Animals were probably grazed in suitable forests and leaf fodder was used as winter feed for animals (Saks & Valk 2002, 54). There is no direct archaeological evidence of the use of such forest produce in the period in question, but since Estonian peasants to some extent exploited forests for food throughout historical times (see Luts 2008), it is likely that forest produce was also gathered during the Iron Age. It is not known whether the inhabitants of Estonia at that time ate mushrooms; the Estonian peasantry of the 18th–19th centuries looked upon mushrooms with contempt and mushrooms as food were insignificant (Jürgenson 2003, 26–31). Due to their almost non-existent nutritional value, mushrooms would not have held an important place in the diet of Iron Age people either.

3.4. Summary

The main sources of subsistence in the Iron Age were field cultivation and animal husbandry; in the period in question, hunting and fishing were significant means of subsistence only in south-eastern Estonia.

Traces of farming in the form of field remains can be encountered on the limestone plains of northern and western Estonia. These comprise mainly baulks and cairns piled up during the clearance of stones, and arable plots between them. So far only three cairn fields have been dated to the second half of the first millennium, but this number hardly reflects anything else than the present state of research. Only a few long and narrow Viking Age strip fields separated by field baulks have been found, all in Virumaa. Further, it is possible that some of the terraces that were formed from ploughing found on the slopes of hilly southern Estonia date from the late first millennium.

Agricultural tools, such as hoe and plough blades, scythe-knives, scythes, and sickles, provide evidence of agricultural technology. The few plough-shares of the period originate from a hook ard. The emergence of strip fields may indicate that the forked plough was introduced in the Viking Age. Small scythe-knives with blades up to 18 cm long were used as harvesting tools and perhaps also as billhooks or pruning knives. In harvesting and hay-making, longer scythes up to 50 cm in length were also used. The sickles of the time were small and had strongly curved blades up to 12 cm long.

The main cultivated plant throughout the Middle Iron Age and Viking Age was barley. Finds of grain also include wheat, but wheat probably grew among barley to a limited extent. Rye began to be cultivated in about the 6th century, and this can be considered to be the most important change in agriculture in the period under review. Wheat and rye were summer grains at that time,

and it is unknown whether they were cultivated separately or together with barley. There is also evidence of the cultivation of oats, peas, broad beans, and the fibre plants flax and hemp.

The main livestock in northern and western Estonia were cattle and sheep, with smaller number of pigs and horses (the latter were also eaten). In south-eastern Estonia the cultivation of horses and pigs was more important than in coastal areas.

In northern and western Estonia, hunting and fishing as means of subsistence had already lost their relevance by the second half of the first millennium. In south-eastern Estonia, on the other hand, these practices preserved their importance. The most important game animal was the beaver, which was hunted for both its meat and hide; elk was next in importance. In coastal areas, seals were hunted.

Chapter 4

Handicrafts and Early Industry

Herein handicrafts are defined as the manufacturing of bone, wooden, and metal objects; clay vessels, textiles, and clothing; as well as processing of animal skins and the production of leather items. In the context of the Estonian Iron Age, early industry can be considered to involve the production of iron and tar, although there are no direct data concerning the latter. The richest sources for the investigation of handicrafts and early industry are sites of manufacture, where remains of used devices and tools as well as semi-finished products and manufacturing residue can be found. Finished products or materials themselves represent a second source concerning handicrafts.

The quantity of source material varies between different branches of handicraft and early industry. Most is known about crafts that used durable materials, for instance metal, bone, and ceramic. The production and processing of iron requires special devices, and leaves long-lasting residue in the soil. Some crafts, for instance the making of textiles and clothing, can be investigated through various tools (spindle whorls, needles, and loom weights). Large numbers of axes and knives used for woodwork have survived, but since these implements were also used for other work and as weapons, they tell little about the volume of ancient woodwork. Very little is known about the working of textile, wood, and leather because the products of these crafts do not usually survive the ravages of time.

Below an overview of the known manufacturing locations, tools, and production residue is offered, followed by an examination of the extant pieces of handicraft products. Jewellery and weapons, the two most numerous and diverse groups of items in the archaeological record, are examined in greater detail; in addition to the light these items shed on handicraft practices, they also reveal aspects of ancient trade, cultural contacts, social order, and much more. Pottery has been examined above (2.2.2).

4.1. Production sites

4.1.1. Iron production sites

Although the oldest iron production site excavated in Estonia has been dated to the Early Roman Iron Age, and at least eight iron smelting sites are known to have existed in various parts of Estonia in the first half of the first millennium (Peets 2003, 51–126; Lang 2007c, 122–125), no iron production sites of a Migration Period or of a firm Pre-Viking Age date have yet been found. Viking Age radiocarbon dates have been obtained from four iron smelting sites (Saunakünka, western

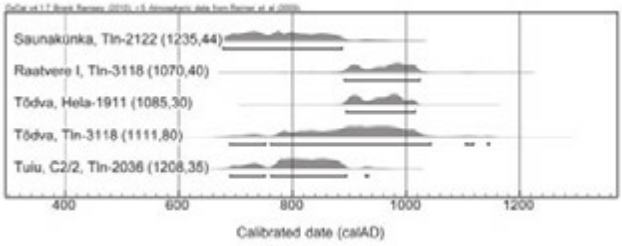


Fig. 66. *Radiocarbon dates from Viking Age iron smelting sites.*

Virumaa; Raatvere, northern Tartumaa; Tõdva, Harjumaa; Tuiu, Saaremaa — Figs. 4, 66). At least 26 prehistoric or medieval iron smelting sites are known in Estonia, but it is difficult to date them more precisely without performing archaeological excavations.

Iron has mainly been produced in Estonia using bog iron ore (limonite) containing goethite ($Fe^{3+}O(OH)$), which is found almost everywhere in Estonia (Peets 2003, 31f.). The composition of the slag found at the iron smelting site at Tõdva indicates that maritime manganese-iron concretions created at the bottom of the sea may also have been used; they can be found in the undersea sedimentary sand layer in Estonian coastal areas (Kiudsoo *et al.* 2009).

Iron production was a complex process. Ore needed to be dried and roasted over a bonfire. The shaft of the smelting furnace, which in the case of Estonian Iron Age furnaces was ca 30 cm in diameter and 80 cm high, was filled with pieces of roasted ore and charcoal stacked on top of one another. In the furnaces, carbon dioxide (CO_2) arising from the burning of carbon pervades the charcoal layer, becoming carbon monoxide (CO). This reacts with the oxygen in the ore, reducing the iron from the oxide. In order to achieve a sufficient temperature (ca 1500 °C), air was pumped into the furnace with a smith's bellows. Depending on the type of furnace, the bloom iron either tapped down to the base of the furnace (in the case of shaft furnaces dug into the ground) or out of an opening in the side of the furnace (in the case of above-ground shaft furnaces). There were also openings in the body of the furnace for the removal of slag and the ventilation of the furnace. In order for slag-rich bloom iron to become wrought iron, it had to be purified by heating it on a forge and beating it on an anvil. The final product was bars of pure wrought iron (Peets 2003, 31–49).

It is clear from the process described above that iron smelting sites featured several different fireplaces and installations: fires for roasting ore, smelting furnaces, bellows, charcoal pits or stacks, and outdoor forges. Iron production left behind remains of production devices and large quantities of slag, burnt clay, charcoal fragments, pieces of ore, and bloom iron, as well as forge scale from the hammering of iron, which all contribute to recognizing an iron smelting site today.

The location of an iron smelting site was primarily determined by the proximity of a location where iron ore had been found. Because wood was used to obtain the charcoal, iron smelting sites were located in forested areas. The work involved a high fire hazard, and therefore iron production sites were mostly situated at a distance from settlements. The iron production site at Raatvere, for instance, lies about 300 m from the settlement site that is presumed to be contemporaneous with the iron smelting site, and there are no known settlement sites at all in the vicinity of the iron smelting sites at Tuiu and Saunakünka.

The iron smelting site of Saunakünka in Virumaa is evidence of iron production in the Pre-Viking Age or the earlier part of the Viking Age. This site is situated in a glade on the edge of the Punasoo bog, on a low 200 m long sand esker with large quantities of slag and pieces of burnt clay lying above and around it. Excavation at one end of the esker revealed pieces of bloom iron and the remains of a clay smelting furnace or clay forge. The cultural layer was 30–40 cm

in thickness, but only the bottom 10–15 cm was intact. The site has been dated to the 7th–9th centuries based on radiocarbon dating (Fig. 66) and the pottery finds (Peets 2003, 71–73).

Remains of two iron smelting furnaces were found in the area occupied by the Viking Age cemetery at Raatvere, on the shore of Lake Peipsi (see also 6.1.4 and 6.1.9; Fig. 207). The furnaces, originating from the 10th century (Fig. 66), pre-dated the burials. What remained of them were cavities dug into the sand, about 50 cm deep and 100 cm in diameter, full of slag dust and burnt pieces of clay from the lining of the furnace (Fig. 67). Oblong clay patches about 100 cm in length and 20 cm in depth were found lying in front of the furnace floors. One of them (Fig. 67: I) revealed a ventilation channel 7–8 cm in diameter, with granite rocks in its proximal end. The latter possibly reinforced the ventilation opening at the point where it flowed into the furnace's high temperature zone. In front of the other furnace base (Fig. 67: II), a ventilation channel 1.1 m long, its base and walls laid of granite stones, had been built in the clay layer. The distance between the furnaces' ventilation channels was only 1 m. One can presume that the furnaces were used simultaneously such that the bellows that stood between them pumped air into both at the same time. Since the furnaces were found on land that later was used for agriculture, nothing of their superstructures remains. It is likely, however, that the walls of the furnaces were made of clay, similarly to the floors (Fig. 67: III). If such furnaces had been used for the reduction of iron, larger lumps of slag in the shape of the base of the furnace should have remained. In the surroundings of the furnace remains, however, there was mainly fine slag dust, indicating that the remains of sunken shaft furnaces were used for the secondary heating of bloom iron and slag. Such additional heating made it possible to dispose of most of the slag that remained in the bloom iron as a result of the reduction process (Lavi 1999b, 44–49; Peets 2003, 72–76).

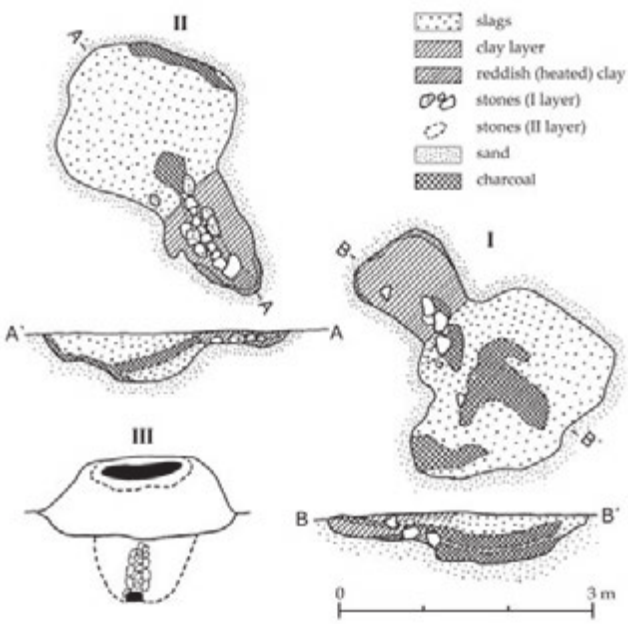


Fig. 67. *Iron smelting furnaces at Raatvere (Lavi 1999b, fig. 5).*

The only known Viking Age iron smelting site in the northern Estonian coastal region is located at the village of Tõdva, Harjumaa, about 20 km south of central Tallinn. The site lies on a rocky moraine hill 1.5 m high, in an area unsuitable for crop cultivation at the edge of a drained bog. The excavation of an area 207 m² exposed bottoms of three iron smelting furnaces and of three outdoor forges (Fig. 68). The furnaces were sunken shaft furnaces, surviving in the form of slag collection pits ca 35 cm in depth and 40 cm across. The pits were lined with granite stones and surrounded by limestone debris from the demolition of the furnaces, as this type of furnace had to be demolished to reach the bloom iron, which tapped onto the base. In the direct vicinity of the furnace remains, the shallow rectangular holes measuring about 40 × 50 cm, lined with limestone or granite slabs on three sides and the base, were interpreted to be outdoor forges. Many small drops of

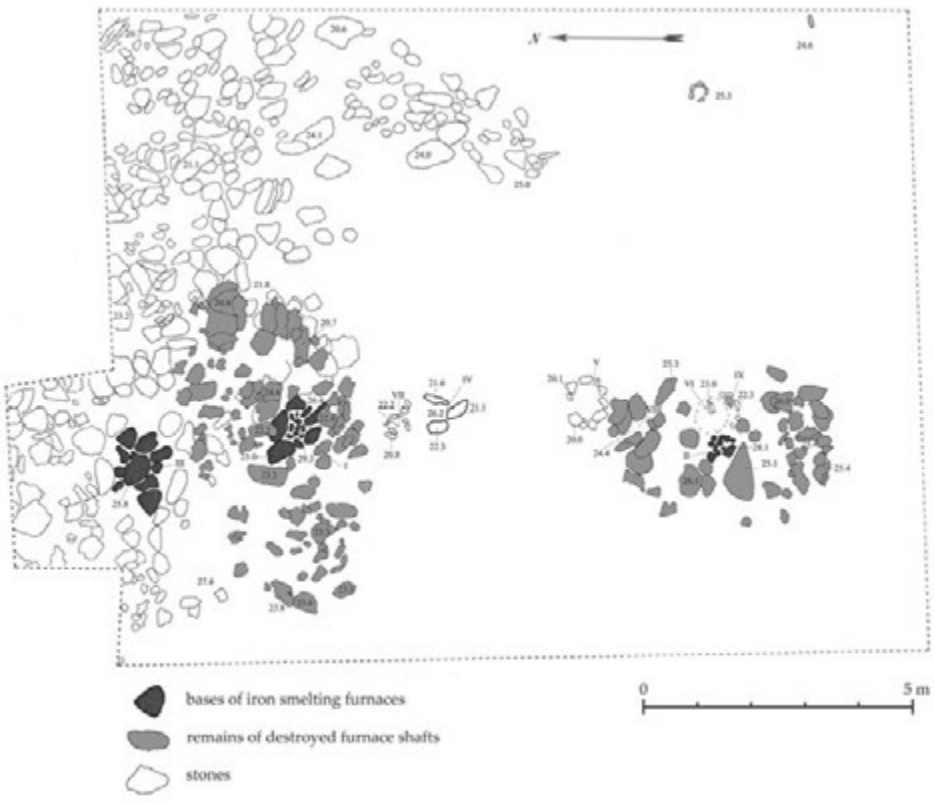


Fig. 68. *The iron smelting site at Tõdva (after Kiudsoo* et al. *2009, fig. 2). I–III furnaces; IV–VI forges; VII–IX post holes from anvil posts.*

slag were found in the vicinity of the forges. Next to each forge a post hole about 25 cm in diameter was found, which were interpreted to be the locations of wooden blocks that supported anvils. About one-third of the excavated area consisted of heavily burnt limestone debris, filling a depression that reached more than 1.5 m in depth. In addition to limestone, there were smaller quantities of burnt granite stones, fragments of bog iron, chunks of clay, and a few pieces of slag. This was presumably a natural depression from which base construction material for the building of furnaces was obtained, and later filled with stones burnt in the furnaces. The site produced potsherds classified as AIIIa and AIIIb groups of Iru-type fine ware with a 9th–10th-century date. In addition to pottery finds, radiocarbon dates also indicate a Viking Age date, as calibrated dates fall within AD 894–1016 and 689–1146 (Fig. 66; Kiudsoo & Kallis 2008; Kiudsoo *et al.* 2009).

During the Viking Age, the Tuiu region in northern Saaremaa started to become the most important centre for iron smelting in Estonia. There, on the sand dunes on the western sides of the Pelisoo bog and Lake Järise, in an area about 5 km long and 1 km wide, one can find hundreds of slag heaps and furnace bases, which have been archaeologically excavated in roughly a dozen spots. The oldest known iron smelting furnace from there was found within a small excavation trench made at the edge of the Pelisoo bog, where slag piles were also investigated. Against the yellow subsoil sand, the remains of the furnace were clearly distinguishable as a red patch of burnt

sand with a diameter of 85–90 cm. The charcoal gathered from the floor of the furnace was radiocarbon-dated to the 8th–9th centuries (Fig. 66; Peets 2003, 122). The beginning of iron production at Tuiu is also observable in the peat section of the nearby Jõhvikasoo bog, where the quantity of charcoal particles increases explosively in the deposits of the early Viking Age (Hansson *et al.* 1996, fig. 5b). The majority of iron production in the Tuiu region took place in the 12th–14th centuries, when iron production reached nearly industrial volumes (Peets 2003, 122f.). The success of this iron smelting area may partly have been due to the small phosphorus content in the local ore, as that ensured high quality of the iron (Lavi & Peets 1984, table 1; Peets 1991, table 2).

4.1.2. Smelting sites for non-ferrous metals

The casting of silver and tin requires lower temperatures than iron production, and an ordinary hearth or oven could be used for that purpose. In such cases, the only evidence of metal casting is the presence of pieces of smelting crucibles around the hearth. Such finds of smelting hearths have been made at the fort at Rõuge and at the settlement adjacent to the fort at Unipiha.

At Rõuge, a hearth with burnt and sooty stones was revealed in the courtyard of the fort, right beside the remains of a clay-floored log house. Ten intact or fragmentary mould halves, three crucible fragments, and pieces of slag confirm that bronze casting was conducted there. Some chunks of burnt wood around the hearth have been taken as evidence that the hearth stood in a building of some sort, perhaps in a smithy (Moora 1955, 59). On the other hand, the hearth may have been in the open air, and the burnt wood may have originated from the hut that stood beside the hearth.

At Unipiha, evaluation trenching exposed ruins of a *keris* stove, damaged through tilling activities, and abundant slags emerging from the coal-rich sand beneath the stove ruin. Numerous fragments of clay crucibles were found in the vicinity of the stove. There were hardened drops of bronze on the walls of many of the crucibles, and silver residue on some of them (Aun 1975a, 356; 1992, 21).

Bronze casting produces scrap metal which had filled the runners and vents of the mould. Additionally, casting is not always successful, and the cast item may prove to be defective. Such remains were, however, rarely deposited in the cultural layer, because the metal from defective items and cast scrap could always be melted down again. The discovery of two defective Scandinavian-style cast bronze pendants found in the layer of the fort-settlement in Tartu is therefore unique in Estonia (Fig. 69). Such pendants portraying so-called Borre animals have been found in Scandinavian countries, especially often in Mälaren Valley, including Birka. They have also been uncovered in Russia. Such pendants came into use in the mid-10th century or slightly later, and disappeared at the turn of the 10th–11th centuries (Callmer 1989, 29, 40; Metsallik 1996). The Tartu pendants are definitely rejects, as the

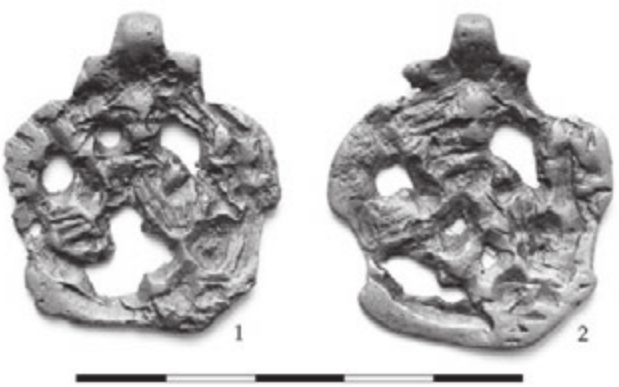


Fig. 69. *Defective bronze pendants in Borre style from the fort-settlement in Tartu (TM A 42: 540/1–2; photo: Arvi Haak).*

depiction on them is indistinct, and there are gas bubbles in the bronze. Atomic emission spectroscopy performed on one of the pendants showed that the main components of the amalgam were copper, zinc, tin, and lead, as well as a smaller amount of magnesium. Pieces of metal found together with the pendants contained the same substances (Metsallik 1996, 1353) and confirm that the pendants were manufactured locally.

4.1.3. Production sites for clay pottery

Potsherds are found at almost all of the archaeological sites of the period under review and there is no reason to doubt the local origin of this handmade pottery, yet the traces of the manufacturing process of pottery are rare. The most likely reason for this is that clay vessels were fired in hearths, pits, or rudimentary stoves that researchers are unable to distinguish from those used to prepare food or heat buildings. Sometimes pottery was fired simply above the ground, and in such cases the identification of the site is extremely difficult (see Orton *et al.* 1993, 127–130). Further, no specific tools were used to make pottery at that time. Even manufacturing rejects — it is common for some vessels to crack or break during firing — are generally indistinguishable from other potsherds.

It is, however, sometimes possible to identify defective pottery. If the temperature rises too quickly during firing, the surface of the vessel sinters or melts, while the interior of the vessel still contains water and the gases arising from the heating. This results in swollen clay, i.e. clay turned into claydite, and in the breakage and twisting of vessels. However, swelled potsherds did not always originate from defective pottery. Such sherds are also found in cremation burials, where they may have arisen as a result of being burnt with the body on the cremation pyre: pottery that was initially poorly fired may have swelled when being fired a second time. Comparably, occasional sherds of swelled pottery turn up in forts that were destroyed by fire (for instance Rõuge and Peedu). There are, however, two places where swelled pottery of the Viking Age has been found in large quantities and in relatively large pieces: the settlements adjacent to the forts at Pada and Iru (Fig. 70). However, no definite pottery kilns or other evidence of the making of pottery have been found at those locations.

Fig. 70. *Potsherds from the fort-settlement at Iru, broken and smelted together, presumably during the pottery firing (AI 3429: 187; photo: Andres Tvauri).*

4.1.4. Residues and unfinished pieces of bone working

Various objects were made of bone and antler, the most common of which at sites of the second half of the first millennium were awl-like implements for weaving bast items (e.g. Fig. 91), spindle whorls (Fig. 85: 1), and pendants (Figs. 118: 1–3, 5–6; 177: 2–3), and less commonly, various handles, arrowheads, combs (Fig. 53), decorative pins (Fig. 106), and skates (Fig. 71). Bone dice and gaming pieces have been found at the boat

Fig. 71. *Bone skate from the fort-settlement at Pada: bottom and side view (AI 5082: 261; photo: Kristel Külljastinen).*

burials at Salme (Figs. 202–203) and some fragments of what are possibly bone flutes at the fort at Rõuge (Luik & Maldre in print, fig. 22). Bone working does not require special buildings or furnishings, but it does generate residue that cannot be used for anything else, and thus tends to remain at the location of manufacture. Most of the bone items from the period in question are of minimal and very simple workmanship; often the natural shape of the bone was utilized, and as a result very little residue was created. For example, skates made of a horse's metatarsal and metacarpal bone found at the settlement site at Pada were made in this manner (Fig. 71). The skates are made from a bone that has been cut to make it narrower, with holes at each end. Based on the find context, these skates are dated to the 8th–10th centuries (Luik 2000).

Diverse cut bones and antler pieces are common among the find assemblage of the settlement site at Pada and the fort and settlement at Rõuge. Only a few unfinished bone items have been found, for instance a fragment of an uncompleted comb-shaped bone pendant from the fort in Tartu (Tvauri 2001, fig. 78: 1), and an uncompleted item of the same shape from the settlement site at Pada (Luik 1999, 136f.; Luik & Maldre 2005, fig. 13: 2; Tamla 1983, pl. XV: 7). What is believed to be an unfinished bone arrowhead has been found at the fort at Rõuge (Luik & Maldre in print, fig. 20: 2).

4.2. Tools for handicrafts

4.2.1. Smithing tools

Smithing requires several specific iron tools. The find assemblages of the second half of the first millennium in Estonia contain few such implements. The find locations include settlement sites, burial places, as well as a hoard or a votive deposit.

Smith's hammers dated to the Viking Age have been found only in two inhumation graves from the first half of the 11th century at Raatvere. Both hammers have lower lugs. The hammer found in grave XV weighs 765 g, and there is an iron wedge in its shaft-hole (Fig. 72: 1). Several hammers of this shape have been found in Viking Age graves, settlement sites, and hoards in northern Europe (Peets 2008, 136). Grave VIII at Raatvere contained a smith's hammer made of an axe fragment, weighing 720 g (Fig. 72: 2); this hammer, too, has an iron wedge in its shaft-hole (Peets 2008, 139f., fig. 4: 3).

The only prehistoric *tongs* found in Estonia (Fig. 72: 3) were also uncovered at Raatvere, at inhumation burial XV. Judging from the curved gripping ends of the tongs, which do not completely meet, these may have been used to lift smouldering lumps of bloom iron out of the smelting furnaces (Lavi 1999, 50f.), though they

Fig. 72. *Smithing tools: 1–2 hammers, Raatvere, grave; 3 tongs, Raatvere, grave; 4 sheet metal shears, Aakre, fort-settlement; 5 iron shovel, Kunda I, hoard (AI 5295: XV 143; 5295: VIII 87; 5295: XV 154; 4726: 65; ÕES 1889; photo: 1, 3, 5 Andres Tvauri, 2, 4 Kristel Külljastinen).*

may also have been used in forging larger objects (Peets 2008, 144).

The only known Iron Age *sheet metal shears* (Fig. 72: 4) have been found at the 8th–10th-century settlement site adjacent to the fort at Aakre. The shears have shanks of different lengths (246 mm and 196 mm) bent at the ends, and blades that have been worn shorter by repeated sharpening. Similar shears have been found in Scandinavia, but the closest counterpart was in an 8th-century smith's toolkit found in Staraja Ladoga (Peets 2008, 144–146).

Small iron shovels were probably connected with smith's work, as these were suitable for lifting charcoal and adjusting the fire in the forge. Such shovels initially had wooden handles (Peets 2008, 146). Two small shovels were found in Virumaa in a bog alongside other iron objects and weapons, the assemblage being known as the Kunda I hoard (Fig. 72: 5). Based on the accompanying finds, the shovels have been dated to the 6th–7th centuries (Tamla 1995, 105; Peets 2008, 146, fig. 7: 3–4). There are more similar shovels, but their find contexts do not allow firm dating.

4.2.2. Equipment for non-ferrous metal working

Moulds offer evidence of casting decorative mounts and pendants from non-ferrous metals. No moulds from the Migration Period have been found in Estonia, but four mould halves from two-piece moulds of the Pre-Viking Age or the beginning of the Viking Age are known from two barrow cemeteries in south-eastern Estonia. One of the barrows at Loosi yielded three mould halves deposited in a burial urn alongside cremated bones. One of them is shaped to cast three trapezoid and one lunula pendant, another is shaped to cast a quadrangular decorative mount (Fig. 73), while the third has only runnels in it. In contrast to the other known mould halves from the second half of the first millennium, the specimens from Loosi are made of varved clay (Schmiedehelm & Laul 1970, 161f.). In view of the period in which

Fig. 73. *Clay mould halves from the barrow cemetery at Loosi (AI 4376: 18, 17; Schmiedehelm & Laul 1970, fig. 4).*

lunular and trapezoid pendants were used (see 4.3.1.6), the Loosi specimens can be dated to the 7th century. A limestone mould half for the casting of a mount with an oval shape and geometrical ornamentation was found in barrow 6 at barrow cemetery III at Arniko (Aun 1992, pl. XIX: 4). This was obtained from a burial patch of cremated bones, which among other things contained a clay casting ladle (Fig. 76; Moora 1963, 357). The artefact finds indicate that the burials in the discussed barrow probably date from the 7th–8th centuries or slightly later (Aun 1978a).

Numerous finds of moulds have been made in the Viking Age fort-and-settlement complexes in south-eastern Estonia. The largest number — at least ten — has been unearthed at Rõuge. The mould half found at the fort-settlement in Tartu was intended for the casting of a small trapezoid-shaped pendant (Tvauri 2001, fig. 75: 3). Similar pendants were the products of a mould half found at the fort at Unipiha (Fig. 74: 1). A mould half for the casting of analogous pendants has also been found at Kamno fort (Tarakanova 1956, 40, fig. 20) and in the 8th–10th-century layer at Izborsk fort (Sedov 2002, fig. 33: 1–2, 5) in the Pskov region. Since no trapezoid-shaped cast pendants have yet been found in Estonia, it is likely that they were made of tin, as this metal persists poorly in the climatic conditions of Estonia. Mould halves obtained from the forts at Rõuge (Fig. 74: 2) and Otepää were used to cast small rounded tin plaques with spokes. Such tin plaques have been found in the Pühaste hoard (Fig. 149) and the burial place at Päidla, both in south-eastern Estonia, and both dated to the first half of the 11th century. The only mould half found in northern Estonia comes from the fort at Kuusalu; this was used to cast a mount with a linear ornament (Fig. 74: 3), which resembles the mount visible on the above-mentioned mould half from Rõuge (Fig. 74: 2).

An *unfinished mould half* was found at the fort at Rõuge (Fig. 74: 4). This is a slab of soft limestone that has been formed into a regular shape. In fact,

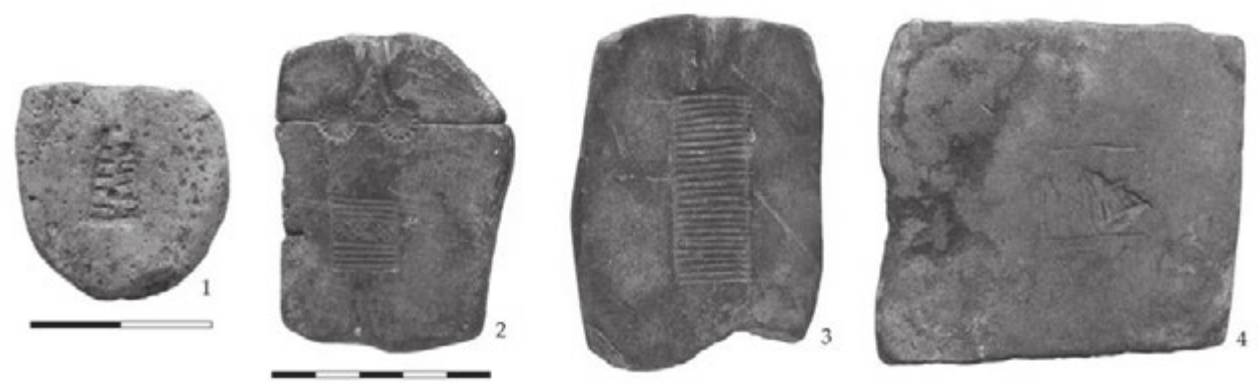


Fig. 74. *Limestone mould halves (4 unfinished) from forts: 1 Unipiha; 2, 4 Rõuge; 3 Kuusalu (AI 4472: 144; 4040: 1078; 3427: 2; 4040: 3451; photo: 1–3 Kristel Külljastinen, 4 Andres Tvauri).*

Fig. 75. *Crucibles: 1 Unipiha, fort-settlement; 2 Tartu, fort (AI 4472: 154; TMA 14: 369; photo: 1 Kristel Külljastinen, 2 Arvi Haak).*

most of the moulds found in Estonia have been made of fine-grained Mesozoic limestone, which is not found in Estonia; these appear to a lesser degree in southern Lithuania, but are common in Bohemia (Jürgenson 1960). This leads to the conclusion that semi-finished moulds were imported to Estonia. Since moulds that completely match Estonian finds even in terms of the objects that were cast have been found in Semigallia, for instance (*Žiemgaliai*, e.g. no. 759), one can presume that prepared moulds were also traded.

Fragments of clay *crucibles* are commonly found in forts and settlements in north-eastern, eastern, and southern Estonia. The earliest fragments of crucibles, however, originate from a barrow at Lemmaku, eastern Virumaa, which has been dated to the 6th–7th centuries (Aun & Ligi 1986). The greatest number of fragments of crucibles has been found at the fort-and-settlement complexes at Rõuge and Unipiha (see Aun 1992, pl. XVIII: 5–6). Particularly rich in crucibles was the settlement at Unipiha, where ca 600 fragments of crucibles and two nearly intact crucibles were found in a 33 m² excavation (Aun 1992, 55). In north-western Estonia, fragments of crucibles have only been found at fort II at Lohu (Tõnisson 1976, fig. 2: 4). No crucible finds of a relevant date are known from the archaeological sites of western Estonia.

Fig. 76. *Casting ladle from barrow cemetery III at Arniko (AI 2591: VI 6; photo: Andres Tvauri).*

Crucibles are generally of a cylindrical shape and have rounded bases (Fig. 75: 1). Their height is 6–8.5 cm, their diameter 4–6 cm, and the average thickness of the walls is 0.7 cm (Aun 1992, 55). Such crucibles were also the most common type in Latvia in the second half of the first millennium (Daiga & Grosvālds 1964). A fragment of a triangular-mouthed crucible found at the fort-settlement at Rõuge (AI 4100: 2186) is an exceptional find. A spherical crucible with a flared mouth (Fig. 75: 2) was found at the fort in Tartu, and there are similar items in Latvian sites of the second half of the first millennium (Daiga & Grosvālds 1964, 11).

Clay *casting ladles* are scarce finds. The largest quantity of such ladles, five, were found at the settlement site at Rõuge. As mentioned above, a casting ladle was found in barrow 6 of barrow cemetery III at Arniko (Fig. 76). Clay casting ladles have also been found at sites dated to the later first millennium in Latvia, but much less often than cylindrical crucibles (Daiga & Grosvālds 1964). The casting crucibles and ladles from the period in question in Estonia and Latvia were generally made of local clay.

Jewellers' equipment included small hammers, also known as *jeweller's hammers*. One such hammer was found at the fort at Rõuge (Fig. 77).

Fig. 77. *Jeweller's hammer from the fort at Rõuge (AI 4040: 1888; photo: Andres Tvauri).*

It weighs 43 g and there is an iron wedge in its rectangular eye. This hammer has been dated to the 8th–9th centuries (Moora 1955, 59; Peets 2008, 139). Another such item, coupled with a few coins from the 11th century, is a stray find from a field at Ratla village, Saaremaa (Peets 2008, 137, fig. 2: 3). A small *punch* and a *chisel* found at the fort at Iru (Vassar 1938, fig. 53: 3–4) may also have been used to work with non-ferrous metals.

4.2.3. Leatherworking tools

Animal skins cannot be used without being treated. Even the tanning of leather involved various tools such as scrapers and knives to clean and cut the skin. Awls and sewing needles were also used in the treatment of leather and the manufacturing of leather products such as footwear, coats, hats, belts, horse harnesses, etc.

Fig. 78. *Leatherworking tools: 1 awl, Proosa, grave; 2 curved knife, Rõuge, fort-settlement; 3 curved knife, Proosa, grave (TLM 16649: 86; AI 4100: 9738; TLM 15740: 53; photo: Kristel Külljastinen).*

Throughout the period in question, *iron awls* remained identical, with blades being rounded and tangs rectangular in cross-section (Fig. 78: 1). They cannot be dated without knowing the find context. Awls finds have been made at burial places, for instance the six found in the stone grave-field at Proosa near Tallinn (Lang 1996a, 193). Also, awls are common finds at Pre-Viking and Viking Age forts and settlements; for instance, six were uncovered at Iru (*ibid.*, 100). One of the awls found at the settlement site at Rõuge (AI 4100: 5242) retained parts of its wooden handle.

Small curved iron knives (Fig. 78: 2–3) are relatively common finds in graves of the Migration Period, but also at forts and settlements of the second half of the first millennium. These have either straight or rolled grips. Both types are characteristic grave finds in northern and central Estonia ever since the Roman Iron Age (see Lang 2007c, fig. 79). Small curved knives have been thought to be razors (e.g. Deemant 1993, 57; Peets 2003, 212; Lang 2007c, 143), but they were certainly also used as tools. This is demonstrated by the fact that curved knives found in female burials of the Late Roman Iron Age and the Migration Period in Scandinavia and northern Germany were placed together with awls, iron sewing needles, and crescent-shaped scrapers used in leatherwork (Hagberg 1967, 115–122; Kaliff 1992). Awls and sewing needles have also been found alongside curved knives in several Estonian burial sites (e.g. Proosa, Nurmsi).

4.2.4. Axes and other woodworking tools

Iron axes were used both as weapons and as tools. Early written and pictorial sources (e.g. Ibn Fadlan, 34; the Bayeux tapestry) reveal that

Fig. 79. *Socketed axe from the Kirimäe cremation burial (AI 2509: 68; photo: Andres Tvauri).*

the axe was one of the most important weapons in the Nordic region in the second half of the first millennium. Interestingly, there is only one axe type of the period, the Petersen M-type (see below), that researchers agree was primarily a weapon. Decorated specimens of other axe types can also be considered to be weapons. Here, however, axes are discussed among tools, because the axe as a tool was needed in every household. It was used in construction, in woodwork, and to split firewood; Iron Age agriculture would also have been inconceivable without axes, especially slash-and-burn agriculture.

Socketed axes represent an older form of an axe that was introduced in as early as the Bronze Age, and continued to be the main axe type into the Pre-Viking Age. Socketed axes from the Migration Period are larger than their earlier counterparts, and have a flaring blade section. Such axes were found in the Alulinn hoard, Virumaa (Tamla 1995, fig. 4: 1–3) and in the Igavere hoard, northern Tartumaa. The Migration Period graves at Lihula and Kirimäe, Läänemaa (Fig. 79), and the 7th-century grave III at Lehmja-Loo, Harjumaa (Lõugas 1973, fig. 5: 17), have also yielded one socketed axe each. They have also been found at forts and settlement sites and as stray finds without context to provide precise dating. It is clear that socketed axes continued to be in use until at least the 7th century.

During the Pre-Viking Age, narrow-bladed shaft-hole axes became predominant. One of the earliest of this type is the *narrow-bladed axe with broad poll* (Fig. 80: 1). All such axes found in Estonia are from hoards, stray finds, or otherwise poorly dated find contexts, and are therefore difficult to date. The Kunda I hoard included six such axes (Tamla 1995, fig. 5: 1–4), and four were found at Igavere along with a socketed axe. One stray axe was found at Lake Kisejärv in Võrumaa (Konsa & Roio 2006, fig. 2: 3), and another near Lüllemäe, Võrumaa (VaM A 4). Fragments of a

Fig. 80. *Narrow-bladed shaft-hole axes: 1 Kunda I, hoard; 2 Koorküla, hoard; 3 Ilmatsalu, grave; 4 Tõnuvere in Tartumaa, stray find (ÕES 1858: 5; 1569; 1670; AI 2516: 12; photo: 1–2 Andres Tvauri, 3–4 Kristel Külljastinen).*

similar axe have been uncovered at the settlement site at Olustvere and on the northern outskirts of the village of Obinitsa, Setumaa, at a depth of 1 m (Aun 2003b, 136, fig. 11). In Finland, only a few such axes have been found, and these originate from the 6th–7th-century find contexts (Wuolijoki 1972, 4). This type of axe has also been found in Latvia (Atgāzis 1997, fig. 5), but is more numerous in eastern Lithuania (Tautavičius 1966). Axes of this type are so large and heavy that they can hardly be considered to have been weapons.

Narrow-bladed axes with narrow polls are more numerous than the previous axe type. The poll of this axe type has a round or oval shaft-hole, and tapers smoothly to a narrow blade, which is slightly broader than the poll (Fig. 80: 2–4). Every found narrow-bladed axe is slightly different from the others, although these differences are subtle. Axes with a straight back and concave lower section form a separate group, one example of which being the axe found at a spring at Koorküla, southern Viljandimaa (Fig. 80: 2). Another group of narrow-bladed axes has gently concave bits and relatively broad polls, tapering smoothly to the blades. One such axe has been found at the Viking Age fort-settlement at Rõuge (AI 4100: 2915) and in the burial site at Ilmatsalu, south-eastern Estonia, which dates from the same period (Fig. 80: 3). The third distinguishable type features a more clearly outlined poll section. An example of this is the stray find of an axe at Tõnuvere village on the western bank of Lake Peipsi (Fig. 80: 4). Some axes, for instance one found at Otepää fort (AI 4036: I 2300), have lower lugs. Narrow-bladed axes with narrow polls have been found throughout Estonia, mostly as stray finds. As a result, it is not possible to date them based solely on the Estonian data. Numerous axes of this type have been found in Latvia, where they were used in the 6th–10th centuries (Atgāzis 1964; *Žiemgaliai*, nos. 718–719, 722).

During the Viking Age, the most common axe type in Estonia was, according to the axe typology

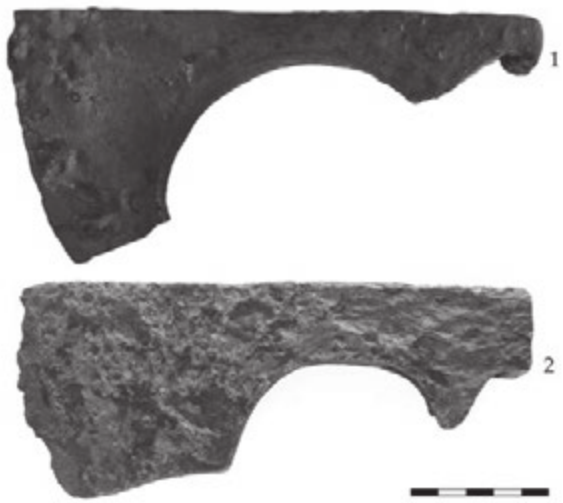


Fig. 81. *Axes of Petersen's type C from graves: 1 Kuude; 2 Sandimärdi at Verevi (TÜ 1151; AI 2800; photo: Kristel Külljastinen).*

by Jan Petersen, the *C-type axe*, which is characterized by a straight back, lower lugs, an extended poll, and a long bearded blade (Fig. 81; Petersen 1919, fig. 32). Such axes are weighty, with solid cheeks and blades. They were widespread in Scandinavia and Finland in the 8th–10th centuries (Wuolijoki 1972, 5–7; Kivikoski 1973, no. 617; Mandel 1991, 114f.), and were particularly widely used in Gotland, from where they spread eastward in the 9th century or, at the latest, 10th century (Mägi-Lõugas 1995b, 520). Among the Estonian finds (mainly grave and stray finds), there is a clearly distinguishable group of approximately twenty high-quality broad-bladed axes with a uniform appearance and design. These specimens have blades that thin evenly from the poll to the edge, and have a distinctive pentahedral cross-section at their narrowest part, as well as triangular lower lugs and a short rectangular extension on the lower side of the poll (Fig. 81: 1). Such axes have been found, for instance, in the cremation burials at Väike-Maarja and Püssi, Virumaa (Mägi-Lõugas 1995b, pls. V–VI). Specimens found as stray finds at Essu, Virumaa, and at Nurme

Fig. 82. *Late Viking Age axes of various types: 1, 4 Maidla II, grave; 2 Ulila, grave; 3 Raatvere, grave; 5 Päidla in Tartumaa, stray find (AM A 580: 2823; AI 2839: 8; 5295: IV 20; AM A 580: 1717; TÜ 216; photo: Kristel Külljastinen).*

manor, Harjumaa, are decorated with punched ornamentation (Selirand 1974, 88). The axes of this group were made with great skill. The blade of an axe found at Rabavere, Läänemaa, for instance, was made of two plies — high-quality, almost carbon-free iron and steel with high carbon content; the blade was hardened (Peets 2000, 260).

A variant form of C-type axes characterized by a narrower blade than classical specimens of that type also spread in Estonia (Fig. 81: 2). One example of this kind of axe was included in the Iila burial in Virumaa (Fig. 206). Several other variants of C-type axes have been found in Estonia which have a simpler poll section than the classical type or a distinctively-shaped blade. C-type axes were presumably used more as tools than as weapons. This is proven by the strike marks on the polls of several axes, especially classical ones.

Straight-backed or curved-backed bearded axes with four lugs (Fig. 82: 1) are an elaboration of the C-type axe. The beards of these axes sometimes have a knob, there is sometimes a hole in the centre of the blade, and the blade is occasionally decorated with punched designs. Such axes were used in Scandinavia in the late 10th and the early 11th centuries (Paulsen 1956, 61). On the eastern coast of the Baltic Sea, this axe type became very popular at the end of the Viking Age. These are also quite numerous in Viking Age find assemblages from Finland (Kivikoski 1973, no. 881), as well as in Russia, where they are dated to the 10th–11th centuries (Kirpičnikov 1966, 38, pls. XIV: 7, XXIII: 9). They were presumably made in many places, because almost all of the axes of this type differ in shape and quality. In Estonia these are mainly found in graves and as stray finds.

Curved-backed bearded axes with four lugs and bilateral poll extensions are numerous in the Estonian archaeological record. They were also used in the areas of north-western Russia, Poland, and East Prussia from the beginning of the 11th century (Paulsen 1956, 27). Perhaps the earliest example of that type of axe in Estonia was found at a burial site at Ulila, Tartumaa (Fig. 82: 2); on the basis of accompanying finds, this axe can be dated to the end of the Viking Age. Most of the axes of that type, however, date from the Final Iron Age (see Selirand 1974, 91).

Inhumation grave IV at Raatvere contained an axe that corresponds to the Petersen *H-type* (Fig. 82: 3). Such axes have four lugs, and the lower ones are sharper. The poll turns smoothly into the blade, and the blade is bilaterally curved. Petersen dated Norwegian axes of this type to the first half of the 10th century (Petersen 1919, 43, fig. 39), but the accompanying finds of the Raatvere specimen attest that this axe originates from the first half of the 11th century.

The most common type of beardless axe was the Petersen *M-type axe* (Fig. 82: 4–5), which are considered to have been used mainly as weapons and were introduced at the beginning of the 11th century (Petersen 1919, 45f.; Paulsen 1956, 19). This axe type is characterized by a particularly broad, evenly flared, thin blade. The poll has a much simpler structure than that of C-type axes. It is believed that the earlier M-type axes are thinner, and have a narrower poll, a larger blade, and a broader cutting edge than later specimens (Ātgazis 1997, 56, fig. 5; Mäntylä 2005, 110; compare Fig. 82: 4 and 5). Generally, M-type axes turn up in Scandinavia and everywhere Scandinavians went, from Greenland to Russia. In addition to Estonia, many similar axes have been found in Finland (Mäntylä 2005, 109) and in Latvia. In Latvia, this type of axe was spread in Livonian areas and, particularly, in Courland, and continued in use into the 14th century (Atgāzis 1997, fig. 1). In Estonia, M-type axes were, for instance, found at inhumation cemeteries at Raatvere (Lavi & Peets 1985, pl. XVI: 2) and Lahepera in northern Tartumaa, and as a stray find at Suur-Rahula village in eastern Saaremaa (SM 9255: 2).

Beside universal tools like axes and knives, a few special woodworking tools can be encountered in Estonian Middle Iron Age and Viking Age find assemblages. The cremation burial at Kirimäe contained a *drawshave* (Fig. 83), which

Fig. 83. *Drawshave from the Kirimäe cremation burial (AI 2509: 58; photo: Kristel Külljastinen).*

Fig. 84. *Hollowing chisels from graves: 1 Salme I; 2 Püssi (SM 10601: 283; AI 4130: 9; photo: 1 Marge Konsa, 2 Kristel Külljastinen).*

judging from the find context dates from the Migration Period. *Hollowing chisel* (in Estonian: *tarutuur*), a socket-hafted tool, was specialized for use in the hollowing out of bee trees and bee hives, but also in the making of cylindrical containers of a single piece of tree (Viires 1960, 76f.). The oldest hollowing chisel found in Estonia (Fig. 84: 1) was included in boat burial I at Salme and, accordingly, dates from the later 7th or earlier 8th century. This object has very close counterparts in 7th–8th-century burials in Norway. Scandinavian researchers have considered these to be socketed axes (Nørgård Jørgensen 1999, 106f., figs. 93, 117), but this is probably incorrect, as the objects are chisel-shaped and noticeably smaller and lighter than axes. The other ancient hollowing chisel in Estonia (Fig. 84: 2) was found among the grave inclusions of the cremation burial at Püssi, Virumaa, along with a sword, C-type axe, spearheads, bridle bits, and bracelets. A *spoon bit* probably of a 10th–11th-century date has been found at what is possibly a harbour site at Viltina, Saaremaa, together with ship rivets, nails, an awl, and other artefacts (Mägi 2007a, fig. 6: 10).

4.2.5. Textile tools

Various tools were required for the manufacturing of textiles, and these were mostly made of wood (for instance spindles, looms, and weaving tablets). Generally only tools made of metal or bone (needles) or the stone or clay parts of tools (spindle whorls, loom weights) survive.

Spindles, devices used to spin yarn, were probably used in Estonia as early as the Late Stone Age (Vedru 1999). Spindles consisted of 20–40 cm long wooden, bone, or metal sticks with a whorl at the lower end. Spindle whorls were centrally perforated discs made of stone, clay, wood, bone, or other material, which acted as flywheels. The weight of the spindle whorls depended on the fibre being spun: wool required lighter whorls made of wood or bone, whereas linen was spun using heavier stone or clay whorls (Vallinheimo 1956, 140).

Spindle whorls are numerous in the archaeological record of both Estonia and the rest of Europe. They are mostly found at settlement sites and forts. At the fort at Rõuge alone, 38 spindle whorls have been found, and another 41 at the adjacent settlement site (Vedru 1999, table 7). Graves only very rarely contain spindle whorls (see 4.5).

Fig. 85. *Bone spindle whorl (1) from the fort at Rõuge and clay spindle whorl (2) from barrow cemetery II at Rõsna-Saare (AI 4040: 4973; 5032: VI 28; photo: Kristel Külljastinen).*

Spindle whorls of the Middle Iron Age and Viking Age are difficult to classify, because they were made for personal use, and thus there is a great deal of variation between them. They are usually classified on the basis of the material from which they were made. The Migration Period sites in Estonia have produced clay whorls, and Pre-Viking and Viking Age sites bone, clay, and stone whorls. The whorls are generally undecorated, although occasionally geometric designs can be encountered.

Bone spindle whorls are mostly cut from animal femur ends and are plano-convex in shape (Fig. 85: 1). These have been found at most of the more thoroughly investigated forts and settlement sites from the second half of the first millennium. The fact that these were indeed used as spindle whorls is proven by, for instance, the wooden spindle found in the 8th–9th-century find context in Staraja Ladoga, which had a femur-end whorl attached to its end (*Staraja Ladoga*, 62, fig. 50). Some bone spindle whorls are flat disc-shaped (Vedru 1999, 106).

Clay spindle whorls come in many shapes. The most common are flat disc-shaped whorls. Bi-conical spindle whorls are characterized by a relatively large hole in the centre; they were used only in the eastern part of south-eastern Estonia. The corresponding finds from barrow cemetery II at Rõsna-Saare (Fig. 85: 2) and the hill fort at Hinniala (Valk 2009a, fig. 2: 1) show that bi-conical clay spindle whorls were used in the Middle Iron Age. One spherical clay whorl has been found at the settlement site at Rõuge (AI 4100: 4021), though it cannot be excluded that it was instead a weight for a fishing net. Clay spindle whorls are mostly undecorated, yet impressed depressions do occur.

Stone spindle whorls were made of limestone or sandstone, and were mostly flat or bi-conical in shape. Ornamentation is rare, and when present it generally takes the form of carved depressions. The fragment of a limestone spindle whorl found at the settlement site of Ala-Pika is notable, because its incised decorations include an unusual swastika (Fig. 86). Limestone and sandstone spindle whorls have close counterparts in adjacent areas east of Estonia, for instance at the forts in Pskov (Beletski 2009, fig. 3: 2–3) and Izborsk (Sedov 2002, fig. 39). Excavations in Tartu have uncovered seven foreign-looking slate spindle whorls, which were discussed above (2.1.6).

Fig. 86. *Fragment of a stone spindle whorl from the settlement site at Ala-Pika (TÜ 605: 47; drawing: Andres Tvauri).*

Simpler stone spindle whorls were made locally, as is demonstrated by what are possibly *unfinished spindle whorls*, found at forts. The fort and settlement site at Rõuge yielded small discs worked to shape, but still lacking holes, although the location of the hole had been marked, or drilling had not been completed (Fig. 87).

Fig. 87. *Presumably an unfinished stone spindle whorl from the fort-settlement at Rõuge (AI 4100: 7437; photo: Andres Tvauri).*

Iron sewing needles with eyes (Fig. 88) were used in at least the Pre-Viking and Viking Ages, as proven by the ten needles found at the fort at Iru in the layers that date from that period (Lang 1996a, 100), as well as some needles from the set-

Fig. 88. *Iron sewing needle from the fort-settlement at Rõuge (AI 4100: 6537; photo: Andres Tvauri).*

tlement at Rõuge (Aun 1992, pl. XXI: 4–5), stone grave III at Lehmja-Loo (Lõugas 1973, 124), and elsewhere. Iron needles with eye-holes have been in use for a long time throughout northern Europe. In Estonia such needles have also been found in graves of the Early Iron Age (Lang 2007c, 139, fig. 70). *Bone needles with eyes* are common in the find assemblages of forts and settlements of the later first millennium. Bone needles were primarily used in the making of needle-netted clothing items such as mittens and socks (Peets 1987).

Iron *shears* were used to fleece sheep and cut fabric. All of the shears of the period are spring-shears. Finds of shears have included different types of archaeological sites: the stone grave of Kurna IA, Harjumaa (Friedenthal 1911, pl. II: 170), the 10th-century grave goods assemblage at the burial ground of Keskvere III, Läänemaa (Fig. 197), the fort at Peedu (Moora 1939, fig. 74), the fort-settlement at Rõuge (Aun 1992, pl. XVII: 2), and the Jur'ev-era layer of the settlement site in Tartu (Tvauri 2001, fig. 73). Due to the absence of distinctive features, it is difficult to date shears without a find context.

In the weaving of cloth using upright looms, *loom weights* were used to keep the warps taut. In Estonia, loom weights have only been found at the settlement site at Pada, where four weights were found (Tamla 1983, 305, pl. XIV: 7). These were clay discs with a diameter of ca 10 cm and a hole at the centre (Fig. 89). Loom weights have been found in large numbers in the 9th–10th-century layers of Staraja Ladoga (Štakel'berg 1962, fig. 1), and are also numerous in the Late Iron Age forts and settlements of Scandinavia and Latvia (Peets 1992, 53). Disc-shaped loom weights are of

Fig. 89. *Clay loom weight from the fort-settlement at Pada (AI 5082: 686; photo: Kristel Külljastinen).*

Fig. 90. *Presumed weaving swords from the fort-settlement at Pada (AI 5082: 374; 5082A: 19; photo: Kristel Külljastinen).*

Scandinavian origin which spread to the eastern coast of the Baltic Sea with Scandinavian colonization of the area; they are above all found in those regions where there are also other signs of Scandinavian presence (*ibid*., 55–57).

In the weaving of figured waistbands, braids, and fabric, a *band knife or weaving sword* made of wood, bone, or iron was used to beat the wefts. Two Viking Age band knives made of cattle ribs were found at the settlement site at Pada (Fig. 90; Peets 1992, 79). According to another interpretation, these may be leather processing tools (Luik & Maldre 2005, 265).

4.2.6. Other handicraft tools

Bone awls for weaving bast items (Fig. 91) are common finds in the forts and settlements of the second half of the first millennium. Besides bast shoes, they were also used to weave birch-bark wallets, etc. In weaving, they were used to lift plaited bast strips in order to insert another strip. These tools were also utilized in removing spiral strips of bark from trees (Truuvärk 1941, 4–6; ERL, 329). Most of these bark-working tools found at the fort at Rõuge were made of the vestigal metapodial of elk (Luik & Maldre in press). Identical objects have been found at archaeological sites in north-western Russia and Latvia. In Latgalian areas, they have even been found as grave goods in inhumation graves (Žeiere 2002, fig. 23: 8–9).

Fig. 91. *Bone awl for weaving bast items from the fort-settlement at Rõuge (AI 4100: 7566; photo: Andres Tvauri).*

4.3. Jewellery and clothing

The majority of ancient jewellery found in Estonia is in the form of grave goods. Due to the burial practices that prevailed here, grave goods from different burials are generally mixed and objects are often fragmentary. As a result, the dating of jewellery is complicated. Additionally, information about how jewellery was worn and the combination of ornaments into sets can only be drawn from fully preserved inhumation graves containing jewellery. Such inhumation graves are known from the Viking Age, but not from the Migration Period and Pre-Viking Age. Further, grave finds only show what items of jewellery were placed in the graves of the dead; they provide no firm information concerning how the living wore jewellery. It is not known whether older people wore jewellery received during their childhood or youth or whether it was customary for people to continually renew their jewellery in accordance with fashion. It is also not known whether there was a tradition in the Middle Iron Age and Viking Age of bequeathing jewellery to subsequent generations.

Jewellery is also found in hoards, but then they often represent types that have no counterparts in graves. Hoards may contain ornaments that were not worn in the region in which they are found; instead, such ornaments may have arrived in Estonia to be reworked or were used only for ritual purposes. Jewellery, especially fragments thereof, turn up also at forts and settlement sites, with the greater proportion of jewellery found at forts (Tvauri 2002). This is altogether understandable: firstly, jewellery was a measure of wealth,

and material resources were gathered in centres, i.e. forts; secondly, metalwork was practised in centres, and thus some of the jewellery found in the cultural layer may be waste metal.

4.3.1. Jewellery

4.3.1.1. Brooches

Brooches are items of jewellery attached to clothing with a pin, which also serve as fasteners for garments. The brooches used in prehistoric Estonia fall into two main groups: bow fibulae and penannular brooches.

Bow-shaped *fibula*-type brooches work in the same way as a safety pin, with the bow of the brooch featuring the decoration (Figs. 92–93). The bow may take very different forms, and is sometimes even disc-shaped. Bow brooches developed in the first millennium BC from pins for fastening clothing. In Estonia they appeared at the beginning of the Roman Iron Age.

Of the bow brooches found in Estonia, the most numerous group is that of crossbow fibulae, which are mainly characteristic of the Migration Period. The models for crossbow fibulae found in Estonia are generally connected with the south-eastern Baltic Sea region, including former East Prussia. More precisely, the Samland Peninsula is considered to be the proper origin of the Estonian types of crossbow fibulae. The typology of crossbow fibulae, which is based mainly on the shape of the fibula's foot, was presented by Harri Moora in his 1938 doctoral thesis (Moora 1938); it is still in use in Estonia and Latvia. Also, a thorough special study of Estonian crossbow fibulae was recently completed (Rohtla 2003; 2005).

Fig. 92. *Crossbow fibulae of different types (all bronze): 1 with a simple cast catch-plate, Kirimäe, grave; 2 with a star-shaped foot, Reinapi at Tõrma, grave; 3 with a spade-shaped foot, Paali I, hoard (AI 2509: 5; 2488: 8; 3235: 92; photo: Andres Tvauri).*

Annulate crossbow fibulae with recurvate feet belong to the group of crossbow fibulae, common in the Roman Iron Age already, in which the catch-plate of the fibula was formed by bending back the lower part of the bow, i.e. the foot. These fibulae are characterized by rings around the bow or on the head or foot. Crossbow fibulae with ring ornaments were introduced in East Prussia at about the turn of the 2nd–3rd centuries (Nowakowski 1998, fig. 4; Rohtla 2003, 54). Proceeding from the position of the rings, Moora divided annulate crossbow fibulae with recurvate feet of Estonia into three sub-types (Moora 1938, 132–144), the youngest of which, sub-type III, dates to the Migration Period. The area between the two ribbed rings of such fibulae is generally decorated with bronze, silver, or gold plate onto which a lattice pattern has been impressed. The rings and plate are generally of a more precious metal than the fibula itself, i.e. bronze fibulae feature silver rings, and silver fibulae gold rings (Rohtla 2003, 29f.). The original home of the sub-type III is believed to lie in East Prussia and western Lithuania. These fibulae are primarily found in hoards. Impressive specimens have been found in the *tarand* grave at Proosa, near Tallinn, and in the hoards of Kardla (Fig. 211) and Paali I and II, south-eastern Estonia. Moora (1925, 113) is of the opinion that the silver specimens of the discussed sub-type were used in the later 5th and the earlier 6th century.

Crossbow fibulae with simple cast catch-plates (Fig. 92: 1) have catch-plates cast in one piece together with the foot. Cast catch-plates appear

even in fibula types of the Roman Iron Age, yet in fibulae of the Migration Period this feature becomes predominant. Such fibulae have been found throughout almost the whole of Estonia. The highest number found at a single site was the twelve found in the stone graves at Proosa. Crossbow fibulae with cast catch-plates came into use in Samland at the end of the 3rd century. In areas where burial in *tarand* graves was practised, they were used from the end of the 4th century to the 6th century (Moora 1938, 148f.; Rohtla 2003, 55f.; 2005, 127f., 144).

Crossbow fibulae with star-shaped and spade-shaped feet (Fig. 92: 2–3) are usually regarded as one group, as it is believed that fibulae with spade-shaped feet are a further development of fibulae with star-shaped feet. Crossbow fibulae with star-shaped feet began to be made in East Prussia in the second half of the 4th century, and fibulae with spade-shaped feet appeared during the turn of the 4th–5th centuries (Schmiedehelm 1924, 34; 1934b, 220; Bitner-Wróblewska 2001; Rohtla 2003, 35, 56). Fibulae of this type or their models used in Estonia mainly originate from the Semigallians. These fibulae were very typical in Estonia at the end of the 5th century and the beginning of the 6th century (Moora 1938, 152–156; Schmiedehelm 1955, 88).

A *fibula with an animal-headed foot* (Fig. 93: 1) was found at Pikkjärve, south-eastern Estonia. Such fibulae have the shape of a crossbow fibula, a cast catch-plate, and the end of the foot in the shape of an animal's head. These are not, however, proper crossbow fibulae, because the spring and transverse spiral bar are imitations cast as one piece with the bow. Many such fibulae have been found in southern Scandinavia and in Lithuania and Poland. They were used in the late 5th and the early 6th century. The fibula from Pikkjärve most likely belongs to the Latvian and Lithuanian variant form of the Sensburg/Mrągowo brooch type (Bitner-Wróblewska 2001, 81, 83; Rohtla 2003, 39–41, 57).

Fig. 93. *Various bow fibulae atypical of Estonia (all bronze): 1 with an animal-headed foot, Pikkjärve I, grave; 2 radiate-headed, stray find from the fort at Jägala; 3 cray-fish fibula, Lagedi XIII, grave; 4 owl fibula, Paluküla, hoard; 5 crossbow-shaped, with poppy-head terminals, Paluküla, hoard (ÕES 1260: 4; AI 3849; AM A 26: 6; AI 2483: 33; 2483: 30; photo: 1, 5 Andres Tvauri, 2–4 Kristel Külljastinen).*

A *radiate-headed fibula* was obtained from the fort at Jägala as a stray find (Fig. 93: 2). This belongs to the sub-type whose original version had bird heads surrounding the head of the fibula, although the design of the Jägala example has diverged from the original model to the point where it is impossible to recognize the bird heads. Most such brooches have been found in Ukraine between Kiev and Zaporižžja, where they were made in the 7th century (Rodnikova 2004).

Bronze *crayfish fibulae* have been found in the later burials of stone graves V and XIII at Lagedi in northern Estonia (Fig. 93: 3; Lang 1996a, pl. LV: 8). These are bow fibulae typical of south-western Finland in the 7th–8th centuries. The fibulae

of Lagedi are the only such specimens that have been found outside Finland, and therefore are to be viewed as imported items (*ibid.*, 216). The same applies to the bronze *owl fibula* decorated with silver, included in the Paluküla hoard, Harjumaa (Fig. 93: 4). This fibula type developed in the area inhabited by the Curonians in the 7th–8th centuries, and later spread to other Latvian and Lithuanian areas (Banytė-Rowell 2006, 27–29). Curonian counterparts of the Paluküla fibula have been dated to the 8th–9th centuries (Bliujienė 1999, 111f.).

Flat crossbow-shaped fibulae with poppy-head terminals are the largest bow brooches found in Estonia. These brooches resemble crossbow fibulae, but their construction is different, and they are much larger than crossbow fibulae. The flat bow of the fibula and the imitated transverse spiral bar and imitated spring are decorated with grooves, and the ends of the arms are shaped to resemble poppy-heads. Two such fully intact bronze fibulae have been found: in the Paluküla hoard (Fig. 93: 5) and in Pöide parish on the island of Saaremaa as a stray find (AI K 50: 5). These fibulae did not achieve great popularity in Estonia, but their fragments found in burial sites perhaps attest that they were nevertheless worn by some. Such sites include the destroyed stone grave with cremation burials east of Tallinn, between the villages of Kostivere and Parasmäe, grave III with below-ground cremation burials at Keskvere, Läänemaa, and the stone grave at Leedri (Lümanda), Saaremaa. Crossbow fibulae with poppy-head terminals originate from areas inhabited by the Curonians and the Semigallians, where they were in fashion in the 8th–12th centuries (*Žiemgaliai*, nos. 391–397). Among the Balts, owl brooches and large flat crossbow-shaped brooches with poppy-head terminals were primarily worn by men (Vilcāne 2003, 132).

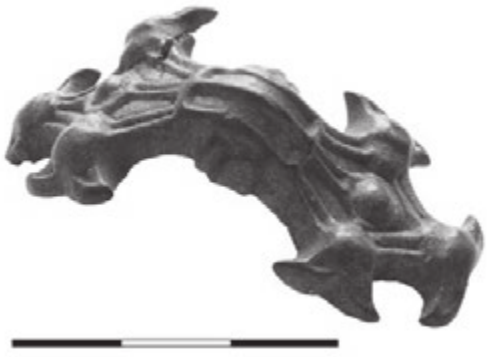


Fig. 94. *Symmetrical bronze fibula from the fort at Iru (AI 4051: 7; photo: Kristel Külljastinen).*

A *symmetrical fibula* made of bronze was found at the fort at Iru (Fig. 94). This belongs to the sub-type of symmetrical bow fibulae, of which about ten are known, including three from central Sweden, one from Denmark, one from southwestern Finland, and two from Russia. These fibulae presumably date from the beginning of the Viking Age (Lang 1996a, 96).

Fragments of an *oval fibula* were found in the stone grave at Kodasema near Tallinn. These originate from a fibula that resembles type P 52/55 in Ingmar Jansson's typology of oval fibulae (Jansson 1985). The dating probably falls in the late 10th or the early 11th century, and counterparts are mostly known in Sweden (Luik 1998b, 5). The other oval fibulae found in Estonia represent Final Iron Age types (see Luik 1998b).

It is clear from the above that the crossbow fibula in all its variant forms was the predominant type of bow brooch in the Migration Period. Thus the fibulae of that time clearly continued the manufacturing tradition and fashion of the Roman Iron Age, although most of the bow brooch types that had been in fashion in the Roman Iron Age had disappeared from use by the mid-5th century. Crossbow fibulae also went out of use in the middle of the 6th century. In contrast to the Baltic peoples, who developed bow fibulae into large and weighty items of jewellery and used them extensively until the end of the 10th century, only a few bow brooches from the 7th–10th centuries are known in Estonia.

Fig. 95. *Penannular brooches with rolled terminals (1–2 iron, 3–4 bronze): 1 Paluküla, hoard; 2–3 Pada, fort-settlement; 4 Lahepera, grave (AI 2483: 13; 5082: 568; 5082: 447; ÕES 1898: I 13; photo: 1–3 Kristel Külljastinen, 4 Andres Tvauri).*

Penannular brooches had a simpler structure than bow brooches (Figs. 95–97). The head of a brooch's pin is folded over an open horseshoe-shaped ring and runs along it freely; the sharp end of the pin rests against the ring. The pin was attached through the cloth, the weight of which pulled the sharp end of the pin against the ring.

Penannular brooches originate from the territory of the Roman Empire, and were introduced in Estonia in the Roman Iron Age. There is presently no evidence that penannular brooches were used in Estonia during the 5th–7th centuries, but they reappeared in the 8th century (Mägi-Lõugas 1994, 465; Pauts 1995, 13). This brooch type spread to Scandinavia during the Migration Period, and from there it spread with other Scandinavian influences to what today are the Baltic States and Finland, where in the following centuries it achieved even greater popularity than in Scandinavia.

In nearby regions, typologies of the penannular brooches of Finland (Kivikoski 1951; 1973, nos. 690–706; Salmo 1956), Gotland (Carlsson, A. 1988), Russia (Mal'm 1967), and Votia (Kolchatov 1980) have been compiled. Penannular brooches have three main variables: the shape of the ring, terminals, and pin. Different researchers have based their typologies on different variables, and thus it is difficult to compare them. In what follows the typologies of penannular brooches developed by Marika Mägi (1994) and Heikki Pauts (1995) are used, which mainly are based on examples from Finland and Scandinavia, and consider the shape of the terminals and the decorations of the ring.

Penannular brooches with rolled terminals are the most common and longest-used form of the penannular brooch in Estonia and in neighbouring regions (Salmo 1956, 24–26; Mal'm 1967, 152; Pauts 1995, 26). In the 8th–11th centuries, the predominant type in Estonia was the penannular brooch with narrow rolled terminals, while brooches with broad rolled terminals became popular later. The oldest penannular brooches with narrow rolled terminals are made of iron (Fig. 95: 1–2). They are very uniform in appearance, with the diameter averaging 6–7 cm, and the ring being circular in cross-section. The remains of bronze wires found on some earlier brooches of this type show that some brooches may have been decorated with bronze or silver wire wrapped around the ring (Mägi-Lõugas 1994, 471; Fig. 95: 1). The find contexts of the iron penannular brooches suggest a date of 8th–9th centuries (Pauts 1995, 27). Bronze penannular brooches with narrow rolled terminals (Fig. 95: 3–4) are more diverse in design than their iron counterparts. Their ring is generally round in cross-section, although brooches with plano-convex or twisted rings do occur. Judging from the find locations, such brooches were in use

Fig. 96. *Penannular brooches of different types (all bronze): 1 with faceted terminals, Kõõre at Taadikvere, grave; 2 with funnel-shaped terminals, Kirbla, grave; 3 with star-shaped terminals, Raatvere, grave; 4 with prism-shaped terminals, Vesneri, grave; 5 with poppy-head terminals, Sargvere, settlement (ÕES 2255: 74; AI 2643: 355; 5295: XV 147; ÕES 2248: 1; TÜ 1574: 42; photo: 1, 3, 4 Kristel Külljastinen, 2, 5 Andres Tvauri).*

in the 9th–11th centuries (*ibid.*, 26). In Estonia, both bronze and iron penannular brooches with narrow rolled terminals have been found in abundance at forts and settlement sites and in graves.

Penannular brooches with faceted terminals have large faceted knobs at terminals, which are bent back towards the ring (Fig. 96: 1). Such brooches were used in the 9th–10th centuries, and have been found throughout mainland Estonia, mostly in eastern Estonia; none have yet been found on the island of Saaremaa. In addition to Estonia, such brooches also appear in Latvia, Lithuania, north-western Russia, Finland, Gotland, and in Mälaren Valley in Sweden (Mägi-Lõugas 1994, 466–468).

The terminals of *penannular brooches with funnel-shaped terminals* resemble faceted ones, but flare slightly upwards (Fig. 96: 2). They have been found in relatively large numbers in western and north-western Estonia. Such brooches were also widespread in Latvia, Finland, north-western Russia, and Gotland, and are generally found in male burials. These brooches have been dated to the 10th century (Mägi-Lõugas 1994, 469f.; Pauts 1995, 58). The shape of the terminals of *penannular brooches with star-shaped terminals* (Fig. 96: 3) developed from funnel-shaped terminals. These brooches were common in both western and eastern Estonia, mainly in the first half of the 11th century (Mägi-Lõugas 1994, 469f., 477, fig. 6).

Penannular brooches with prism-shaped terminals (Fig. 96: 4) are a typological continuation of brooches with faceted terminals. They mainly spread in eastern Estonia, while none have been found, for instance, on the island of Saaremaa. Such brooches appeared in the 10th century, but most of them date from the first half of the 11th century (Mägi-Lõugas 1994, 477, fig. 5; 1995b, 522).

The *penannular brooches with poppy-head terminals* (Fig. 96: 5) that have been found in Estonia mostly come from the southern part of the country. They are believed to have been introduced first by the Curonians, although they were also worn in other parts of Latvia and Lithuania, on Gotland, in eastern Sweden, in Finland, and in north-western Russia. This brooch type appeared in the first half of the 11th century, and its main period of use was the Final Iron Age (Selirand 1974, 156f.).

Estonian penannular brooches from the 9th and the early 10th century are usually richly ornamented, mostly with rows of small punched triangles, circles, or crosses, or with winding and straight lines. Brooches from the late 10th and the early 11th century are more modest and uniform in decoration, but they are larger, and the head of their pins bears a high ridge. It is common that the head of the pin is the only ornate part of the brooch (Mägi-Lõugas 1994, 476). The star-shaped

and prism-shaped terminals of bronze penannular brooches are often silver-coated.

Hoards sometime include penannular brooches that are atypical of Estonia. Two *penannular brooches with flat triangular ring and rolled terminals* (Fig. 97: 1) were found in the Paluküla hoard. These brooches have narrow rolled terminals that are pressed against the ring, and their distinctive feature is that the pin was fastened using a slot made in the ring, as in annular and conical brooches from the historical period in Estonia. Such brooches have been found in Finland, where they date around AD 800. The closest counterparts are found to the east, in the Kama River basin (Mägi-Lõugas 1994, 471f.). One may presume that the Paluküla brooches reached Estonia as scrap metal from Finland. The *silver brooch with a low-ridged ring and narrow rolled terminals* found in the early 11th-century Väike-Rõude hoard from Läänemaa (Leimus 1991, 151, pl. XIX: 2) was probably brought to Estonia as hacksilver. Such brooches are common in Finland and northwestern Russia, where the earliest of them date from the first half of the 11th century (Leimus 1991, 151). Two *silver penannular brooches with long pins* were found at Uduvere, Saaremaa (Fig. 97: 2–3); close counterparts to them can be found in Viking Age male burials on Gotland (Nerman 1929, 145; Stenberger 1947, fig. 204) and in Birka (Arbman 1940, pl. 46: 1).

The manner in which bow brooches were worn is basically unknown, as due to burial practices, they have not been found in Estonia in closed jewellery sets. The only crossbow fibula that can be connected with a particular burial was found in round barrow 8 at barrow cemetery II at Rõsna-Saare along with the cremated remains of a man aged 18–25 (Aun 2009b, 95). In this specific case, the man wore one crossbow fibula.[7] Investigation

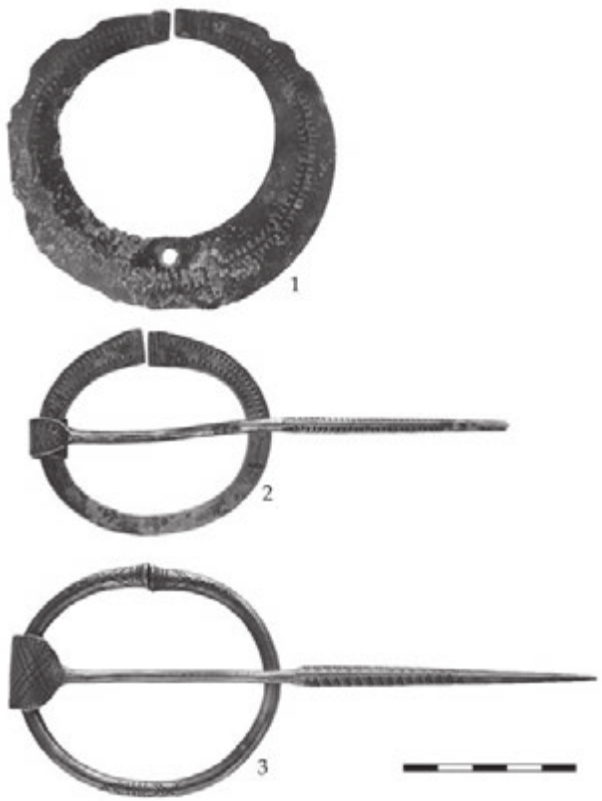


Fig. 97. *Penannular brooches atypical of Estonia (1 bronze, 2–3 silver): 1 Paluküla, hoard; 2–3 Uduvere in Saaremaa, stray find (AI 2483: 1; AI K 15: 178, 269; photo: Kristel Külljastinen).*

of the 4th–6th-century graves of western Lithuania reveal that crossbow fibulae were worn by both men and women (Bliujienė 1998, 284). On the other hand, it has been proposed that at least around the 10th century penannular brooches were mainly the preserve of men (Mägi-Lõugas 1994, 478). This conclusion may, however, be influenced by the fact that female burials from that time are unknown. From the beginning of the 11th century, female burials become more numerous, and judging from these it appears that both men and women wore large brooches. It is probable that there were also regional differences in the way brooches were worn. For instance,

[7] Unfortunately, the foot of the fibula is absent, and therefore more precise identification of the type of the fibula is not possible.

Pre-Viking and Viking Age richly ornate zoomorphic bow brooches were worn by men among the Balts, while in Scandinavia such brooches were also used by women (Bitner-Wróblewska 2001, 189, 193).

4.3.1.2. Pins

In the Middle Iron Age, dress pins became more popular and typologically more diverse than in the Roman Iron Age. This may have been the result of the influence of the Balts' jewellery traditions, which is also evidenced by the spread of Baltic-style pins in Estonia.

Bronze disc-headed pins (Fig. 98: 1) have sometimes their heads covered with a thin layer of silver plating and decorated with small domed embossments and ring-and-dot designs or concentric ringlets. Marta Schmiedehelm (1934a) dated the smaller pins to the end of the 5th century or around the year 500, and the larger ones mainly to the 6th century. In her opinion, these were mainly later forms of the iron disc-headed pins that were used in the 3rd century in Masuria (Schmiedehelm 1934a, 110f.). In the opinion of Valter Lang, however, pins with disc-shaped heads instead evolved at the turn of the 5th–6th centuries in the vicinity of Tallinn, where they have been found in the largest numbers. The models for these pins may have been brooches with disc-shaped feet, neck rings with disc-shaped terminals, disc brooches, dress pins with disc-shaped or rosette-shaped heads, or the like. From north-western Estonia, this type of pin to a certain extent spread to central and north-eastern Estonia, while they have yet to be found in other neighbouring areas (Lang 1996a, 187). It is not known how disc-headed pins were worn, because all of them have been found in cremation graves, where the burials have become disarrayed (in the stone grave-field at Proosa near Tallinn, for instance, there were at least seven such pins). Since the pins found in one grave are not identical, and the pins do not have eyelets for attaching a breast chain, they were presumably worn singly.

Fig. 98. *Various types of Migration Period decorative pins (all bronze): 1 disc-headed, Mardimägi at Saha, grave; 2 wheel-headed (fragment), Oti manor in Saaremaa, grave (?); 3 conical-headed, Paju, grave; 4 with reeled head, Proosa, grave; 5 triangular-headed, Kirimäe, grave (AI 3839: 1; AI K 38; AI 4868: 114; TLM 15109: 79; AI 2509: 21; photo: 1–4 Kristel Külljastinen, 5 Andres Tvauri).*

Only two *wheel-headed pins* have been found, both from the land of former Oti manor, Pöide parish, Saaremaa, presumably from a damaged burial site (Fig. 98: 2). The heads of these relatively large bronze pins are silver-coated, and there is a conical knob above the wheel. Such pins have 6th-century equivalents in areas inhabited by the Balts (Moora 1938, 185–192, pl. X: 7, 9; STŁ, no. 725). The closest equivalents to the pins found in Saaremaa are known in the territory of the Semigallians in Latvia and Lithuania (LA, pl. 41: 20; Vasilauskas 2007, fig. 13: 1).

Conical-headed pins, with a hole beneath the head (Fig. 98: 3), correspond to similar pins found in the southern part of the Baltic States, which have been dated mainly to the 5th–6th centuries

Fig. 99. *Various types of Pre-Viking and Viking Age decorative pins (5–6 iron, others bronze): 1 triangular-headed, without ornamentation, Leina, grave; 2 triangular-headed, with simple ornamentation, Mäla, grave; 3 triangular-headed (fragment), with leaf ornamentation, Mihkli parish in Pärnumaa, stray find; 4 Saaremaa-type (fragment), Kõiguste in Saaremaa, stray find; 5 crutch-shaped, Ojaveski, grave; 6 shepherd's crook pin with bronze wire wrapping, Kurna IA, grave (AI 2643: 366; AI K 2: 1, 4; AI 2513: 18; ÕES 436: 1; AM A 349: 34; 29: 73; photo: 1–3, 5–6 Kristel Külljastinen, 4 Andres Tvauri).*

(see Moora 1938, 200–205, pl. XII: 4, 8). Conical-headed bronze pins have been found in large numbers in the burial places of the Migration Period throughout Estonia. *Pins with reeled heads and without holes* resemble the former, but lack a hole for a chain. Such a bronze pin was found in the stone grave-field at Proosa (Fig. 98: 4) and stone grave E at Jäbara in Virumaa. Two equivalents made of bone are known from the stone graves of Lagedi XV and Saha D in Harjumaa (Spreckelsen 1927, 56f.).

Dress pins with triangular heads appeared in Estonia during the second half of the Roman Iron Age, as an influence from the neighbouring Baltic peoples. Triangular-headed pins were widespread in Lithuania and Latvia, although in most cases their ornamentation differed from that of their Estonian counterparts; similar pins were also used in Finland. In neighbouring countries, a few silver pins of that type are known, but all of those found in Estonia are made of bronze.

The Migration Period was characterized by *pins with flat triangular heads*, with a hole for the attachment of a chain in the upper part of the shaft. The heads of the pins are decorated with small punched ring-and-dot designs and lines. Such pins have been found in the burial sites at Kirimäe, Läänemaa (Fig. 98: 5), and at Kuninguste and Lepna, Saaremaa. Baltic examples suggest a date of 5th–6th centuries (Mägi 1997, 34).

In the Pre-Viking Age, *pins with triangular knobbed heads* became common. These are noticeably larger than the triangular-headed pins from the Migration Period, and can be divided into several variant forms on the basis of their design (Mägi 1997, 34–36). The earliest knobbed triangular-headed pins either lack ornamentation (Fig. 99: 1) or have very simple ornamentation (Fig. 99: 2). These were used in the 7th–8th centuries. Knobbed triangular-headed pins that feature leaf ornamentation can be regarded as a separate sub-type (Fig. 99: 3). They were introduced

at the end of the 9th century at the latest, and continued to be in fashion in the 10th century. Beyond Estonia, similar pins with leaf ornamentation were common in Semigallia and Curonia (Mägi 1997, 39).

Triangular-headed pins with heart-shaped flat extensions differ from the other triangular-headed pins (Fig. 99: 4). Both flat extensions of the head generally feature two higher knobs, complemented by one or three smaller knobs on the upper edge of the head. Most such pins have been found on the island of Saaremaa, with fewer found in Läänemaa and only one in Harjumaa, which is the reason why this sub-type is sometimes referred to as the Saaremaa-type pin. Such pins were used from the later 10th century into the 12th century. Pins resembling this type can be found in large numbers in Latvia, especially in Curonia, Semigallia, and in areas once inhabited by the Daugava Livonians (Mägi 1997, 39–44).

Crutch-shaped pins made of iron and bronze spread mainly in southern Estonia; they have been uncovered in stone graves (Kirikumägi at Sammaste), cremation barrows (Laossina II), and also forts (Otepää, Rõuge). In northern Estonia they have only been found in the stone graves of Proosa and Ojaveski (Fig. 99: 5). Similar pins have been reported from the eastern bank of Lake Peipsi (Popov 2009b, fig. 4: 4, 7). Again, such pins were common among Baltic tribes, and date from the 6th–7th centuries (Aun 2009b, 95).

Iron shepherd's crook pins with bronze wire wrapped around the head loop (Fig. 99: 6) were an elaboration of the earlier shepherd's crook pins. Such pins were common in the 7th–8th centuries (Ariste 1938; Lang 1996a, 97). Few pins of this type have been found, and those that have been found are mostly from northern Estonia (e.g. the fort at Iru and the stone graves of Rae I and Kurna IA). Analogous pins were widespread in Latvia (LA, fig. 40: 13) and in Finland (Kivikoski 1973, no. 443).

Ring-headed pins were in fashion in the Pre-Viking Age and at the beginning of the Viking Age (Mägi 1997, 29–33). These may be considered to be Estonian and Finnish elaborations of Baltic, primarily Semigallian, specimens. A few earlier pins of this type, from the early 7th century, were made of both iron and bronze; they

Fig. 100. *Ring-headed bronze pins: 1 Kurna III, grave; 2 Parasmaa in Pärnumaa, stray find; 3 Paluküla, hoard (AM A 31: 5; 493: 1; AI 2483: 16; photo: 1–2 Kristel Külljastinen, 3 Andres Tvauri).*

Fig. 101. *Ring-headed bronze pin with a chain of pendants, stray find from Püssi, Virumaa (AM A 99; photo: Kristel Külljastinen).*

are small and have a simple shape (Fig. 100: 1). Later ring-headed pins, used from the mid-7th to the mid-9th century, are bronze, larger than the earlier specimens, and more richly ornamented; the pin's head is often decorated with wrapping of silver wire, and reels may occur beneath the head (Fig. 100: 2). One variant form of the later ring-headed dress pins has a cross-shaped extension below the head (Fig. 100: 3). Such pins do not have wrappings of silver wire. These are more common in Finland, and presumably also reached Estonia from across the Gulf of Finland. Ring-headed pins with a cross-shaped extension were used in the 9th century (Mägi 1997, 31–33).

A ring-headed bronze pin was found as a stray find in a field of Püssi manor, Virumaa (Fig. 101); its length, 36 cm, makes it the longest dress pin found in Estonia. Attached to the pin is a series of ornamental pendants, decorated with silver and entirely unique in shape, since such pendants do not appear on any other dress pins or separately, at least not in Estonia. The chain ends with a tweezer-shaped pendant, and the lower part of the chain can be attached to the pin with a bronze loop. A pin resembling that from Püssi has been found in the richly furnished grave of a nobleman at Pappilanmäki, Eura, Finland, which dates from the second half of the 7th century (Salmo 1941, 34–36). This pin too has a chain of pendants attached to it, including a tweezer-shaped pendant. Another very similar ring-headed pin with pendants has been found in the 7th–8th-century stone grave at Muuntajamäki, Juttikala, Sääksmäki, Finland, but that pin is made of iron (Hirviluoto 1998, 13f., figs. 5–6). In terms of the decorative chain, a pin found at Kiikka in southern Finland is most similar to the Püssi find (Tallgren 1925, fig. 47; Kivikoski 1973, no. 448), but the pin itself is a large triangular-headed pin of a sort that was used in the 9th–10th centuries (Mägi 1997, 39). It should be mentioned here that a pin with a knobbed triangular head and the remains of a chain, featuring two pendants, has also been

found in the stone grave at Pajumaa, Läänemaa (Mägi 1997, 39, pl. III: 4). Two large ring-headed pins, to which a decorative chain of large rings and a tweezer pendant have been attached, have been found in a gravel pit between Parasmaa and Vahenurme, in northern Pärnumaa (Fig. 100: 2). Judging by corresponding finds from Finland, large dress pins decorated with chains of pendants found in northern and western Estonia date from the middle of the 7th century to the middle of the 9th century.

Although pendants are discussed in greater detail below, tweezer-shaped pendants and tweezer pendants should be considered here, because there is reason to believe that these were only worn as appendages of large decorative pins. Besides the *tweezer-shaped pendant* attached to the Püssi pin (Fig. 101), there is another similar specimen in Estonia, although without a pin, found at the settlement site at Veskimäe, Uugla, Läänemaa (Mandel 2006, fig. 2). At least seven tweezer-shaped pendants have been found in Finland, all attached to pins or other bronze pendants (Koponen 1980, 64). A model of the discussed pendants, or their variant form, is *tweezer pendants*. These are usable tweezers that were worn as pendants. They were also worn as appendages to ring-headed dress pins, as demonstrated by the above-mentioned two pins with such pendants found in northern Pärnumaa (Fig. 100: 2). Similar pendants have also been found in Presti stone grave at Rebala near Tallinn, in the stone grave at Ojaveski in western Virumaa (Friedenthal 1935/36, fig. 13: 39), and in a burial site near Kukruse in eastern Virumaa that had already been damaged in the 19th century (AM A 69: 8). The two latter-mentioned tweezer pendants have a cross-shaped pendant attached to them with a ringlet, which gives reason to presume that these specimens were originally attached to a pin, along with other pendants. Presti grave at Rebala also contained two large ring-headed pins with wrappings of silver wire,

Fig. 102. *Bronze pins with knobbed cross-heads (2 is fragment) from graves: 1 Ojaveski; 2 Proosa (AM A 349: 33; TLM 15109: 214; photo: Kristel Külljastinen).*

and one of them was found with a fragment of a chain of pendants. It is not unlikely that the tweezer pendant found from the grave was initially attached to one or another of these pins. At least four tweezer pendants have been found in Finland, and all were attached to dress pins or bronze chains and have been dated to the 7th–8th centuries, as in the case of tweezer-shaped pendants (Koponen 1980, 61, 66).

If one also takes into consideration the pins to which the tweezer-shaped and tweezer pendants are attached, the period of use of these pendants can be more precisely dated from the mid-7th to the mid-9th century. Both types of pendants outwardly resemble a hammer, the attribute of the Norse god Thor; however, it is not likely that either Estonian or Finnish tweezer pendants or tweezer-shaped pendants are connected with the cult of Thor, because such pendants have not been found in the Scandinavian countries. Further, there is no information regarding the presence in Estonia of Thor hammerlets with thick arms, which were widespread in Scandinavia. Thor hammers also spread in Scandinavia later,

mainly in the 9th–10th centuries (Jonuks 2009, 299 and citations therein).

Small *pins with knobbed cross-heads* (Fig. 102), which have been found in northern Estonia in the Migration Period find context, were most likely brought from the Baltic tribes (Mägi 1997, 44). In northern Lithuania and Latvia the earliest of such pins have been dated to the 6th century, but most originate from the 7th–8th centuries (LAA, 81f., fig. 48: 1).

A *cross-headed pin*, atypical to Estonia (Fig. 103), also most likely originates from the territory inhabited by the Balts. It was a stray find, coupled with a crescent chain-holder, which was obtained from Savastvere village on the western bank of Lake Peipsi. This pin has exact equivalents among the Semigallians' 7th–11th-century jewellery (Mägi 1995a, 281; *Žiemgaliai*, nos. 470, 474).

Double cross-headed pins are clearly Estonian-style jewellery, with only a few specimens found in neighbouring countries. There are somewhat more in Finland, while only two such pins are known from more westerly countries — one from Gotland and another from Mälaren Valley; furthermore, the latter-mentioned pin was actually used as a pendant (Jaanusson 1971). Double cross-headed pins were worn in the late 10th and the early 11th century; pins with open arms (Fig. 109) and pins with joined lower arms (Fig. 104) were in use simultaneously. Double cross-headed pins were most widespread in continental Estonia (Mägi 1997, 44–49, fig. 15, 17).

Fig. 103. *Cross-headed bronze pin with a chain-holder, stray find from Savastvere, Tartumaa (ÕES 1483: 7; photo: Andres Tvauri).*

Fig. 104. *Bronze breast chain combined with double cross-headed pins from the inhumation cemetery at Raatvere (AI 5295: 121; photo: Kristel Külljastinen).*

Fig. 105. *Mushroom-headed bronze pin from a burial site at Kõruse (AI 2643: 114; photo: Andres Tvauri).*

Mushroom-headed pins have been found at Kõruse, western Saaremaa, in a burial site destroyed in the 19th or early 20th century (Fig. 105) and in the stone-circle cemetery at Mäla on the island of Muhu (Schmiedehelm 1930, pl. XXXVIII: 3–4). Based on the find context and Latvian counterparts (LA, pl. 41: 13; *Žiemgaliai*, nos. 438–439), these originate from the 7th–8th centuries.

In addition to metal pins, *bone pins* have been found at the fort at Iru (Lang 1996a, pl. XXIV: 4) and the settlement site at Pada (Fig. 106). These are not imitations of metal pins, but have a characteristically simple design. The pin found from Iru has a bulge in its upper part, and the section that was above the bulge is missing. There are close counterparts to such pins in Viking Age Scandinavia, including Hedeby and Birka (Lang 1996a, 97). The two pins from Pada have a plain shape and a hole for attaching a chain. Such pins have not been found in graves — it is possible that they were destroyed during the cremation of the corpse. One may presume that bone pins, which were lighter and less expensive than metal pins, were mainly used as dress fasteners in everyday situations.

Like brooches, dress pins were both items of jewellery and means for fastening clothing. The pins of the later first millennium found in inhumation burials of the Balts, as well as pins in the Final Iron Age inhumations in Estonia, demonstrate that only women wore dress pins, usually in pairs and connected to a chain. Migration Period small pins (with disc heads and conical heads) without holes for fastening chains were presumably worn individually. Most of the ring-headed pins, popular in the Pre-Viking Age, were worn singly on the chest, as a fastener of some over-garment (Mägi 1997, 49). Large ring-headed pins with pendant decorates, which spread at least into northern and western Estonia and into Finland, were worn by men, as in Finland these have mostly been found in the richly furnished graves of noblemen or elite warriors (Lehtosalo-Hilander 1982a, 109).

Fig. 106. *Bone pins (2 is fragment) from the fort-settlement at Pada (AI 5082: 283, 351; photo: Kristel Külljastinen).*

4.3.1.3. Small bronze pins

Besides yielding large dress pins, sites of the second half of the first millennium have revealed small bronze pins shorter than 10 cm long (Fig. 107). Such pins generally have simple spiral heads or double spiral heads. A small bronze pin resembling a shepherd's crook pin, with a fragment of a chain of single ringlets attached to it, has been found at stone-circle grave XII at Käku, Saaremaa; it has been dated to the later 10th century (Mägi 2002, pl. 12: 9). Small spiral-headed pins and pins resembling shepherd's crook pins have also been unearthed in Latvia in the graves of the

Fig. 107. *Small spiral-headed bronze pins: 1 Lahepera, grave; 2 Rõuge, fort-settlement (ÕES 1893: I 16; AI 4100: 10291; photo: 1 Andres Tvauri, 2 Kristel Külljastinen).*

Daugava Livonians (Spirģis 2008, fig. 156: 3) and the Latgalians (Žeiere 2002, fig. 20: 3–7), and the Viking Age and Final Iron Age graves on the eastern shore of Lake Peipsi (Hvoščinskaja 2004, pl. CI: 6). It is possible that such pins were used to fasten women's headscarves, a particularly common practice in the 12th–13th centuries (Selirand 1966).

4.3.1.4. Breast chains and components thereof

Breast chains attached between two pins began to be worn in Estonia during the Roman Iron Age. The chain was generally not directly attached to the pin, but with the help of a chain-holder. In

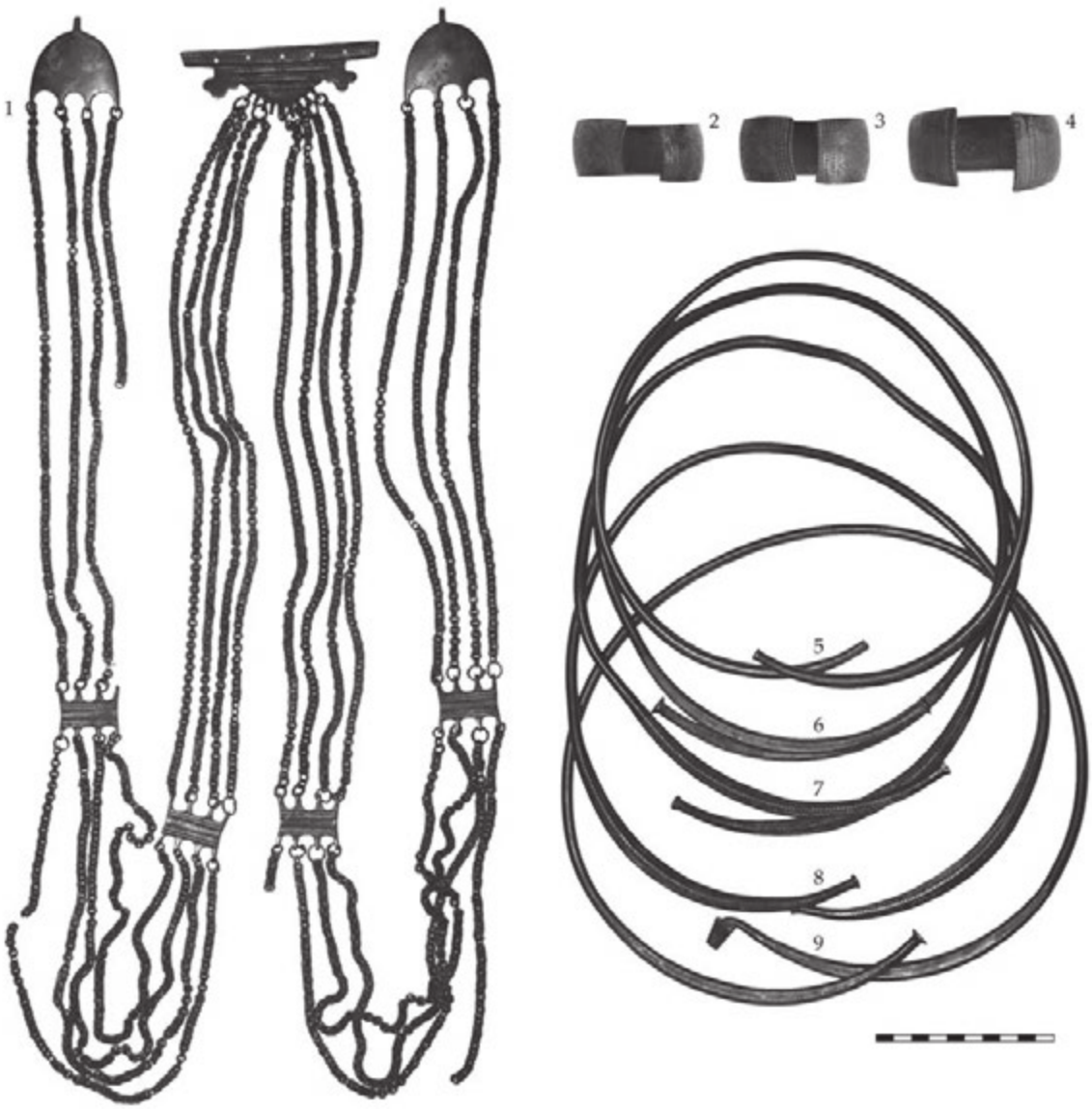


Fig. 108. *The Öötla find (AM A 119; photo: Kristel Külljastinen).*

Fig. 109. *Bronze breast chain combined with double cross-headed pins from the inhumation cemetery at Lahepera (ÕES 1893: 1; photo: Andres Tvauri).*

this way, it was possible to hang several rows of chains from the pin. A breast chain consisted of one to six rows of chains fastened at the shoulders and hanging down to the abdomen (Figs. 104; 108: 1; 109).

The *chains* have been made in different ways. The links of earlier chains are made of flat bronze strips about 3 mm wide (e.g. Fig. 98: 2). The fragments of chains found in the burial sites at Lepna and Kirimäe, for instance, were made in this manner. Chains with the links consisting of two wire rings usually 6–8 mm in diameter were common since the Pre-Viking Age (e.g. Fig. 103).

In comparison with dress pins, few chain-holders from the second half of the first millennium have been found in Estonia. There are two predominant types: crescent- or lunula-shaped chain-holders and those shaped like the mythological world tree. The prototypes of both types of chain-holders are found in the territories of the Balts.

A *crescent-shaped chain-holder* of sheet bronze (Fig. 110: 1) has been found in the Migration Period burial at Kirimäe, Läänemaa. The contemporaneous burial site at Lepna, Saaremaa, produced a fragment of a similar chain-holder, although this chain-holder was coated in silver. Crescent-shaped chain-holders continued in use into the first half of the 11th century, as demonstrated by the cast chain-holders included in the Pühaste hoard from south-eastern Estonia (Fig. 110: 2–3) and the chain-holders attached to the breast chain that was found together with 11th-century neck rings and bracelets at Öötla, Järvamaa, as a hoard or grave goods (Fig. 108: 1). A chain-holder decorated with ring designs has been found in a burial from the later 10th century in the grave at Rahu, Saaremaa (Fig. 110: 4). A unique chain-holder (AM A 234: 1) was in the ornament set found in Keila, Harjumaa, which as in the case of the Öötla find has an ambiguous find context. Judging from accompanying finds the chain-holder from Keila dates from the 9th century (Mägi 1997, 32). So far no exact counterparts have been found to this item.

Cast openwork chain-holders with the motif of the world tree are later in date than crescent-shaped chain-holders. They were most likely introduced at the very end of the Viking Age, in the second quarter of the 11th century, as is shown by their appearance alongside double cross-headed pins, for instance in the inhumation cemeteries at Raatvere and Lahepera (Figs. 104, 109).

One *Livonian-style openwork chain-holder* (Fig. 110: 5) of the type used by Livonians in the 10th–14th centuries was found in the burial site at Kõola, Tartumaa. This chain-holder appears to belong to the sub-type of Livonian openwork chain-holders that were made at the end of the 10th century and the earlier 11th century (Spirģis 2005, fig. 20).

All the spacers of breast chains found in the period under review are *rectangular spacers with*

Fig. 110. *Chain-holders (all bronze): 1 Kirimäe, grave; 2–3 Pühaste, hoard; 4 Rahu, grave; 5 Kõola, grave (AI 2509: 14; 3667: 2; 3667: 3; 4239: 35; 2462: 31; photo: 1–3, 5 Andres Tvauri, 4 Kristel Külljastinen).*

two bulges (Fig. 108: 1). Such spacers were widespread in what now are the Baltic States and Finland in the 9th–13th centuries; a few specimens have also been found in Sweden and in northwestern Russia (Selirand 1974, 150f.). Spacers of the chain found from Keila are most likely among the earliest such chain spacers in Estonia, dating from the 9th century based on the co-finds.

The largest and weightiest breast chains extended over the shoulders to the back, where there was a *central plaque*, larger than the other spacers and more decorative. Chains with central plaques appear to have been more common during the Final Iron Age. On the basis of accompanying finds, only the breast chain with a central plaque found at Öötla (Fig. 108: 1) can be dated to the end of the Viking Age.

With the passage of time, breast chains and the pins used to fasten them became increasingly more massive, and new components were added to the chains. By the early 11th century, the breast chain had become the heaviest and most decorative item of jewellery for women in Estonia. Although the length and number of chains most likely depended on the wearer's wealth, most female burials of the Viking Age contain at least a few fragments of breast chains.

4.3.1.5. Beads

Necklaces with beads were in fashion as early as in the second half of the Roman Iron Age, and continued in use throughout the Middle Iron Age and Viking Age. Beads are found in graves as well as in forts and settlements. Unfortunately, no comprehensive study of the beads of the Estonian Iron Age has been attempted. Only the beads of the Migration Period (Mägi 1993) and the end of the Viking Age (e.g. Selirand 1974, 142) have been addressed, in a very cursory manner, in connection with the study of other material. As a result, it is not possible to present an exhaustive overview of beads herein.

The majority of beads that have been found are *glass beads*. Most of the burial sites of the

Fig. 111. *Glass (1–7) and tin (8–9) beads: 1–5 Ojaveski, grave; 6 Saha D, grave; 7 Hummuli, grave; 8–9 Pühaste, hoard (AM A 349: 386, 383, 381, 385, 372; 49: 190; ÕES 1979: 45; AI 3667: 29, 82; photo: 1–6, 8–9 Kristel Külljastinen, 7 Andres Tvauri).*

Migration Period contain annular, faceted, and multiple beads made of blue glass (Fig. 111: 1–4). Blue faceted beads were widespread in eastern Europe, especially since the 6th century (Rozenfel'dt 1982, 63, type I, fig. 14: 1–6). White or greenish glass beads with longitudinal ribs have been found in the burial site at Lepna, Saaremaa. The grave of Paju in Saaremaa and the grave at Ojaveski in Virumaa each contained a dark blue barrel-shaped bead with white and blue spots (Fig. 111: 5).

The range of Pre-Viking and Viking Age glass beads is more diverse. Blue glass beads continued to be the most numerous type, coming in annular, spherical, barrel-shaped, cylindrical, bi-conical, and faceted forms; annular and spherical beads and multiple beads sometimes feature longitudinal ribs. It has been speculated that light blue glass beads in Latvia may have been imported from Rus (Mugurevičs 1965, 72). Besides blue beads, the Estonian archaeological record includes occasional transparent, yellow, dark red, and brown glass beads. Since the Viking Age, beads containing a thin foil of gold or silver occur.

After AD 700, the mass production of multicoloured beads began in Scandinavia. These were mainly made of blue, white, or red glass, using imported glass as the raw material. The centres of manufacture appear to have been located in Denmark or southern Sweden, Norway, eastern Sweden, and Gotland. After 760, the manufacture of such beads came to an end (Callmer 2007). Some such beads have been found in Estonia also, for instance in the stone graves of Saha D (Fig. 111: 6) and Lehmja-Loo III in Harjumaa and in the stone grave at Koila in Virumaa.

In the category of multicoloured beads, large dark blue glass beads decorated with ring-and-dots and intersecting lines achieved the greatest popularity in Estonia (Fig. 111: 7). These have been found in both Viking Age graves and also in forts and settlement sites. These beads originate from Central Asia, perhaps from western Turkestan. In Scandinavia they appeared at the end of the 10th century (Callmer 1977, 85–97); in Novgorod and elsewhere in what is now Russia they have been dated to the 10th and the beginning of the 11th century (L'vova 1968, 77f.; Golubeva 1973, 181). In Finland too, dark blue glass beads with ring-and-dots and lines are characteristic of the end of the Viking Age (Ranta 1994, 93).

In addition to glass beads, there were beads made of other materials. *Clay beads* are mainly found in the cultural layer of forts and settlements, with the largest number having been found in the fort and settlement at Rõuge. These are generally spherical or annular, and less often cylindrical or even in the shape of a truncated cone. Some sites of the Middle Iron Age and Viking Age yield *bronze and tin beads* (Fig. 111: 8–9). A hollow spherical bronze bead has been found at the Middle Iron Age settlement site at Ala-Pika, south-eastern Estonia (Valk 1996, fig. 2: 9). *Amber beads* are rare. One annular amber bead has been found at the burial site at Lepna (Mägi 2004b, fig. 6: 4) and the stone grave-field at Proosa which, on the basis of the period of use of the graves, most likely date from the Migration Period. Two bi-conical amber beads have been found at the Pühaste hoard of the early 11th century date.

Spiral tubules of thick bronze wire with convex, triangular, or, less often, round cross-section were worn between pendants on necklaces as early as in the Roman Iron Age. Spiral tubules from the Migration Period have been found in stone grave Varetemägi at Ehmja, Läänemaa. They were also components of Pre-Viking Age necklaces, as shown by two spiral wire tubules from barrow cemetery II at Rõsna-Saare, found together with a lunula pendant (Fig. 112). The excavation of barrow cemetery II at Laossina uncovered bronze spirals alongside a crutch-shaped pin dating from the 6th–7th centuries. The Viking Age find contexts have not yielded spiral tubules of thick bronze wire.

Tubules of sheet bronze or silver 2–3 cm in length were most likely components of Migration Period bead necklaces. Some of the tubules show grooves at the ends. Such specimens have been found at the burial sites of Lepna, Ojaveski, and Rõsna-Saare II, for instance.

Cowrie shells were sometimes worn as beads. Two cowrie shells found at the settlement site adjacent to the fort at Unipiha come from the Pre-Viking or Viking Age context (Aun 1975b, 356). These are from the small shellfish species *Cyprea moneta*, which are found along the coast of the Indian Ocean. Cowrie shells generally only reached Estonia at the end of the Final Iron Age and during the Middle Ages. More than fifty cowrie shells from AD 400–1000 have been found in northern Europe, primarily Sweden. Their spread to Scandinavia mainly began after the rise of the Arab Caliphate in the 7th century (Johansson 1996, 348). In Finland, cowrie shells have been found in at least three hoards from the 7th–10th centuries (Kivikoski 1962). Cowrie shells also appear in eastern Latvia from the 7th century (Urtāns 1970, 75), which may indicate that they were also worn in south-eastern Estonia at that time (Aun 1992, 63).

Necklaces usually included various beads of glass, amber, and metal. The hoard from Pühaste, south-eastern Estonia, for instance, offers a cross-section of the beads used at the beginning of the 11th century, featuring tin-bronze bi-conical beads of blue glass with filigree ornaments, dark blue bi-conical glass beads with longitudinal ribs, two bi-conical amber beads, a large glass bead decorated with ring-and-dots and intersecting lines, and a triple bead of dark purple glass with longitudinal ribs. Based on the grave finds (e.g. Aun 2009b, 95), the bead chains appear to have been jewellery worn by women and girls.

Fig. 112. *Silver lunula pendant and bronze spirals from barrow cemetery II at Rõsna-Saare (AI 5032: II 58; photo: Andres Tvauri).*

The small number of glass beads in chains (usually less than twenty beads) suggests that they were expensive at that time, and may even have been used as currency. Arab traveller Ibn Fadlan wrote that the Rus seen near the Volga River in 922 purchased beads at the price of one dirham per bead (Ibn Fadlan, 34). Since Estonian Iron Age sites do not contain traces of glass processing, one must assume that all glass beads have been imported. The value of glass beads is also demonstrated by the fact that while glass beads are found almost exclusively in graves, the find assemblages of settlement sites mostly contain clay beads. For instance, 68% of the 110 beads found at the fort and settlement site at Rõuge are made of clay, and only 32% are made of glass.

4.3.1.6. Pendants

Pendants are items of jewellery or parts thereof that were hung from necklaces, breast chains or scarf chains, neck rings, knife sheaths, headgear, or clothes. In the case of a pendant that is found on its own, it is generally impossible to say how it was worn. It is also very difficult to establish whether the pendants were only jewellery or whether they could also be considered to have been amulets (see 6.3). Pendants are discussed here in the same sub-chapter with jewellery because they were primarily worn as appendages to jewellery. It is likely that most pendant types were worn in many different ways. Only tweezer pendants and tweezer-shaped pendants are known from the available information to have been worn exclusively attached to large dress pins, for which reason they were examined above, in connection with ring-headed pins (see 4.3.1.2).

Although Roman Iron Age graves in Estonia have produced various bronze pendants worn on necklaces, there are no pendants that can assuredly be dated to the Migration Period. *Rings of bronze wire with a small spiral disc formed of rolled wire* (Fig. 113) are indeed of the Migration Period date, but it is not known how they were worn; in Estonia these have mainly been considered to be finger rings (Mandel 2003a, 29). In Estonia, such jewellery has only been found at the stone graves at Lihula and Ehmja in Läänemaa, three from the former and one from the latter, as well as one stray find from Leebiku, southern Viljandimaa (AI 3120). In Latvia, such an item has, for instance, been found at Daugmale fort (Mugurevičs 1965, pl. XXIV: 2). Such small rings of bronze wire most likely originate from East Prussia and the area around the lower reaches of the Vistula River, where they were worn at the end of the Roman Iron Age and in the Migration Period as pendants and not finger rings (see Gaerte 1929, 233, fig. 178).

Pendants became fashionable once again in the Pre-Viking Age. Pendants of this period found in Estonia are generally made of bronze. The singular exception, made of silver, is the above-mentioned *lunula pendant with spiral ends* found in barrow 2 of barrow cemetery II at Rõsna-Saare together with two bronze spirals (Fig. 112). From the beginning of the first millennium to at least the end of the 7th century, lunula pendants were common in a very broad area from the southern Urals, the Caucasus, and the northern coast of the Black Sea, to the Netherlands and southern Scandinavia. They differ, however, in terms of design and manufacture (Kargopol'cev & Bažan 1993; Rodnikova 2003). Two bronze pendants that have a very similar shape to the Rõsna-Saare silver pendant have been found in the barrow cemetery at Ljubahin, north-western Russia (Kargopol'cev & Bažan 1993, 118, fig. 6: 19–20). A pendant of the same shape but made of iron and belonging to horse gear has also been found in Ylipää cemetery in Lieto, Finland, from a burial dated to roughly AD 700 (Kivikoski 1973, no. 633). A lunula-shaped tin pendant (Fig. 114: 1) has been found in the stone grave at Preedi, Järvamaa; based on the date given for the grave itself, it may originate from the end of the Roman Iron Age, the Migration Period, or the Pre-Viking Age. No bronze lunula pendants have been found in the Estonian Middle Iron Age find context. Nevertheless, the mould half obtained from a barrow at Loosi, Võrumaa (Fig. 73: 1), shows that in fact lunula pendants were even cast locally.

Fig. 113. *Bronze wire ring with a spiral from the cairn grave at Lihula (AM A 478: 112; photo: Kristel Külljastinen).*

Fig. 114. *Pre-Viking and Viking Age pendants of various types (1 tin, 2–6 bronze, 7 silver): 1 Preedi, grave; 2 Tagametsa, grave; 3 Arniko III, grave; 4 Rõuge, fort-settlement; 5 Ala-Pika, settlement; 6 Kurevere, grave; 7 Parivere, hoard (AI 4426: 652; 5252: 1; 2591: VI 6; 4100: 6635; TÜ 318: 13; AI K 75: 1; AI 2575: 1; photo: 1, 4–5 Andres Tvauri, 2–3, 6 Kristel Külljastinen, 7 AI).*

A total of seven *wire rings with a bead* have been found in the cremation barrows of south-eastern Estonia. These are rings made of bronze or silver wire with a diameter of 1.2–2.1 cm, onto which a blue glass bead has been threaded (Fig. 114: 2). These are usually found in graves one or two at a time. In Mare Aun's opinion, these may be temple ornaments, and date from the 7th–8th centuries (Aun 1984, 353f.; 1992, 126, fig. 51: 9). Since there are no assured data regarding the way in which they were worn, here they are tentatively categorized together with pendants. In the second half of the first millennium, wire rings with one, two, or three beads were used almost throughout the whole of Europe, although to a relatively small extent and worn in different ways. They have also been found in the cremation barrows in north-western Russia (Lyč 2000, fig. 4: 3–4). In the eastern part of central Europe they were used in the Late Roman Iron Age and in the Migration Period (Tempelmann-Mączyńska 1985, figs. 22b, 23b), and in England from the 7th–9th centuries (Geake 1997, fig. 4.10). Such jewellery is also found in the Viking Age graves in Birka (Arbman 1943, figs. 38: 8–10, 275: 21).

Small bell-shaped pendants (Fig. 114: 3) appeared in the Pre-Viking Age. Four such pendants, which were attached using an S-shaped connecting piece of bronze wire, have been found in barrow cemetery I at Rõsna-Saare alongside the remains of an adult woman. Similar pendants have also been found in the grave at Haimre, Läänemaa, which was built in the 10th century and continued in use into the Final Iron Age. A small bell-shaped pendant has also been uncovered at the fort-settlement at Saadjärve and at the fort at Rõuge. Similar pendants were widely used in the upper reaches of the Dnieper and in the Daugava River basin from the 7th–11th centuries, and were characteristic of the Balts (Antoniewicz 1970, 46f.). Such pendants were very common in eastern Latvia (e.g. Ciglis 2001, fig. 9: 2–4). In the vicinity of Estonia, they have, for instance, been found in the lower strata at the fort of Izborsk (Sedov 2007, 95, fig. 76: 11), but also in barrows with cremation burials on the eastern bank of Lake Peipsi (Aun 2009b, 95).

Trapezoid pendants, very common in the Pre-Viking and Viking Ages, were usually cut out from bronze or, less frequently, silver sheet

plate (Fig. 114: 4). The pendants are generally 1.5–2 cm in length; at the narrower end there is a hole, which sometimes contains a small wire ring. Such pendants began to be used in the 6th century, and their area of distribution extended east from the Baltic States to the upper reaches of the Volga River (Rozenfel'dt 1982, 29, fig. 6). In Estonia these are most often found in forts and settlements in south-eastern Estonia, whereas only a few have been found in northern Estonia (e.g. at the fort at Iru). Both a trapezoid pendant and a blank for such a pendant have been found at the fort-settlement at Saadjärve, Tartumaa, which shows that such pendants were made locally. Trapezoid pendants were very common among the Latgalian women, who wore them as appendages to neck rings, head ornaments, spiral finger rings, etc. (see e.g. LA, pls. 60: 17–18; 61: 4; 66: 13). A few neck rings decorated with trapezoid pendants from the 10th or early 11th century have also been uncovered in Estonia (see 4.3.1.7). In the absence of find context, or in cases in which it is not attached to some other item of jewellery, it is impossible to provide an accurate date for these pendants, because they continued to be used as appendages for neck rings and head ornaments in the Final Iron Age. As shown by corresponding mould finds (see 4.2.2), such pendants were also made using casting. Since no cast trapezoid pendants have yet been found, however, one must conclude that they were made of tin, which usually does not survive in subterranean conditions.

The *double spiral pendants* of sheet metal found at the fort-settlement at Rõuge and the Pre-Viking Age settlement at Ala-Pika (Fig. 114: 5) are rare finds. The author has only been able to find one analogue, which was discovered at the settlement site at Varikkoniemi, Hämeenlinna, Finland (Schulz & Schulz 1992, pl. 2: 5).

A *round openwork pendant* made of bronze portraying a triskelion-shaped animal (Fig. 114: 6) was found in the burial site at Kurevere, Saaremaa. The closest equivalents of this pendant are known from Gotland, and have been dated to the second half of the 7th century (Nerman 1929, 36, figs. 35–39; 1975, 54). Similar pendants were also hung from the belts of the Baltic women in the south-eastern coast of the Baltic Sea and in western Lithuania in the 7th–9th centuries. It is thought that in the latter areas such pendants are an expression of Germanic cultural influence (Bliujienė 2003).

Face pendants decorated by granulation were manufactured in Scandinavia, most likely on the island of Gotland. These are present in Swedish, Estonian, and Russian hoards that date from the late 10th to the early 13th century. The earliest known face pendant from Estonia (Fig. 114: 7) originates from the coin hoard found at Parivere, Läänemaa, which has a *tpq* of AD 953/954. Ivar Leimus (2004b) has deduced from this that face pendants began to be made in the middle of the 10th century. The remaining two analogous pendants found in Estonia originate from Olustvere and Kose hoards of the Final Iron Age (Molvõgin & Sokolovski 1979; Leimus 1986). One can presume that all of those pendants have found their way to Estonia for their metal value rather than as jewellery, since they have not been found as grave goods.

The first Arab silver coins appeared in Estonia in the 9th century, and many coin hoards dating from the subsequent century have been found (see 5.2). Apart from using coin silver as a means of payment and raw material for jewellery forging, the coins also served as jewellery or components thereof. For that purpose, a loop made of sheet silver or bronze was riveted to the coin, permitting the coin to be suspended from a chain. The other means of attaching a coin was to make a hole in it, into which a small ringlet of bronze wire could be inserted. The oldest specimens of *coin pendants* appear in the Estonian archaeological record more or less at the same time as coins. A coin pendant was found in the oldest larger

Fig. 115. *Silver necklace of coin pendants from the Paunküla IA hoard (AM 13892; photo: Ivar Leimus).*

hoard of Arab coins in Estonia, which was discovered at Kohtla, Virumaa; its *tpq* is AD 837/838 (see Leimus 2007d, pl. 3: 71).

The only *necklace of coin pendants* that can be dated to the Viking Age has been obtained from Paunküla on the south-eastern margin of Harjumaa, and is known as the Paunküla IA treasure (Fig. 115). This necklace consists of ten Arab dirhams mounted with loops and small silver ringlets; the chain also contains two quatrefoil-shaped small pendants of sheet silver, and three tiny pendants that resemble bells. The pendants are connected with links entwined of silver wire. The *tpq* of the coins is 942/943 (Bykov 1961; Leimus 2007d, 23). Fragments of a similar chain have also been found in another hoard from the same village, the Paunküla IB treasure, which has a *tpq* of 1009 (Tõnisson 1962, 191). No other intact chains of this kind have been found in Estonia, although relatively similar silver chains have been found in Finland, where they are considered to have been manufactured locally and are dated to the 11th–12th centuries (Tõnisson 1962, 225 and citations therein).

At present it is difficult to assess to what extent coin pendants served as ornaments in Estonia, since they have not been found in inhumation burials. They appear to have been present in cremation burials, although in very small numbers. For instance, of the four silver coins from the late 10th or the early 11th century found in the burial site at Randvere, Saaremaa, one has a suspension loop, and the edges of two of the coins were broken in such a manner that suggests that these also had suspension loops (Kustin 1962, 92). In coin hoards, however, the number of coin pendants is insignificant. Of the 421 mainly Arab silver coins of the Kehra hoard (*tpq* 978/979; Fig. 178), for instance, only five have suspension loops, and 35 have holes (Dobrovol'skij & Molvygin 1985, table 1). The pendant coins in hoards may have had loops or holes for attachment even before they reached Estonia, and it is not certain that they were worn as pendants here.

Bracteate pendants, which are round pendants made of sheet gold or silver and provided with suspension loops, appeared at the same time as coin pendants. The golden pendants from the hoard uncovered at Essu, Virumaa, which were found together with a pendant made from an Arab gold coin (dinar) from AD 864/865 can be considered to be the earliest bracteate pendants in Estonia (Fig. 116). The heaviest of the Essu bracteate pendants are decorated with four symmetrically-placed rings, each having a looped quadrangle in the centre. One such pendant, weighing 5.7 g, is now lost; the preserved one (Fig. 116: 4) weighs 4.97 g. Other pendants bear a pattern

Fig. 116. *The Essu gold hoard (AM 87; photo: Ester Oras).*

that resembles the world tree design. These pendants weigh 4.40, 4.35, and 4.03 grams (the latter has part of the decoration missing). Their uniform weight points to the possibility that flattened gold coins, for instance Byzantine solidi or dinars of the Caliphate, were used as blanks. Pendants resembling the Essu bracteate pendants have been found in both Scandinavia and Russia (Leimus 2006, 23f.). In addition to Essu, the silver bracteate pendants of the Paunküla IB hoard (*tpq* 1009) can be dated to the Viking Age. One of these is decorated with an embossed and punched undulating ornament, which imitated the design of Arab coins. The remaining two have ornamentation that imitates the cross portrayed on western European coins. No other bracteate pendants that can assuredly be dated to the Viking Age are known in Estonia; they only became more widely used in the 12th–13th centuries.

Bronze rumbler bells from the Estonian Viking Age are all of one type — pear-shaped with four grooved petals (Fig. 117). Such rumbler bells spread over a very wide area in what today are the Baltic States and the northern part of Russia from the end of the 10th century to the beginning of the 12th century (Mal'm & Fehner 1967, 136). Grooves are absent on later rumbler bells. Rumbler bells were particularly characteristic of the peoples that lived on the eastern coast of the Baltic Sea, while they were not common in Scandinavia (Selirand 1974, 153). In Estonian forts and settlements of the Viking Age rumbler bells are still uncommon. At Rõuge, for instance, only three of them have been found, while 44 have been collected at the Final Iron Age fort at Lõhavere.

Fig. 117. *Bronze rumbler bell from the inhumation cemetery at Lahepera (ÕES 1978: 58; photo: Andres Tvauri).*

Estonian sites of fort-and-settlement type have yielded various bone pendants, and of these, *comb pendants* are the most common. The largest number — twelve — have been found at the fort-settlement at Rõuge; there were two at the fort-settlement at Aakre, and elsewhere, at the forts in Tartu and Tõrva, and at the fort-settlement at Pada, a few single finds have been made (Luik 1999, table 1). Comb pendants can be classified into two groups. The first group of pendants portrays long-necked (aquatic) birds or snakes on its upper part, forming a twined motif (Fig. 118: 1). This group includes the majority of comb pendants that have been found. The second identifiable type are pendants with a double S-shaped motif, the upper part of which consists of stylized animal or bird heads facing in different directions. Such pendants have been found at the fort at Tõrva and the settlement site at Pada (Fig. 118: 2), for instance. In addition, there are some pendants

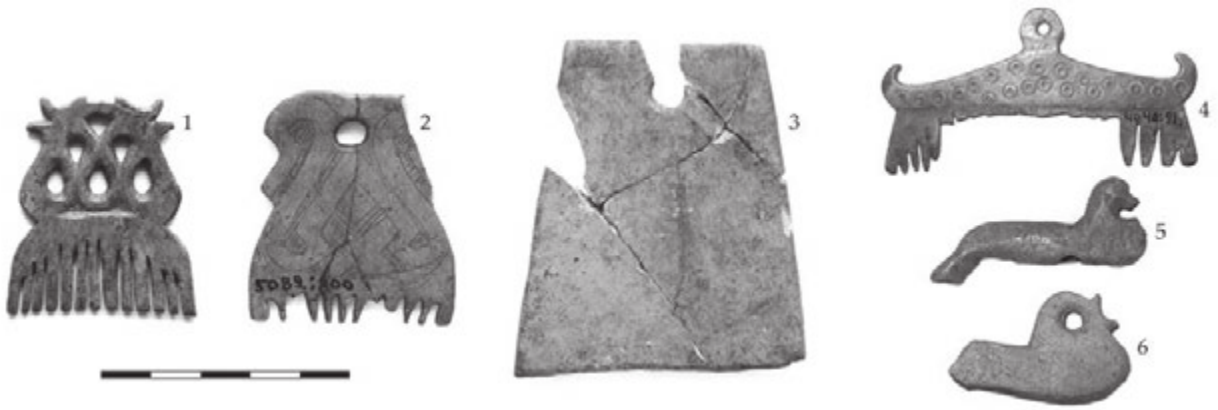


Fig. 118. *Comb- and bird-shaped pendants (4 bronze, others bone): 1 Aakre, fort-settlement; 2–3 Pada, fort-settlement; 4 Rõuge, fort; 5–6 Otepää, fort (AI 4726: 1073; 5082: 800; 5082: 785; 4040: 91; 4036: III N 297; 4036: III N 288; photo: 1–3 Kristel Külljastinen, 4–6 Andres Tvauri).*

whose animal ornamentation is extremely stylized (see Luik 1999, figs. 6: 1–2; 7: 2). Comb-shaped bone pendants have mostly been dated to the 8th–10th centuries. They were manufactured locally, as indicated by finds of corresponding blanks at the settlement site at Pada (Fig. 118: 3) and at the fort in Tartu (Tvauri 2001, fig. 78: 1). A bronze comb-shaped pendant has also been found at the fort at Rõuge (Fig. 118: 4). Comb pendants made of bone or bronze are common over a very large area from the Kama River to Estonia. In north-western Russia they have been discovered in the 9th–10th-century find contexts, and they are considered to be of Finno-Ugric origin (Kondrat'eva 1981; Nosov & Khvoshchinskaya 2006, 149).

Bird-shaped bone pendants have been found at the forts at Rõuge and Otepää (Figs. 118: 5–6; 177: 2) and at the settlement site at Aindu (Valk 1994b, 387). In addition to these Estonian Viking Age sites, such pendants have also been found in north-western Russia, for instance Staraja Ladoga (Davidan 1992, fig. 29: 121–122). Very similar bird-shaped pendants, although made of bronze, have been found in archaeological sites of the Livonians in Latvia (e.g. Tõnisson 1974, pl. XXXII: 10).

Tooth pendants can be distinguished from other animal teeth remains by the hole made in one end. The largest tooth pendants are those made of bear canines, which have been found at the fort and settlement at Rõuge (Jaanits *et al.* 1982, fig. 169: 9), the fort at Unipiha (Fig. 119: 1), and the fort at Tõrva. All of these come from the Pre-Viking Age or, more likely, from the Viking Age. Bear canine pendants were also used by the Finns and the Daugava Livonians. In south-western Finland one can even find bronze pendants in the shape of a bear tooth. These were worn by women and were presumably believed to possess a fertility-related protective function (Asplund 2005). Viking Age sites have also revealed pendants made of the canines of dogs (Fig. 119: 3; Luik & Maldre 2005, 266, fig. 11: 2), small predators (Fig. 119: 2; Luik 2009, fig. 60: 10–11), and pigs or wild boars (Fig. 119: 5; e.g. Luik & Maldre 2005, 266, fig. 11: 3), as well as a beaver tooth (Fig. 119: 4) and an equine milk tooth (Luik 2009, fig. 60: 9). The dog or wolf tooth attached (along with other pendants) to a neck ring from the first half of the 11th century found at Savastvere is the only known tooth pendant found on an item of jewellery (Fig. 125).

The finds characteristic of the Viking Age fort-and-settlement complexes in southern and eastern Estonia include *pendants made from a beaver astragalus* (Fig. 120; Leimus & Kiudsoo 2004, 42f.;

Fig. 119. *Tooth and claw pendants: 1 bear canine, Unipiha, fort; 2 fox canine, Lahepera, grave; 3 dog canine, Pada, fort-settlement; 4 beaver tooth, Rõuge, fort-settlement; 5 wild boar, Rõuge, fort; 6 bird of prey claw, Linnaaluste III, fort-settlement; 7 sturgeon bone shield, Pada, fort-settlement (AI 4472: 864; ÕES 1978: III 12; AI 5082: 367; 4100: 10714; 4040: 907; TÜ 1115: 188; AI 5082: 330; photo: Kristel Külljastinen).*

Luik 2010, fig. 3). Such pendants are also found in Finland (Schulz & Schulz 1992, pl. 6: 18–19), Latvia (Aun 1975a, 355), and elsewhere in the forest belt of eastern Europe as far as the upper reaches of the Volga River. At least one pendant made from a beaver astragalus has been found in the 11th-century cultural layer in Sigtuna, Sweden (Ros 1990, 133).

Fig. 120. *Pendant made of a beaver astragalus from the fort at Otepää (AI 4036: I 2324; photo: Kristel Külljastinen).*

The *pendant made of the claw of a bird of prey* found at settlement site III at Linnaaluste (Fig. 119: 6) and the *pendant made of the bone shield of a sturgeon* found at the settlement site at Pada (Fig. 119: 7) are rarities in the context of the period under review. Small Final Iron Age shovels made from sturgeon shields have been reported from the forts at Daugmale and Aizkraukle in Latvia; a cross-shaped pendant made of this material has been found in Novgorod (Luik & Maldre 2005, 273).

4.3.1.7. Neck rings

The typology of the Middle and Late Iron Age neck rings found in Estonia and Latvia originates from the 1920s (Tallgren 1925, 86–94; Karnups 1929; Moora 1929). The only research specifically devoted to Estonian neck rings is the Bachelor's thesis by Margit Kruglova from the University of Tartu (Kruglova 1994). The following examination of neck rings is based on the existing typology, although a few modifications have been made here to it.

Fig. 121. *Silver neck rings from Migration Period hoards: 1 Paali II; 2 Uuri; 3 Paali I (AI 3235: 235; AM A 287: 1; AI 3235: 91; photo: Ester Oras).*

All of the Iron Age neck rings found in Estonia are open-ended. The neck rings of the period in question can be divided into two broad groups depending on whether the terminals of the neck rings can be clasped to one another or they simply overlap. These two main types are divided into sub-types depending on the shape of the terminals. At least five different variant forms of neck rings with overlapping terminals and three different variant forms of neck rings with clasp terminals have been found in Estonia.

Neck rings that have broadening, ribbed, overlapping terminals with round cross-section (Fig. 121: 1) are made of silver or bronze. All of these originate from Migration Period hoards (e.g. Paali II) and wealthier burial sites (e.g. Lepna; Mägi 2004b, fig. 6: 1). These neck rings were widespread throughout the entire Baltic region, from Norway to Finland and the Baltic States. Such neck rings appeared in the 5th century in northern Germany and southern Scandinavia, where they were made of gold and were richly ornamented (Aun 1992, 139). In Estonia, this type of neck ring was also found in the Paluküla hoard, which has been dated to the second half of the 8th century, and in the Mõigu hoard, which was deposited in about 1200. From this it has been concluded that such neck rings were used until the end of the Iron Age (Moora 1929, 142f.). However, it is more likely that the neck rings in the above-mentioned hoards only represented scrap metal, because such items have not been found in graves that date later than to the Migration Period.

The second type of neck ring that is characteristic of the Migration Period is that of silver *neck rings with faceted overlapping terminals*, which have been found in hoards, for instance those uncovered at Kardla (Fig. 211), Villevere, and Uuri (Fig. 121: 2). Fragments of such neck rings were also found in the burial site at Kirimäe. These neck rings were more numerous in Latvia, where they are considered to be typical of the 6th century (Urtāns 1977, 150, 241).

Neck rings with overlapping twisted terminals had their terminals first made quadrangular in cross-section and then twisted. Only a few such neck rings have been found in Estonia. One golden neck ring with twisted terminals had been included in the Kardla hoard (Fig. 211), and one similar silver neck ring was in the Paali I hoard (Fig. 121: 3); both hoards date from the Migration Period. The remaining neck rings of this type in Estonia are made of bronze and date from the Final Iron Age (e.g. Laul & Valk 2007, fig. 71). Among the Balts,

neck rings of this type were used for a very long period indeed — from the beginning of the 6th century to the 12th century (Urtāns 1977, 241).

Neck rings with flat overlapping terminals were introduced in the 7th century in eastern Latvia, among the Latgalians (Urtāns 1977, 20; Šnore 1994). Based on Latvian parallels, four silver neck rings with flat, faceted overlapping terminals, obtained from treasure finds from Hummuli in southern Viljandimaa (Fig. 122) and by the Navesti River in northern Viljandimaa appear to originate from the Pre-Viking Age; no such neck rings have been found elsewhere in Estonia. Later specimens of the above-mentioned type of neck rings, dating from the 10th–12th centuries, are made of bronze, and their flat terminals have a triangular cross-section. Trapezoid pendants were often hung from the upper terminal of such

Fig. 122. *Silver neck rings from the Hummuli hoard (AI 2019; photo: Ester Oras).*

Fig. 123. *Bronze neck ring with trapezoid pendants from Tähtvere, Tartu (ÕES 250; photo: Kristel Külljastinen).*

neck rings (Urtāns 1977, 20; Šnore 1994; see also 4.3.1.6). In Estonia, at least two complete neck rings with flat overlapping terminals have been found with such pendants: a stray find in the field of Tähtvere manor in Tartu (Fig. 123) and in the burial site at Vesneri, not far from Tartu. The lower edge of the upper terminal of the Vesneri neck ring originally bore 24 trapezoid sheet metal pendants, and 28 similar pendants were hung from the Tähtvere neck ring. The oldest fragment of a neck ring of this type in Estonia, however, comes from the fort at Rõuge, although its pendants have not survived (Aun 1992, 62, fig. 20: 3). Since most of the neck rings under review were found in southern Estonia, they can be viewed as imports from Latgalian areas (Kruglova 1994, 15).

Bronze *neck rings with knobbed overlapping terminals* usually have a faceted knob on one terminal,

Fig. 124. *Silver neck ring from the Loosi hoard (AI 712: 1; photo: Ester Oras).*

and the other, ribbed, terminal has a hexagonal cross-section and a tip resembling the head of a nail. These neck rings were used at the end of the Viking Age. They have primarily been found in southern Estonia, for instance in the burial site at Päidla (Moora 1929, fig. 4) and the hoard from Pühaste, which both date from the first half of the 11th century. A neck ring of this type has also been found in the cemetery at Zalahtov'e on the eastern bank of Lake Peipsi (Hvoščinskaja 2004, pl. XCIX). A variant form of this type of neck ring has both ends with a hexagonal cross-section and a tip resembling the head of a nail. A jewellery set from the earlier 11th century that has been found at Öötla in Järvamaa (without authoritative context) contains both variants of the type in question: four neck rings with two terminals shaped like nail heads (Fig. 108: 5–8) and one neck ring with one faceted terminal and the other terminal shaped like a nail head (Fig. 108: 9). All these neck rings were probably made by one craftsman. Fragments of an identical neck ring with one faceted terminal and the other terminal shaped like a nail head, presumably made by that same craftsman, have been found in the stone grave at Mustamäki, Halikko, on the coast of south-western Finland (Kivikoski 1942, 23, fig. 12). In the opinion of Ella Kivikoski (*op. cit.*) this originates from Estonia.

A minority of the Middle Iron Age and Viking Age neck rings found in Estonia belong to types in which the ends can be clasped. The earliest of these are *neck rings with long, faceted terminals with hook-and-eye clasp*. This type is rare in Estonia; the only specimens are known from the Villevere and Viira hoards from southern Estonia (Fig. 212). These neck rings, dated to the 5th–6th centuries, originate from the region of eastern Latvia, eastern Lithuania, and the upper reaches of the Dnieper in Belarus (Aun 1992, 140; Urtāns 1977, 241).

Neck rings with a saddle-shaped terminal are thus named because one terminal resembles a saddle, which hooks onto another terminal shaped like the head of a crutch. All of the neck rings of this type that have been found in Estonia are made of silver. Only a few complete neck rings have been found in addition to fragments. Perhaps the most beautiful example of this type comes from the Loosi hoard from south-eastern Estonia, which has been dated to the 7th–8th centuries (Fig. 124; Tõnisson 1962, 208; Aun 1992, 140). At least four neck rings with a saddle-shaped terminal were in the Saue hoard from Harjumaa which, judging by the coins found therein, was interred in the middle of the 10th century (Leimus 2007c, figs. 1–2). The main area of distribution of neck rings with a saddle-shaped terminal was Latgalia and the central part of Vidzeme in Latvia (Kruglova 1994, 17). Specimens and fragments thereof found in Estonia may have ended up here as silver currency; there are no data that such neck rings were worn in these regions.

Neck rings with hook-and-eye terminals and a flat central section were used in central and eastern Estonia in the first half of the 11th century. A bronze neck ring of this type that has four metal

Fig. 125. *Bronze neck ring, a stray find from Savastvere, Tartumaa (ÕES 1459; photo: AI).*

pendants and a pendant of a dog or wolf tooth attached to its central section was found as a stray find at Savastvere on the western bank of Lake Peipsi (Fig. 125). Five such neck rings or fragments thereof have been reported from Estonia, and three of them, found in hoards, are made of silver (see Selirand 1974, annex 7, XXVI: 2b). The main area of distribution of this type was to the east of Lake Peipsi. Several similar neck rings have been found at Zalahtov'e, in burials from the first half of the 11th century (e.g. Hvoščinskaja 2004, pls. XLI: 9, XLIII: 9). In Finland only one such neck ring has been found, in the stone grave at Mustamäki, Halikko. Ella Kivikoski (1942, 23, fig. 11; 1973, no. 730) considers this to be of Estonian origin.

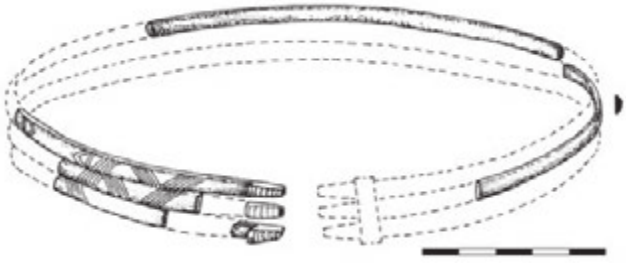


Fig. 126. *Reconstruction of a composite bronze neck ring from the grave-field at Käku (Mägi 2002, pl. 15: 1).*

Composite neck rings, which are usually assembled from three separate bronze neck rings with the help of connecting clasps, have only been found in burial sites in Saaremaa, for instance at the stone cemetery at Käku (Fig. 126). The Saaremaa composite neck rings resemble finds from Courland; such neck rings were also worn by the Semigallians in the 10th–11th centuries (see Mugurevičs 1965, pl. XXVIII: 3; *Žiemgaliai*, no. 371). The use of this type of neck ring in Saaremaa probably continued into the Final Iron Age (Moora 1929, 157).

In the second half of the first millennium, neck rings were much less commonly worn in Estonia than farther south, in Latvia and Lithuania. Although the neck rings of the above-mentioned period turn up throughout Estonia, most have been found in the southern part of the country. All types of neck rings dating from the second half of the first millennium that have been found in Estonia are modelled after Baltic styles or have been imported from the areas inhabited by the Balts.

Being bulky and intricate items of jewellery worn in a visible position, neck rings presumably had an important communicative role. Silver neck rings are the heaviest silver objects of the period covered in this book, and in both Estonia and Scandinavia they generally originate from hoards or are found as stray finds (Hårdh 1996, 49). Certain types of neck rings, for instance neck rings with long, faceted terminals that are fastened with a hook and eye and neck rings with saddle-shaped terminals, appear only in hoards or votive deposits. Thus it cannot be assured that they were really worn in Estonia: it is just as likely that they were seen merely as precious metals or were used as ritual items here.

Fig. 127. *Migration Period bracelets of different types (all bronze): 1–2 Proosa, grave; 3 Kirimäe, grave; 4 Paali II, hoard (TLM 15109: 170; 15109: 189; AI 2509: 22; 3235: 238; photo: 1–2 Kristel Külljastinen, 3–4 Andres Tvauri).*

4.3.1.8. Bracelets

Bracelets were among the most popular items of jewellery in Estonia throughout the Middle Iron Age and the Viking Age. One of the reasons for the abundance of bracelet finds is the fact that multiple bracelets could be worn at a time and on each arm. Bracelets turn up in burials primarily, although they can also be found in hoards, and to a lesser extent even in forts and settlement sites.

The Middle Iron Age and Viking Age bracelets in Estonia are mostly made of bronze; silver bracelets are relatively few in number. All of these bracelets are penannular and were made either by casting or from bronze sheet metal. The width of cast bracelets remained uniform throughout the period in question, usually around 1–2 cm, but bracelets of sheet metal were made wider over time. Whereas the bracelets of sheet metal from the Migration Period are only 0.5–1 cm in width, the Viking Age bracelets with a plait motif are mostly 3–4 cm wide. The dimensions of Pre-Viking Age concavo-convex bracelets made from sheet metal fall between these two extremes. Spiral bracelets coiled from a strip of metal form a distinctive group of bracelets.

A general study of the Iron Age bracelets of Estonia does not exist. The classification presented below is a summary of those publications in which the bracelets of the Middle Iron Age and Viking Age have been examined to a greater or lesser extent (Moora 1931; Selirand 1974, 161–173; Tamla 1991; Mägi-Lõugas 1995a; Lang 1996a, 188–190).

Ribbon-like sheet bronze bracelets with plano-convex cross-section (Fig. 127: 1) were used during the Migration Period. The terminals of these bracelets generally bear punched ornamentation, and less often the entire bracelet is decorated. The ornamentation consists of rings, dots, or arcs, which are often arranged to form a wavy line. Such bracelets have been found in abundance in Migration Period graves in the vicinity of Tallinn, while few have been reported elsewhere in Estonia (Lang 1996a, 188–190). Exceptional among bracelets of this type are those found at the burial site at Lepna, Saaremaa, as these are made of silver (Mägi 2004b, fig. 6: 6).

Thin cast bracelets with a midrib (Fig. 127: 2) also originate from the Migration Period. Their shape resembles ribbon-like bracelets, but they differ from the latter by possessing a low ridge stretching along the length of the bracelet. These have been found in greater numbers in graves from north-western Estonia, and a few are known from elsewhere in Estonia (Lang 1996a, 190; Laul 2001, fig. 61: 2). In Finland such bracelets have also been dated to the Migration Period (Cleve 1943, 94).

Cast bracelets with flaring terminals and a bulky midrib (Fig. 127: 3) have been found in several Migration Period hoards (e.g. Kardla and Villevere) and burials (e.g. Kirimäe, Proosa, and Kurna IB), and as a stray find from Väo, near Tallinn (Lang 1996a, pl. XLV: 1). These are made of

Fig. 128. *Pre-Viking and Viking Age bracelets of different types from graves (all bronze): 1, 4 Inju; 2 Presti at Rebala; 3 Kohtla I; 5–6 Vesneri; 7 Lihula (AI 2794: 27; 5490: 445; 3905: 32; ÕES 570: 12; 2249: 19; 2249: 8; AM A 478: 70; photo: 1–3, 5–7 Kristel Külljastinen, 4 Andres Tvauri).*

both silver and bronze. Such bracelets were relatively common in Estonia and Latvia, but are less well-known in Lithuania. The models of these bracelets were adopted in Prussia at the end of the 2nd century (Moora 1925, 115). Bracelets of this type from Estonia and Latvia are dated to the 5th–6th centuries. Over time, these bracelets became increasingly bulky. Those bracelets with flaring terminals and a bulky lengthwise ridge that have terminals that are somewhat hollow (such as the bracelets from Kirimäe and Väo), are believed to date from the 6th century (Moora 1925, 115; 1938, 440–445; LAA, 91, no. 5).

Concavo-convex bracelets with flaring terminals (Fig. 128: 1) are made of thin sheet bronze; the terminals are decorated with a lattice pattern, and their edges are serrated. Such bracelets have been found in the graves of northern Estonia, Järvamaa, and Saaremaa (e.g. Lehmja-Loo III, Toila I, Inju, Preedi, and Kõruse). In Finland such bracelets were very common in the 7th–8th centuries (Cleve 1943, 90–94). It is possible that the bracelets of this type found in Estonia originate from Finland.

Cast bracelets with thickening terminals (Figs. 127: 4; 128: 2–3) are made of bronze. The cross-section of the terminals may be either uniformly round or faceted. Such specimens have, for instance, been found in the Migration Period burial at Kirimäe, Läänemaa (Schmiedehelm 1924, figs. 11–12), as well as in the Kardla (Fig. 211) and Paali II hoards (Fig. 127: 4) from Tartumaa. Such bracelets are decorated with punched ornamentation consisting of triangles, lines, and ring-and-dot designs. In the Pre-Viking and Viking Ages, later forms of this bracelet type (Fig. 128: 2) were used, mainly in north-western Estonia, Virumaa, Järvamaa, and northern Tartumaa. The latest bracelets of this type, from the 9th century, display a longitudinal groove on their terminals (Fig. 128: 3; Tamla 1991; Mägi-Lõugas 1995a, fig. 30). All bracelets with thickening terminals, apart from one exception (from the fort at Rõuge), have been found in burials, hoards, or as stray finds.

Cast bracelets with flaring terminals that have a plano-convex cross-section (Fig. 128: 4) evolved from the previously discussed type through the expansion of terminals and the thinning of their cross-section. These bracelets were used in the 10th century. They are characterized by a plait motif or longitudinal and traverse lines stamped on the ends. Such bracelets have been found in northern, central, and western Estonia (Mägi-Lõugas 1995a, 284–294). *Thin plano-convex*

Fig. 129. *Spiral bronze bracelets: 1 the Keila find; 2 Lahepera, grave; 3 Lähtse in Harjumaa, stray find (AM A 234: 8; ÕES 1894: 1–2; AI 6542; photo: Andres Tvauri).*

bracelets with uniform width (Figs. 108: 2–4; 128: 5), which usually have a raised flange at the ends, were introduced at the end of the Viking Age, i.e. at the beginning of the 11th century. Many of them also bear a plait motif. This type is characteristic of central and southern Estonia. Only a few such bracelets have been found outside of Estonia, in north-western Russia and the areas once inhabited by the Livonians (Mägi-Lõugas 1995a, 297–300).

Archaeological finds in Estonia also include Scandinavian-style *cast bracelets with wavy ornamentation* (Fig. 128: 6). These have a plano- or concavo-convex cross-section and ornamentation consisting of meandering lines or arcs. Such bracelets developed in Scandinavia at the beginning of the Viking Age, and were often made from silver or even gold. They were still in use in the 11th century. From Scandinavia, this type spread to what today is Finland and north-western Russia, although the bracelets that have been found there are mainly made of bronze. All cast bracelets with wavy ornamentation found in Estonia have been obtained from the continental part of the country, mostly eastern Estonia (e.g. from the inhumation cemeteries at Raatvere and Lahepera), which may indicate that this type of bracelet reached here through the eastern Vikings. Nevertheless, in north-western Russia and Estonia such bracelets appeared later than in Scandinavia and possess local features. There is no evidence that such bracelets were used in Estonia before the beginning of the 11th century (Selirand 1974, 166; Mägi-Lõugas 1995a, 300–302).

Cuff-shaped sheet bronze bracelets have only been found in Estonia in the cairn grave at Lihula, Läänemaa (Fig. 128: 7), the cremation burial at Inju, Virumaa, as well as at the fort in Otepää, south-eastern Estonia. This is a Baltic style of jewellery that was used by the Semigallians and the Latgalians in the 8th–10th centuries (*Žiemgaliai*, no. 498; STŁ, no. 881).

Spiral bracelets (Fig. 129) appeared in the 5th century (Moora 1938, 453), and continued in use throughout the entire Middle Iron Age and Viking Age. Such bracelets were rolled from a strip of metal with a plano-convex or flat triangular cross-section; they were usually made of bronze, although some of the specimens found in burial sites of the Migration Period are made of silver. Spiral bracelets generally lack ornamentation, or the ornamentation consists of modest zigzags or rows of triangles. Particularly bulky spiral bracelets with triangular cross-sections have been found as stray finds at Paluküla and Lähtse in Harjumaa (Fig. 129: 3). These have counterparts in areas that were inhabited by the Semigallians and the Latgalians, where such bracelets date from the 8th–11th centuries (*Žiemgaliai*, no. 515; Ciglis & Radiņš 2002, fig. 58: 3; Vasilauskas 2007, fig. 2).

As is evident from the above, spiral bracelets and penannular bracelets with flaring terminals

or terminals of uniform width that were either cast or hammered from sheet metal were popular in Estonia in the Middle Iron Age and Viking Age. Analogous bracelets are also numerous in Latvia and Lithuania. In Finland the number of such bracelets is smaller, and in Scandinavian countries they have been found in altogether insignificant numbers, as various annular and penannular wire bracelets were popular there at that time (Mägi-Lõugas 1995a, 271). Migration Period bracelets in Estonia thus mainly represent the style of the Balts, and were probably mostly imported. The bracelets of the Pre-Viking Age and the earlier Viking Age have been found in relatively small numbers, but even among the bracelets of that time, extensive import from Baltic tribes can be observed. At that time, bracelets were also brought to northern Estonia from Finland. Although there is no direct evidence in the form of moulds or semi-finished products, one may presume that the majority of bracelets used in the second half of the Viking Age in Estonia were made locally. Evidence for this is provided by the fact that Estonian bracelets of the 10th–11th centuries belong to those types whose main area of distribution was Estonia.

Whereas there are unornamented specimens among the bracelets of the Middle Iron Age, every Viking Age bracelet possesses ornamentation. Only abstract geometrical ornamentation was used to decorate bracelets. Some of the ornamental components on cast bracelets may have been cast, while others may have been imprinted or incised. Migration Period bracelets found in Estonia are mainly characterized by small circles (Fig. 127: 1), ring-and-dot designs (Fig. 127: 4), and wavy lines, which are also typical of other metal jewellery of that period. During the Pre-Viking Age, crossing lines became common. At the end of the Viking Age, plait motifs of intertwined lines or rows of notches (Fig. 128: 4–5), which presumably imitated the plaiting used in textiles and possessed symbolic meaning (Piho 2006), became more widespread. Although the bracelets are grouped by the similarity of ornamentation, each object is nevertheless unique. Most of the ornamental elements of the bracelets found in Estonia are of a local nature, although foreign influences can also be perceived therein (Mägi-Lõugas 1995a, 271).

Bracelets were mainly worn by women, and often several at a time. They are, however, also found in male burials, for instance the Iila inhumation burial from the second half of the 10th century (Fig. 206; Mägi-Lõugas 1995a, pl. IV: 6) and the so-called smiths' burials at Raatvere (Fig. 208; Lavi 1999b, figs. 10, 13). Men also tended to wear several bracelets at a time: one man inhumed at Lahepera, for instance, had four bracelets (Mägi-Lõugas 1995b, pl. X). No spiral bracelets have been found in inhumation burials of the period under review.

4.3.1.9. Finger rings

In the Middle Iron Age and Viking Age, two main types of finger rings were used in what today is Estonia: open-ended and spiral rings. The latter were more common, as had also been the case in the Roman Iron Age. Rings are mostly found in graves, and less often in forts and settlement sites. They were generally made of bronze, and less frequently of silver. Only four gold rings, more specifically spiral gold rings, have been found in Estonia, all from graves: Mõigu (Peetri) near Tallinn (Fig. 130: 3), Ojaveski in Virumaa, Kõola in northern Tartumaa, and Virunuka IV in south-eastern Estonia. All of these stone graves were in use both in the later part of the Roman Iron Age and during the Migration Period (see 6.1.1). It is, however, likely that the above-mentioned rings originate from the Migration Period, because of all the Metal Ages, that is the period when gold was most abundant in northern Europe.

Spiral rings from the Migration Period are generally rolled from a metal strip with a midrib, and

Fig. 130. *Finger rings (3 gold, others bronze): 1, 2, 5 Ojaveski, grave; 3 Peetri at Mõigu, grave; 4 Pada, fort-settlement (AM A 349: 246; 394: 128; AI 4877: 3; 5082: 599; AM A 349: 72; photo: 1–2, 4–5 Kristel Külljastinen, 3 Ülle Tamla).*

the edges of the strip bear zigzag ornamentation; many of the rings also have transverse ridges at the ends (Fig. 130: 1–2). There are also rings made of flat strips; for instance, the gold ring from Mõigu (Fig. 130: 3). Spiral rings can be found in Migration Period graves throughout Estonia. Pre-Viking Age and Viking Age spiral rings differ: both the number of twists and the thickness and cross-section of the bronze strip vary. Most of the spiral rings of these periods are made of wire with a plano-convex or triangular cross-section, and sometimes they are decorated with zigzags. Sites from the late 10th and early 11th century, for instance grave XII at Käku and grave I at Piila, Saaremaa (Mägi 2002, pls. 13: 7, 18: 8), have yielded spiral rings with ends that have been twisted into loops. Such rings were popular among the Semigallians, the Latgalians, and the Selonians (*Zemgaļi senatnē*, 64; Radiņš 2001, 79).

Spiral rings were not only worn on fingers, but also for instance on penannular brooches, as demonstrated by one such brooch from the Viking Age burial in grave IV at Piila, Saaremaa (Fig. 195: 4). It is possible that this manner of wearing is an influence from the Curonian style of jewellery, as several penannular brooches with spiral rings have been found in their area of inhabitation in western Lithuania (e.g. Bliujienė 2001, figs. 11: 11; 12: 7). For example, as many as six spiral rings were threaded onto one Viking Age penannular brooch found in that area (Bliujienė 1999, fig. 58: 6).

Spiral rings with a broader middle wind (Fig. 130: 4), which were adopted in the 5th century, form a sub-type of spiral finger rings. These were worn throughout the entire period covered in this book. In the early 11th century the middle wind of the spiral began to be decorated with punched triangular ornamentation. Spiral rings with a broader middle wind have been found in burial sites throughout Estonia. The models of this type of ring may originate from Lithuania and north-eastern Poland (Moora 1938, 462).

Band-shaped open-ended rings (Fig. 130: 5) have been found in Migration Period graves in northern Estonia. The ends of the rings are in some cases decorated with a diagonal cross and small lines (Lang 1996a, 160). *Double spiral rings* (Fig. 131) were another type of open-ended ring, which were worn in Estonia and elsewhere in what today are the Baltic States and Finland from the 4th century AD onwards (Moora 1938, 462f.; Jaanits *et al.* 1982, 232). Double spiral rings were in fashion throughout Estonia until the end of the Viking Age and even later (Selirand 1974, 174). In the

Fig. 131. *Double spiral bronze finger rings: 1 Unipiha, fort; 2 Pühaste, hoard (AI 4472: 429; 3667: 13; photo: Kristel Külljastinen).*

Pre-Viking Age and Viking Age this was the only type of open ring.

Regarding the Migration Period, the Pre-Viking Age, and the first half of the Viking Age, it is impossible to say to what extent rings were worn by women or by men. The find assemblages of the 10th–11th centuries reveal that in contrast to Scandinavian peoples, in Estonia, rings were not only worn by women, but also by men. This is a feature that united the Estonians' ancestors with the Baltic tribes, among whom it was relatively common for men to wear jewellery.

4.3.2. Belts and components thereof

The archaeological record of the second half of the first millennium in Estonia generally includes only metal fittings of belts: buckles, buckle plates or other plates for fastening the strap, belt ends, belt distributors, and decorative mounts. The Migration Period is represented by only one set of belt components, which comes from the Paali II hoard, interred in about AD 500 (Fig. 132; Schmiedehelm 1934b, 223). The hinged belt component included to the Paali II hoard (Fig. 132: 3) has a very similar counterpart in Gotland (Nerman 1935, no. 171). Better preserved are the belts in the inhumation burials of the later part of the Viking Age, at Lahepera and Raatvere, for instance (Figs. 133–134). Based on these, one can conclude that leather belts were roughly 2 cm wide and decorated with mounts. At one end of the belt was the buckle, and at the other end the metal belt end or chape. Belts usually also had belt distributors or spacers, which were small rings which could be used to attach a sword or a chatelaine chain bearing everyday items. Belt distributors are usually found together with two or three fastening plates. Belts themselves sometimes consisted of two layers of leather that were sewn together, with birch-bark placed between the layers.

Fig. 132. *Bronze buckle and other belt fittings from the Paali II hoard (AI 3235: 242; photo: Andres Tvauri).*

Fig. 133. *Remains of a belt with a Gotland-Baltic type buckle and domed mounts from the inhumation cemetery at Lahepera (ÕES 2053: 9, 4, 6, 3, 7; photo: Kristel Külljastinen).*

Fig. 134. *Remains of a so-called Novgorod-type belt from the inhumation cemetery at Raatvere (AI 5295: IV 21; photo: Kristel Külljastinen).*

Men's and women's belts were different. Wealthier men had special sword belts for the

Fig. 135. *Buckles of various types from Migration Period and Pre-Viking Age burial sites (1, 2, 6 iron, others bronze): 1 Suure-Rõsna; 2, 7 Proosa; 3 Lepna; 4 Varetemägi at Ehmja; 5–6 Lagedi XIV (AI 5227: 5; TLM A 79: 167; SM 10372: 113; AM A 554: 667; 26: 55; 26: 57; TLM 13943: 294; photo: 1–2, 4–6 Kristel Külljastinen, 3, 7 Andres Tvauri).*

wearing of a sword, consisting of a bronze buckle, spacers, fastening plates, and a belt end. Sword belts were sometimes decorated with metal studs or mounts. It appears that women did not wear studded belts.

4.3.2.1. Buckles

Buckles were made of either iron or bronze. Buckles of different materials cannot be united under one typology since the iron buckles were forged, while bronze buckles were cast. The main difference, however, lay in the function of the buckles: iron buckles were primarily used as a component of riding equipment, which is why they are discussed separately in a corresponding subsection (4.4.2.1).

The bronze buckles of the Migration Period have a basically oval shape characteristic of the period, but there is great diversity among the details. *Oval buckles of a uniform thickness* (Fig. 135: 1, 6), *oval buckles with a thicker front section* (Fig. 135: 2–3), *heart-shaped buckles* (Figs. 132: 1; 135: 4), *D-shaped buckles* (Fig. 167: 5), and *B-shaped buckles* (Fig. 135: 5) were in fashion. Such buckles, especially B-shaped ones, are characterized by decoration consisting of transverse lines. Migration Period buckles usually have one pin, although a few buckles with two pins have also been found, for instance in the burial site at Lepna, Saaremaa (Fig. 135: 3). Buckles were often attached to belts by means of a plate of sheet metal, which was riveted to the belt. The above-mentioned buckle types or very similar buckles have been found in the find context of the Late Roman Iron Age and the Migration Period in a broad area from western Europe to the Urals. In Estonia, oval buckles with a thicker front section are the most numerous finds. Heart-shaped buckles are most common in western Estonian graves, whereas other types of buckles are found throughout Estonia.

The *buckle with oval, grooved frame cast as one piece with the buckle plate* (Fig. 135: 7) found in the stone grave-field at Proosa near Tallinn is a rare type of find. A similar buckle, but with a different plate to that from Proosa, was found in the grave of Paju in Saaremaa (Tamla & Jaanits 1977, fig. 1: 11). Proper counterparts to these buckles have not been found (Lang 1996a, 193).

A sumptuous *buckle of Scandinavian origin decorated in animal ornamentation of Salin style I* (Fig. 136) has been found in the Proosa stone grave-field from the Migration Period. The silver-coated cast bronze buckle, 6 cm in length, has a bulky oval-shaped frame and similar fastening

Fig. 136. *Silver-coated bronze buckle from the stone grave-field at Proosa (TLM 14847: 86; photo: Kristel Külljastinen).*

plate; the end of the pin closest to the buckle plate bears a portrayal of a four-legged animal, and there is a human head on the fore-part of the pin. This was presumably a buckle for a sword belt. The closest equivalents are known from the grave of Snartemo V, southern Norway, and the sacrificial deposit from Sjörup, southern Sweden (Franzén 2009, figs. 2–3; Stenberger 1977, fig. 218). Swedish researcher Rickard Franzén categorized these buckles and some other similar finds in Sweden and Denmark in the Proosa group of Scandinavian Migration Period luxury buckles. The Proosa buckle, which was made in the second half of the 5th century, is the youngest known buckle of that group (Franzén 2009).

Fig. 137. *Two-part pentagonal bronze buckle from the burial site at Kõrveküla (AI 2544: 12; photo: Kristel Külljastinen).*

Due to the absence of closed find sets, it is difficult to generalize about Pre-Viking Age buckles. It seems that buckle types that are characteristic only of the 7th–8th centuries and the first half of the Viking Age are absent; at this time oval and heart-shaped one-piece buckles, which had been present also in the Migration Period, continued in use. Buckles from the second half of the Viking Age have been found in relatively large numbers, also from closed find assemblages. These feature a more uniform appearance than those from the Migration Period, generally have two parts, and are divided into two main types: Gotland-Baltic type buckles and two-part pentagonal buckles. Other buckles, for instance simple rectangular ones, are not commonly found at Viking Age sites.

Gotland-Baltic type buckles (Fig. 133: 2) are two-part buckles with an oval frame that has a pointed extension (lip) in its front section (Nerman 1929, 125). This type presumably developed on the eastern coast of the Baltic Sea at the end of the 10th century. The most characteristic buckles of this type appeared at the beginning of the 11th century, constituting the most widespread group of buckles at the end of the Viking Age (Lehtosalo-Hilander 1982a, 149–151; Mägi-Lõugas 1995b, 524). *Two-part pentagonal buckles* (Fig. 137) were introduced later than Gotland-Baltic type buckles. Such buckles have, for instance, been found in the 11th-century find context in the cemetery at Raatvere. The main period of use of pentagonal buckles was the Final Iron Age. They have been found in the greatest numbers in Courland and on the island of Gotland (Nerman 1929, 229; Selirand 1974, 130).

4.3.2.2. Belt distributors, loops, ends, and fastening plates

The simplest belt distributor was a *bronze ring* onto which a belt or fastening plates were fastened (Figs. 134: 3–4; 138: 1). Such distributors were used

Fig. 138. *Belt distributor (1) and belt ends (2–6) from graves (all bronze): 1 Proosa; 2 Lihula; 3 Varetemägi at Ehmja; 4 Käbiküla; 5 Rõsna-Saare II; 6 Lahepera (TLM 13943: 314; AM A 478: 101; 554: 806; 259: 2; AI 5227: 292; ÕES 2053: 7; photo: 1 Andres Tvauri, 2–6 Kristel Külljastinen).*

throughout the entire period under review. *Round three-part belt distributors* with a disc-shaped or star-shaped central section were introduced at the end of the Viking Age (Fig. 133: 3).

Belt loops fulfilled a similar function to belt distributors: these were loops riveted to the belt by means of a strip of sheet metal, and were used to hang a chatelaine chain or the like from the belt. These have been found for instance in the Migration Period hoard of Paali II (Fig. 132: 3–4) and in burials from the first half of the 11th century on the island of Saaremaa (Mägi 2002, pl. 5: 13).

Fastening (buckle) plates are folded loops of sheet bronze or cast bronze plates that were used to attach a belt to a belt distributor or buckle. Plates made of sheet bronze (Figs. 132: 2–4; 133: 2–3; 138: 1), which were riveted to the belt, are more common than cast plates (Figs. 132: 1; 135: 7).

A belt end (or chape) is a metal decoration at the end of a leather belt that does not, in contrast to fastening plates, have a fastening function. This component of a belt was present already during the Roman Iron Age. Cast bronze *belt ends with a long thin tip and broad rear* (Fig. 138: 2) and *long belt ends with plano-convex cross-section* (Fig. 138: 3) are characteristic of the Migration Period and the beginning of the Pre-Viking Age. *Tongue-shaped cast belt ends* have a rectangular attachment section and a lozenge central section which makes a smooth transition to a tongue-shaped tip. Such a belt end has, for instance, been found in the stone grave at Käbiküla, southern Harjumaa (Fig. 138: 4), and in the *tarand* grave at Nurmsi, Järvamaa (Vassar 1943, fig. 23: 4). There are numerous equivalents of these on the island of Gotland, which have been dated to the second half of the 6th century (Nerman 1929, 36; 1969, nos. 232–261). Barrow cemetery II at Rõsna-Saare yielded a *unique belt end*, most likely of a Migration Period date, which has no known counterparts elsewhere (Fig. 138: 5). *Loop-ended belt ends* (Figs. 138: 6; 133: 4–5) coiled from bronze sheet entered into use at the end of the Viking Age.

4.3.2.3. Mounts

Mounts are thin metal ornaments used to decorate leather items. They were usually riveted to belts, bridles, or scabbards. Migration Period sites in Estonia contain mounts of very diverse design and appearance. Most numerous are mounts made of sheet metal, which have been shaped or decorated through embossing. A second, less numerous group of mounts is comprised of cast mounts.

Among the mounts made of sheet metal, *small circular domed mounts* (Fig. 139: 1) are the most numerous, being frequent in Migration Period graves from Saaremaa to Setumaa. Another relatively numerous type of mount that has been found throughout Estonia in the Migration Period graves is the group of *hat-shaped mounts* (Fig. 139: 2). The characteristic motif of *rectangular silver-plated mounts with embossed ornamentation* is a ring-and-dot motif (Fig. 139: 3–4), as

Fig. 139. *Various sheet bronze mounts (3–8 silver-coated) from Migration Period and Pre-Viking Age burial sites: 1 Rõsna-Saare I; 2 Saha D; 3–6 Ojaveski; 7–8 Proosa (AI 4929: VIII 47; AM A 49: 156; 349: 299; 349: 306; 349: 303; 349: 305; TLM 15109: 151; photo: 1–2, 4–8 Kristel Külljastinen, 3 Andres Tvauri).*

is the case with Migration Period fibulae and bracelets. Rectangular sheet metal mounts with embossed snake images have been found in the stone graves at Proosa and Ojaveski in northern Estonia (Fig. 139: 5); the grave at Ojaveski also included a mount with an image of aquatic birds, presumably geese (Fig. 139: 6). These are identical to the snake and bird motifs depicted on the sheet metal decorations on Lithuanian drinking horns from the 5th–6th centuries (Kazakevičius 1987, figs. 1, 5, 10). The Proosa grave also contained two fragments of mounts with images of deer (Fig. 139: 7–8). The above-mentioned mounts of Proosa and Ojaveski are small and flat, and thus do not originate from a drinking horn, but most likely from a belt or scabbard. These were probably imports from the south-eastern coast of the Baltic Sea.

Fig. 140. *Gilded bronze (1, 3) and silver (2) mounts from the stone grave-field at Proosa (TLM 15109: 136; 13943: 274; 15470: 42; photo: Kristel Külljastinen).*

Cast mounts, although found in considerably smaller numbers than sheet metal mounts, deserve great attention, because they include several finds that are unique in Estonia and elsewhere. *Gilded bronze and silver mounts ornamented in Salin I style* were relatively abundant in the stone grave-field at Proosa. One of these is a gilded rectangular bronze mount with animal ornamentation (Fig. 140: 1) which, judging by the inward-turned side, had probably been the edging of some object. No precise equivalents are known, but one can presume that it originates from the edge of a scabbard (Deemant 1993, 43). The same grave-field yielded a gilded silver mount with an image of two animals looking backwards (Fig. 140: 2). The rivet holes penetrating the ornamentation show that the mount was used repeatedly. This mount too has no known equivalents. Further, a gilded cross-shaped bronze mount or belt distributor with animal ornamentation and stylized human faces on its branches has been found from Proosa (Fig. 140: 3). An object with a similar shape and in a similar style, but with different ornamentation, has been found in the Migration Period handicraft centre in Helgö, eastern Sweden (Vierck 1967, 61, fig. 1: 5). In addition to those mentioned above, other smaller or fragmented mounts of the Salin I style have been found in the grave of Proosa, and also of Lihula (Lang 1996a, 191, pl. L: 2–3; Selirand & Deemant 1985, fig. 8: 1; Mandel 2003a, pl. II: AM 478: 87). The stone grave at Ojaveski contained a silver mount with a gilded surface that has an image of a human face on one of its prongs, while the three smaller prongs combine elements of animal ornamentation with stylized human faces (Fig. 141). A very similar human face has been found on a hinged belt mount from the island of Bol'šoj Tjuters (Kivikoski 1973, no. 334). Jewellery of the Salin style I spread throughout Germanic areas in the

Fig. 141. *Gilded silver mount from the stone grave at Ojaveski (AM A 349: 345; photo: Andres Tvauri).*

last quarter of the 5th century and the first half of the 6th century (Haseloff 1981).

The grave-field at Proosa contained six *bronze belt mounts in the shape of the number 3*, all identical in terms of shape, although half of them are the mirror image of the number 3 (Fig. 142: 1). They are unique in Estonia, and were brought from the east, from Permic areas in the Kama River basin. One W-shaped belt mount resembling the mounts of Proosa was found in a 7th-century warrior's grave at Pappilanmäki, Eura, south-western Finland, together with other mounts of Permic origin (Salmo 1941, fig. 16). The Permic mounts from Pappilanmäki included *openwork silver-coated bronze mounts*, of which type four have been found in Estonia, all from the stone grave at Ojaveski (Fig. 142: 3; Friedenthal 1935/36, fig. 13: 25; Schmiedehelm 1955, 144, fig. 36: 4). Both types of the discussed mounts were made in the region of the Kama River basin in the 7th–9th centuries (Gening 1979; Goldina & Vodolago 1990, 8of., pls. XXIX, LXVIII). *A unique mount* found in the Proosa grave for which no equivalent has yet been found (Fig. 142: 2) most likely also has a Permic origin. Permic belt mounts are more numerous in 7th–8th-century graves in Finland than in Estonia (see Salmo 1941, 28f.). The presence of such mounts in Estonia most likely represents contacts with Finnish coastal regions rather than direct connections with distant eastern regions. Based on the Pappilanmäki grave find, one may presume that in Estonia too, exotic belts with such mounts may have been worn by men.

As in the case of buckles, no belt mounts that assuredly date from the Pre-Viking Age and the first half of the Viking Age are known. The mounts from the second half of the Viking Age differ from earlier specimens in terms of décor and design; there are also altogether fewer types of mounts than in the Migration Period. Most numerous are *small circular domed mounts made of sheet metal*, which have a diameter of 1–1.5 cm. They have a rivet in their centre, and the edge often features embossed bumps. Such mounts have, for instance, been found at stone-circle V at Käku, Saaremaa, which dates from the first half of the 11th century (Mägi 2002, pl. 5: 13). A leather belt decorated with small domed mounts was also present in an 11th-century burial at Lahepera (Fig. 133: 1).

Late Viking Age burials contain also *elongated cast mounts with palmette ornamentation*. The ornamentation may differ, but the main motif is a twisted tree or vine. These mounts are sometimes coupled with *small heart-shaped cast mounts*. Mounts with palmette ornamentation and heart-shaped mounts both belonged to the so-called Novgorod-type belt (Fig. 134). The main feature of such belts was the relief palmette ornamentation

Fig. 142. *Bronze (3 silver-coated) belt mounts of Permic origin from graves: 1–2 Proosa; 3 Ojaveski (TLM 15109: 37; 13943: 33; AM A 349: 294; photo: Kristel Külljastinen).*

Fig. 143. *Iron chatelaine with a fire-steel from the inhumation cemetery at Lahepera (ÕES 1984: 81; photo: Kristel Külljastinen).*

on both the bronze buckle and the mounts. These belts were most common in north-western Rus, but they have also been found in eastern Sweden, Finland, and Latvia. Novgorod-type belts were introduced in the second quarter of the 11th century, and they were presumably worn until the end of the 12th century (Mikhailov 2007).

4.3.2.4. Chatelaine chains

From the beginning of the 11th century, chatelaine chains were accessories to the belts of both women and men. These consisted of two or three rods with loops at the ends, and were sometimes wrapped in bronze wire. A belt could carry several chatelaines, with various everyday items such as fire-steels and knives attached to them (Fig. 143).

4.3.3. Knife sheaths

In the Iron Age, knives were everyday items for both men and women, and were most likely carried everywhere. As was the case later, knives were worn in leather sheaths attached to a belt. Usually only metal parts of knife sheaths survive. The fact that burial sites contain many knives and only a few metal parts of sheaths probably indicates that most knife sheaths did not have metal fittings.

The author is not aware of finds of metal parts of knife sheaths in Estonia that assuredly date from the 5th–9th centuries. The oldest knife sheath parts made of sheet bronze come from 10th-century graves. The bronze edging of a knife sheath has, for instance, been found in the 10th-century grave XIV at Käku, Saaremaa, along with the knife (Mägi 2002, pl. 16: 6). A knife accompanied by the sheet bronze chape and edging of a sheath had also been placed in a male burial in grave III at Piila, Saaremaa, dated to the late 10th or the early 11th century (Fig. 144). The blade side (seam) of this sheath had been lined with sheet bronze, which served as a means to rivet the leather edges together. Not far from the mouth

Fig. 144. *Knife and sheet bronze edging of a knife sheath from stone circle III at Piila (Mägi 2002, pl. 20: 2–4).*

Fig. 145. *Knife sheath and a knife from the inhumation cemetery at Raatvere (AI 5295: XIV 123; photo: Kristel Külljastinen).*

of the sheath was a hole in the metal seam for attaching a chain to hang the sheath upright from a belt. The Daugava Livonians, both men and women, used similar bronze-edged knife sheaths in the Viking Age (e.g. Spirģis 2008, 189–196).

Knife sheaths of uniform width and covered in bronze (Fig. 145) began to appear among grave goods of women at the very end of the Viking Age, i.e. in the first half of the 11th century, and continued in use until the mid-13th century. The front and back of these sheaths were riveted together with a separate edge-piece of sheet bronze. The sheaths have two sheet metal loops riveted to the edge, with bronze rings inserted in them. The earliest knife sheaths of that type, from the first half of the 11th century, have been obtained in inhumation graves in eastern Estonia: two from Raatvere and one from Lahepera. All three sheaths have a similar shape and embossed ornamentation; the design of the décor differs, consisting of lines, arcs, or interwoven ornamentation reminiscent of tabby weave.

According to current knowledge, the oldest knife sheaths with a uniform width and sheet bronze coating, dated to the early 10th century, come from south-western Finland (Riikonen 2009, 288). Their main period of use was in the Final Iron Age. In addition to continental Estonia and south-western Finland, these also spread throughout Baltic-Finnic areas east of Lake Peipsi. The small number of bronze-coated knife sheaths has provided grounds to argue that they were prestige items of women from wealthier families (Selirand 1970). Finnish finds show that sheaths were attached at the abdomen on top of the apron with an apron string or some separate string (Riikonen 2009, 294).

4.3.4. Agraffes

Agraffes, i.e. metal clasps for fastening clothes, were used in Scandinavia and its neighbours England, Finland, and Estonia at the end of the Roman Iron Age and during the Migration Period. These were used for the fastening of pants and sleeve-ends, for instance. Agraffes can be divided into three groups based on their design (Hines 1993): group A consists of wire clasps, group B includes clasps of sheet metal, and group C are cast agraffes. Each group can in turn be divided into sub-groups. In Estonia, only parts of the B1 group have been found. The agraffes of that sub-group had a decorative button riveted onto the clasp, which in essence was a rivet to attach the hook of sheet metal to the clothing. The buttons

Fig. 146. *Selected agraffe buttons from the stone grave-field at Proosa (TLM 14847: 8; 14847: 90; 12891: 81; 13943: 222; 15109: 15; 14335: 33; 13213: 33; photo: Kristel Külljastinen).*

may be undecorated or decorated with a triskelion, a swastika, a spiral design, or with ornamentation in the Salin style I. Many of the buttons are gilded. In Scandinavia agraffes of the B1 sub-type are generally found in male graves (*ibid.*, 78).

In Estonia the most abundant collection of agraffe buttons, including 16 specimens, has been found in the stone grave-field at Proosa near Tallinn (Fig. 146). This is also the largest find of agraffe buttons on the eastern coast of the Baltic Sea. One agraffe made of sheet bronze was found in *tarand* grave D at Saha not far from the Proosa grave group (Fig. 147: 1). Since the other finds in that grave originate from the period of the 3rd to the mid-5th century (Lang 1996a, 246), this is presumably one of the oldest agraffes found in Estonia. Two agraffe buttons have been found in the stone grave at Ehmja, Läänemaa (Fig. 147: 2), one at the fort at Konuvere, Läänemaa, as a stray find, and one from the grave of Paju in Saaremaa (Tamla & Jaanits 1977, fig. 1: 8). Agraffes made of sheet bronze have also been found in the *tarand* graves in Virumaa, including Jäbara B (Schmiedehelm 1955, fig. 17: 5), Erra (Fig. 147: 3), and Kukruse.

Agraffe buttons decorated with geometrical or animal ornamentation of the B1 sub-group in Estonia were presumably made in Helgö, as some of the 526 mould fragments for agraffe buttons found there match the buttons found in Estonia (see Lamm 1972). Buttons found in Estonia belong to the variant forms that were more widespread in the east, i.e. in Mälaren Valley, Åland Islands, Gotland, and also in Finland (Kuiv 1991b).

Fig. 147. *Agraffes and agraffe buttons from graves: 1 Saha D; 2 Varetemägi at Ehmja; 3 Erra (AM A 49: 146; 554: 538; 370: 179; photo: Kristel Külljastinen).*

4.3.5. Textile finds and clothing

In Estonia, ancient remains of clothing are mostly found in inhumation burials. What remains of clothing in these burials are metal parts, and with these sometimes pieces of the clothing's organic material — fragments of textiles and leather — survive owing to the preserving effect of metal salts. In the period covered in this book such finds are rare due to the fact that cremation was the predominant form of burial and thus the organic parts of clothing burned up even before reaching the grave.

The only textiles find from the Migration Period are two small pieces of linen cloth in tabby weave measuring 9 × 8 and 26 × 13 mm found with the Villevere hoard (Moora 1925, 113; see also 6.2.2). No textile finds from the Pre-Viking Age and the first half of the Viking Age have been obtained.

Textile remains originating from the end of the Viking Age are known only from the inhumation cemetery at Raatvere (Peets 1992, 21; 1993, 216). Among the textile fragments found there, fragments of wraps (plaids) and red braided ribbons were identified. The clothing fragments were exclusively made with a twill weave, which was the predominant type of weave in Estonia until the 14th century. The wool used in the Raatvere fabrics was very uniform, similar in quality to the local textile wool in Novgorod (Peets 1992, 17; 1993, 225). The textiles found at Raatvere are also the oldest evidence of the dyeing of textiles in Estonia: fragments of blue, red, brown, and maybe also green cloth were represented (Peets 1998, 281).

Fig. 148. *Bronze spiral intertwining on the edge of a wrap from the inhumation cemetery at Raatvere (AI 5295: 125; photo: Kristel Külljastinen).*

More remains of clothing have survived from the inhumation burials of the 12th–13th centuries, and consequently publications on prehistoric Estonian clothing focus primarily on these (e.g. Laul 1985; 1986; 1997; 2004; Mägi & Ratas 2003; Rammo 2006). Based on what is known of clothing in Estonia and in neighbouring countries in the Final Iron Age (e.g. Zariņa 1970; 1988; 1999; Hvoščinskaja 1984; Lehtosalo-Hilander 1984a), one can form a very general picture of the clothes worn during the second half of the first millennium and the beginning of the 11th century in Estonia. Fashion naturally differed from one region to another, and changed over time. The material, quality, and quantity of clothing and accessories also depended on the social position and wealth of the wearer or his/her family.

Men's clothing consisted of woollen pants, a long linen or woollen shirt, and an overcoat. From the end of the Viking Age, the neck and borders of the latter were decorated with bronze spirals. Around the shins, on top of pants, men could have worn puttees; in the male burials at Raatvere, these were also adorned with bronze spirals. Male dress also included a leather belt, which was fastened with a buckle and contained a bronze chape at its other end. More impressive belts, probably primarily sword belts, were decorated with bronze or silver mounts. Various objects, for instance a belt-bag or a sheathed knife,

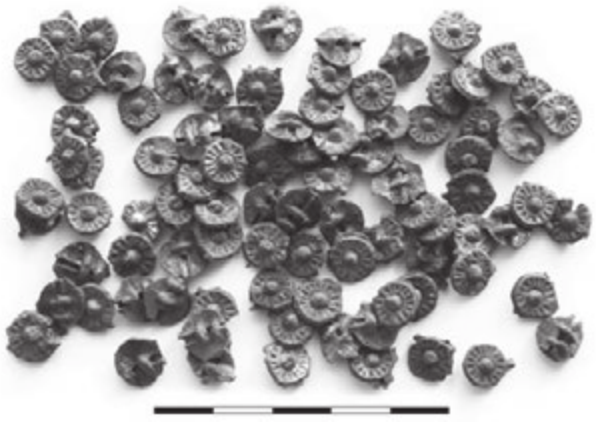


Fig. 149. *Tin plaques from the Pühaste hoard (AI 3667: 83; photo: Kristel Külljastinen).*

could be attached to a belt. A fire-steel could also hang from a belt with the help of a chatelaine.

As in neighbouring countries, Estonian women's clothing most likely included a linen or woollen shirt, which was covered with a long woollen shirt-like coat without skirts or sleeves. In the summer or in warm rooms, women possibly wore only a shirt, and in colder weather they could have worn several shirts. The coat was sometimes replaced with a wrap-skirt: a quadrangular piece of cloth that was wrapped around the waist and secured with a textile belt. On festive occasions and in cold weather, women probably wore multiple-layer woollen wraps, the edges of which were decorated with bronze spirals which were woven in or sewn onto the material. The wrap was draped around the shoulders and fastened in the front with a brooch. Livonians' inhumation burials indicate that perhaps sleeved overcoats were also worn. On their hips women wore knitted or leather belts from which they could hang a knife sheath, keychain, etc. Around the legs puttees were possibly worn.

In winter both men and women most likely wore coats and hats made of sheepskins or fur. The remains of footwear are not present in the archaeological record of the period under review. Shoes were most likely made of leather, although bark shoes may have been worn for work and everyday footwear.

At the very end of the Viking Age, clothes began to be decorated with small spiral tubes of bronze wire sewn onto the clothing. This custom was established by the Volga-Finnic and the south-eastern Baltic-Finnic peoples in the 5th–8th centuries. By the final centuries of the Iron Age, festive clothing decorated with intertwined small bronze spirals had become characteristic of all of the Baltic-Finnic peoples. The oldest spiral decoration sewn onto clothing in Estonia, dated to the 11th century, is the spiral intertwining on the edge of a wrap found in the cemetery at Raatvere (Fig. 148). The clothes of Estonians, Livonians, and Finns were mostly decorated with spirals in the 12th–13th centuries (Laul 1985, 415).

During the Viking Age at the latest, clothes also began to be decorated with tin plaques — small cast mounts of tin, which were presumably sewn onto clothing. There is very little information about these, because small tin items that end up in the cultural layer decompose due to the cold weather. Evidence of their manufacture is provided by the moulds with which they were cast: moulds obtained from the forts at Otepää and Rõuge (Fig. 74: 2) were used for the casting of small round tin objects with spokes. Such tin plaques themselves have only been found in two places in south-eastern Estonia — the Pühaste hoard, which based on the remaining components dates from the first half of the 11th century (Fig. 149), and the contemporaneous inhumation burials at Päidla. Round tin plaques with spokes can be considered to be Scandinavian-style clothing decorations, as these have been found in large numbers in the 9th–10th-century layers in Hedeby and Birka. In Rus areas only one mould for the casting of tin plaques is known; it comes from Gnëzdovo and is therefore also connected with Scandinavians, as Gnëzdovo was a Scandinavian settlement (Eniosova 1999).

4.3.6. Development and regional features in jewellery fashion

The design and manner of wearing of jewellery underwent noticeable changes over the more than half millennium examined in this book. Nevertheless, bronze remained the primary material of jewellery throughout the entire period in question; far less silver jewellery has been found, and gold jewellery extremely rarely. A few types of ornaments (e.g. some dress pins and penannular brooches) were made of iron. Sometimes several metals were used: the pins of bronze or silver brooches, for instance, were made of iron, and the heads of iron or bronze dress pins and the rings of iron penannular brooches were decorated with wrappings of copper or silver wire (e.g. Figs. 95: 1–3; 100: 2; 101). Silver plating was sometimes used to decorate bronze jewellery, and silver jewellery was sometimes gilded. Pendants and dress pins were made of both metal and bone, and beads were made of glass and clay.

The Migration Period is characterized by bow fibulae, more specifically later forms of crossbow fibulae (with a recurvate foot and annulate decoration, with a simple cast catch-plate, or with a star- or shovel-shaped foot). This period is also characterized by various small pins which were worn singly as well as in combination with a chain. The most numerous pins were bronze pins with conical heads (in western and northern Estonia) and crutch-shaped iron pins (in southern Estonia). In northern Estonia disc-headed pins, a local type of dress pin, were worn at that time. Various bracelets with midribs and thickening ends became fashionable, and finger rings were also worn. The main neck rings had thickening overlapping terminals with a round cross-section and ribbed design, which have been found in both hoards and graves. The bead chains of the Migration Period, worn by women, usually contained only a few beads, mostly of blue glass; small spirals from bronze wire and tubules from sheet silver were also worn as beads. In coastal Estonia agraffes were used, which were characteristically Scandinavian dress-fasteners; they were mostly decorative and served also as ornaments. Based on the Scandinavian analogies, one can presume that agraffes were primarily part of men's clothing. Various sumptuous mounts of Scandinavian origin and the majority of buckles also presumably originate from men's belts.

The Migration Period is represented by relatively numerous types of ornaments, as well as ornaments made of precious metals. The richly furnished graves of this period (e.g. Proosa and Lepna) contain much more silver jewellery than do graves from the Roman Iron Age; there are also a few gold items and jewellery decorated with gold. Generally, however, jewellery fashion continued the traditions of the Roman Iron Age and mainly followed the example of the jewellery fashion of the Balts. The ornamentation of jewellery is clearly distinctive of this period. One characteristic motif is that of an embossed dome surrounded by a circle. This has been derived from precious stones and drops of glass attached to jewellery, crowns, chests, etc. The use of precious stones and glass on jewellery spread in Germanic jewellery art from Roman and Greek cultural spaces (Sarvas 1973).

Far fewer items of jewellery are known from the Pre-Viking Age and the first century of the Viking Age. This is presumably a result of the overall shortage of Pre-Viking Age sites. No inhumation burials with grave goods from that period have been found, and there is a shortage of other jewellery sets that could be considered to be closed finds.

The crossbow fibulae, which had entered into use in the Roman Iron Age, disappeared once and for all by the Pre-Viking Age. Penannular brooches appeared in the 8th century, the earliest of these made of iron, but as of the 10th century they were mainly made of bronze, and less often

of silver. Thin concavo-convex bracelets, presumably of Finnish origin, are characteristic of the era, especially in the coastal region. On bead chains, blue glass beads were supplemented by polychromic glass beads. The most notable component in the jewellery sets of both men and women were dress pins, more impressive and larger than before; ring- and triangular-headed pins and pins in the shape of a shepherd's crook with wire wrapped around the head were worn. A separate phenomenon that is characteristic of the Pre-Viking Age and the beginning of the Viking Age is the presence of large ring- and triangular-headed dress pins onto which a chain with decorative plaques and a tweezer pendant or a tweezer-shaped pendant were attached. Such items were used in northern and western Estonia and in Finland. Every known pin of this type along with the attached pendants is unique. These pins were presumably men's status symbols.

Alongside the rings and circles that were the main ornamental elements used in the Migration Period, rows of small triangles appeared on jewellery in the 7th–8th centuries. Triangular stamp impressions were initially miniature and deeply impressed, but later became larger, and raised knobs appeared at their centre. Triangles with three or more knobs were most likely introduced on Estonian jewellery in the 10th century, but the heyday of this so-called wolf-tooth design was during the 11th–13th centuries (Mägi-Lõugas 1995a, 313f.).

There is more information about how and what items of jewellery were worn in the second half of the Viking Age (in the 10th century and the beginning of the 11th century). A jewellery set of wealthy women from the Viking Age included a necklace of beads and pendants, and often also one or more neck rings. Bracelets were common items of jewellery. The fact that these were indeed constantly worn, and were not only placed in the grave as grave goods, is demonstrated by the traces of wear on the bracelets. Wraps and shirt collars were fastened with penannular brooches. The most impressive item of jewellery was a breast chain, which was attached at the shoulders with pins. Pendants and rumbler bells were probably worn on the chain. Rings were also worn, primarily spiral or double spiral rings. At the end of the Viking Age, knife sheaths decorated with sheet bronze entered into use, and these can also be considered to be jewellery.

Viking Age men wore penannular brooches as jewellery and as clothing fasteners; those of more important men were larger and decorated with silver. In contrast to the Scandinavian Vikings, Estonian men wore many rings and bracelets. Whereas the Balts had special bracelets for warriors, in Estonia the graves of men and women contain the same bracelet types (only spiral bracelets are never found in men's graves).

Throughout the entire Viking Age, one can observe a continual increase in the quantity of items of jewellery; the jewellery itself, for instance brooches, pins, and bracelets, also grew larger. Whereas during the Roman Iron Age and Migration Period a common breast chain was just one chain between two small pins, by the end of the Viking Age large and heavy breast chains with several rows of chains and numerous details (chain-holders, spacers, pendants) had appeared. Similar tendencies — the increase in the number of ornaments and the diversification of ornament types — are noticeable in neighbouring areas, for instance in the jewellery fashion of the Latgalians (Vilcāne 2003, 127).

Although the majority of jewellery types spread throughout Estonia, two regions with clearly distinctive features become evident through jewellery fashion during the entire Middle Iron Age and Viking Age, which may broadly be referred to as coastal and inland Estonia (see also 7.6).

During the Migration Period, western and northern Estonia (Saaremaa, Läänemaa, Harjumaa, Virumaa, and the northern part of Järvamaa)

formed one area of jewellery tradition, and the other consisted of central, eastern, and southern Estonia (southern Järvamaa, south-eastern Pärnumaa, Viljandimaa, Tartumaa, Võrumaa, and Setumaa). Items of jewellery that were characteristic of the coastal region in that period were ribbon-like bracelets with a plano-convex cross-section and thin bracelets with a midrib. Ornaments and parts of clothing of Scandinavian origin were also distinctive features of this region. Disc-headed pins and holeless pins with a reeled head were jewellery types common only in northern Estonia. Pins with flat triangular heads were characteristic of Saaremaa and Läänemaa. While most of the Migration Period jewellery found in Estonia has been uncovered in burial sites of coastal Estonia, inland Estonia is much poorer in this respect, and as a result it is more difficult to reveal the distinctive features of the jewellery fashion of those regions. Crutch-shaped iron pins can be regarded as primarily characteristic of Migration Period inland Estonia. No such types of jewellery that were worn only in southern and eastern Estonia are known to have existed.

In the Pre-Viking Age and in the 9th century, the jewellery style of coastal Estonia was characterized by the wearing of diverse, often large, dress pins. Large ring-headed pins and shepherd's crook pins have been found, with the heads often wrapped with bronze or silver wire. Pins with triangular heads came into fashion. Several items of jewellery of Finnish origin, for instance concavo-convex bracelets with flaring terminals and crayfish fibulae, have been found in northern Estonia. Northern Estonia is similar to Finland in the Pre-Viking Age also in the use of Permic belts from far in the east, as demonstrated by the exotic belt mounts found in the stone graves at Proosa and Ojaveski. The quantity of jewellery found inland, however, is still so small that it is difficult to characterize the jewellery fashion of those regions. It appears that a greater diversity of pendant types were worn by people inland than by those of the coastal region: bell-shaped and trapezoid bronze pendants were characteristic mainly of inland Estonia.

In the second half of the Viking Age, i.e. the 10th century and the beginning of the 11th century, the jewellery fashion of Virumaa began to resemble more closely that of eastern and southern Estonia. The inland jewellery fashion spread during that time in Virumaa, northern Tartumaa, Viljandimaa, and south-eastern Estonia. Jewellery characteristic of the eastern parts of the land was also predominant in north-western Estonia and in Järvamaa, although the influence of western Estonia is visible.

In the second half of the Viking Age, inland jewellery fashion was characterized by double crosshead pins, neck rings with overlapping flattened terminals, neck rings with a flat central section and a hook-and-eye clasp, penannular brooches with prism-shaped terminals, concavo-convex bracelets with a plait motif, and various bone pendants. Of the jewellery worn at that time on the island of Saaremaa and in Läänemaa, triangular-headed pins stand out most notably; in Saaremaa a specific variant of such pins developed. Bracelets were worn less commonly in Saaremaa and in Läänemaa than elsewhere in Estonia. Of penannular brooches, those with funnel-shaped terminals were characteristic of Saaremaa. In contrast to the rest of Estonia, in Saaremaa, composite neck rings of the Baltic style were worn. The distinctive feature of that region's jewellery style was the presence there of individual items of jewellery of Scandinavian origin, above all from Gotland.

Regional differences in jewellery fashion can partly be explained by different foreign contacts. In the Migration Period, jewellery of Scandinavian origin (agraffes, various mounts, buckles) spread in coastal Estonia. In the Pre-Viking Age, contacts with south-western Finland appeared primarily in northern Estonian jewellery fashion (ring-headed pins with pendants, tweezer-shaped and tweezer pendants, concavo-convex bracelets,

crayfish fibulae). During the Viking Age, the jewellery fashion of Saaremaa possessed similar features to that of Gotland, Courland, and territories of Livonians, but was nevertheless clearly distinguishable. Various bone pendants have been found in south-eastern and eastern Estonia (comb-shaped and bird-shaped; made of a beaver's astragalus), which point to cultural contacts with eastern Finno-Ugrians up to the upper reaches of the Volga River. The distribution of neck rings with overlapping terminals in south-eastern Estonia indicates communication with the Latgalians. The proximity of Novgorod and Pskov apparently had an influence on the jewellery fashion of southern and eastern Estonia in the late 10th century and the early 11th century. One may presume that some jewellery, especially those pieces manufactured in a very uniform manner in large batches (e.g. rumbler bells with grooves underneath and spiral finger rings with a broad central wind) and higher-quality jewellery pieces (some of the breast chains), was made in those urban centres.

It must nevertheless be emphasized that most of the jewellery used in the Middle Iron Age and Viking Age in Estonia originates from or is based on models from the south, i.e. the area inhabited by the Balts. All of the types of crossbow fibulae and dress pins that were used in Estonia originate from those regions, as well as most types of penannular brooches, finger rings, bracelets, and neck rings. The custom of wearing bell-shaped and trapezoid pendants was also adopted from the Baltic peoples.

Jewellery has been considered to be an ethnic marker. Areas that can be regarded as uniform territories or peoples usually show a clearly distinctive jewellery fashion. In Scandinavia during the period in question, there are clearly visible differences between the jewellery of Norway, Denmark, and eastern Sweden. Finland became a region with distinctive jewellery from the Pre-Viking Age onwards. Noticeable differences are visible in the jewellery fashions of the Baltic tribes. On the lower reaches of the Daugava River, a distinctive Livonian material culture arose by the end of the Viking Age; its jewellery fashion combined Baltic, Baltic-Finnic, and Scandinavian elements.

Although many types of jewellery spread to Estonia from areas inhabited by the Baltic peoples, not all items of jewellery that were widespread among the Balts were adopted. Whereas the Balts wore various crown-shaped headdresses, that type of jewellery did not become popular in Estonia. The only headdresses that were commonly worn here were headscarves and pins for fastening them. In Latvia and Lithuania there are also types of brooches, bracelets, and neck rings that were never adopted in Estonia. One can also observe a clear regional or ethnic characteristic in the way breast chains were worn in countries around the Baltic Sea. Latgalian women wore breast chains using small yokes that passed behind their necks, the Livonians, Finns, and Karelians hung the chains from both shoulders using an oval fibula, but in Estonia the chain was attached at both shoulders with pins. The boundaries are not clearly delineated, however, and identical objects can be found in different cultural areas.

4.4. Weapons and riding gear

4.4.1. Weapons

In the 5th–11th centuries the same types of weapons were used in Estonia as in the rest of the Baltic Sea area. Most of the weaponry was of Scandinavian origin, or imitated Scandinavian types, although on the eastern shore of the Baltic Sea and in Gotland the weaponry sets were somewhat different from the west. Another innovative region with regard to weaponry was the

area of the Baltic peoples. While the inhabitants of Finland and Baltic lands used some original types of weapons, no local types of weapons have been found in Estonia.

Most of the weapons of the Middle Iron Age and the Viking Age have been found in graves, less in hoards and as stray finds, and even less in forts and settlement sites. The majority of the weapons of this period have been found in northern and western Estonia, which can largely be explained by the fact that in central and southern Estonia, few graves are known or have been studied. Also, the Estonian weapon finds are distributed very unevenly chronologically — few of the weapons date from the Migration Period or the Pre-Viking Age, while the weapons of the Viking Age, especially from the 10th and the early 11th centuries, are numerous. The vast majority of the weapons dated to the Migration Period have come from a few sites, for instance the burial sites at Kirimäe and Proosa and the Rikassaare hoard (Fig. 210).

The present sub-chapter deals with swords, seaxes, spears, bows and arrows, and shields. Also, axes, and possibly also knives, were used as weapons; however, they are generally regarded as multi-purpose implements, and for this reason they were discussed previously (4.2.4 and 2.2.8). Riding gear will be discussed together with weapons because horses were used also in military campaigns, and burial data reveal that weapons and riding equipment were often regarded as belonging together.

4.4.1.1. Swords and sword components

Because of the burial customs of the period, a large number of the prehistoric swords found in Estonia are either fragmentary or deformed. Burial sites yield primarily the components of hilts, while blades are rare. This could well be the result of a custom to place only a part of the item in the grave for the deceased, which was to represent the whole item, while the blade as the most valuable part of the sword remained in the possession of the heirs. Apparently, many swords that had been placed in graves went missing because of tomb raiding, as even a broken sword had some value as scrap metal. The majority of intact Estonian swords have been found as stray finds (Mandel 1991a, 101; 1992, 10).

Sword blades are very difficult to date because they have too few distinctive features and similar blades were used over a long period. However, changes in fashion and region-specific features are clearly manifested in hilts. Unfortunately, the separately found parts of hilts (guards, grips, upper and lower parts of pommels), which are common in graves, cannot usually be classified into a definite type, and neither is their more precise dating possible. Dating of the swords found in Estonia is further complicated by the fact that in some cases the hilts are much more recent than the blade, and these bear only a general resemblance to the internationally known types. The same hilt types could be used in the case of single-edged and double-edged swords alike.

Until now no intact sword of the Migration Period, or even an intact hilt, has been found in Estonia; only a few blade fragments and hilt parts have been found from that period. At present, intact swords of the Pre-Viking or the Viking Age total in 13 in Estonia. These are complemented by 15 intact hilts the type of which can be determined, and at least seven sword blades without hilts that could be dated to the period from the 7th to the early 11th century on the basis of an inscription or the find context. In comparison to the neighbouring countries, these numbers are very small. In Finland, 316 swords of the Viking Age were known by 1985; in Sweden, 186 swords have been unearthed in the counties around Lake Mälaren (Västmanland, Närke, Uppland, Gästrikland, Södermanland, and Dalarna) and about 3000 in Norway (Lehtosalo-Hilander 1985, 6f.).

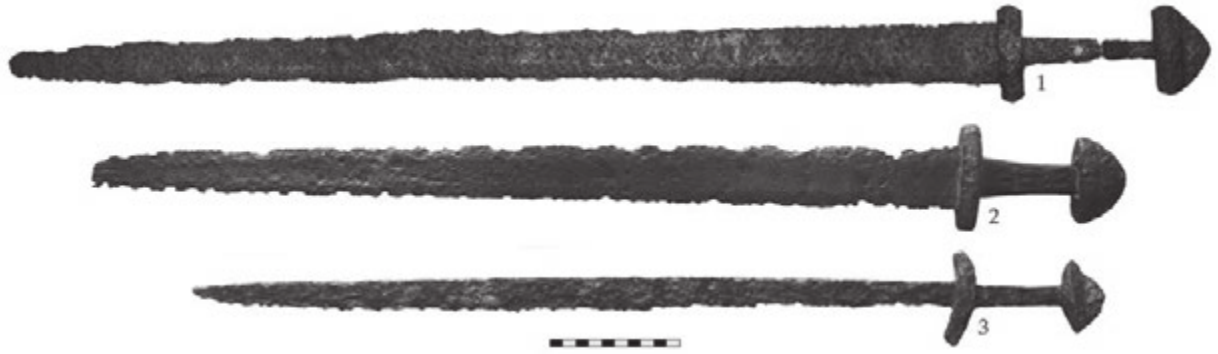


Fig. 150. *Swords: 1 double-edged, with B-type hilt, grave find from Kanama; 2 double-edged, with V-type hilt, stray find from Saaremaa; 3 single-edged, with Z-type hilt, stray find from Suure-Jaani, Viljandimaa (AM A 67: 16; AI K 85, 108; AI 2643: 109; photo: Kristel Külljastinen).*

Most swords of the Pre-Viking and Viking Ages were unearthed in northern and western Estonia. Of the 35 previously mentioned finds (i.e. intact swords, intact hilts, and dated blades without hilts) 16 were uncovered in the area of Harjumaa and Virumaa, 14 in Saaremaa and Läänemaa, and only two swords were found elsewhere in Estonia (in the inhumation cemeteries at Õvi near Tartu and at Raatvere near Lake Peipsi). The precise find sites of the other three swords remain unknown. The uneven distribution of sword finds could be partly explained by the fact that more graves of this period are known and have been excavated in northern and western Estonia than elsewhere in Estonia. On the other hand, one might suppose that due to overseas trade, more swords probably reached the coastal areas than the interior.

The swords of the 8th–13th centuries in Estonia have been thoroughly studied by Mati Mandel, and the treatment below is largely based on his work (Mandel 1991a; 1992).

Single-edged swords were uncommon in Estonia. The largest number of such swords has been found at Salme, Saaremaa, where boat grave I of the second half of the 7th century or the beginning of the 8th century (see 6.1.7) yielded two single-edged swords 108 and 74.5 cm in length (Konsa *et al.* 2008). It is likely that the warriors buried at Salme were not local people but of Scandinavian origin. Unlike in Estonia, single-edged swords were common in Scandinavia in the 7th–8th centuries (Nørgård Jørgensen 1999). Only two more single-edged swords are known from other places in Estonia — a stray find from Suure-Jaani, northern Viljandimaa (Fig. 150: 3), and a sword with an unknown find site (AI 3136). Judging by the hilts, these swords have been dated to the 10th century or the first half of the 11th century (Mandel 1991a, 123).

The long *double-edged swords*, which were common in Europe in the Early Middle Ages, developed from *spatha*, a sword type of ancient Rome. It was mostly used by Germanic mercenaries who were hired to defend the frontiers of the empire (Marek 2005, 10). Such double-edged swords were a weapon of cavalrymen. After the collapse of the Roman Empire this sword type spread rapidly all over northern Europe.

The Migration Period burial at Kirimäe, Läänemaa, contained fragments of the blades of five double-edged swords (Mandel 1992, 19). The earliest intact blades of a double-edged iron sword were unearthed from the 7th-century stone grave of Lehmja-Loo III in Harjumaa (Lõugas 1973, 124, 129, fig. 5: 1), and the Kunda I hoard of the 6th–7th centuries, found in Virumaa (Mandel 1985, 82; 1992, 129).

Fig. 151. *Sword with V-type hilt and an inlaid iron inscription, a stray find from Saaremaa (AI K 85: 120; Ebert 1914, fig. 6).*

Most of the blades of double-edged swords in eastern Europe in the 7th–11th centuries originated in western Europe. Most experts believe that they were made in weapon workshops of the Rhine region and in the area of modern-day France, which produced them mostly for export. The blades of the double-edged swords found in Estonia measured (without the tang) 64.5–98 cm in length and 4.3–6.3 cm in width (Fig. 150: 1–2). Along the midsection of the blade was a shallow groove on both sides — the fuller or 'blood groove' — the purpose of which was to reduce the weight of the blade. The sword blades of the 7th–9th centuries are usually pattern-welded, which means that steel layers of different composition were forged together when making the blade.

The blades of at least six Viking Age swords found in Estonia bear an inlaid iron inscription *VLFBERHT* (Fig. 151), and a sword unearthed as a stray find in the surroundings of Tori in Pärnumaa (AI 2635: 1757) bears the inscription *LEUTLRIT*. The large number of *Ulfberht*-blades found throughout northern and eastern Europe indicates that these swords were not forged by a single swordsmith. Rather, the name of this weaponsmith likely had been used on blades made by his colleagues and descendants at some workshop in the Rhine area. Mostly through Scandinavian merchants, these blades spread all over northern and eastern Europe, and a large proportion of the sword blades were supplied with hilts in Scandinavia (Mandel 1991a, 124).

A sword discovered as a stray find at Vatku, Virumaa, which based on the hilt is dated to the 9th century, bears on one side three stripes and two S-shaped marks, and on the other side a cross and some characters that resemble Latin letters (Fig. 152). The latter have been interpreted as the letter combinations IC + CI, an abbreviation of IESUS CHRISTUS, CHRISTUS IESUS (Drboglav 1984, 114). Another contemporaneous sword discovered at the village of Lepna-Taaravainu, Virumaa, features on one side an omega-shaped mark and the other side has a St. Andrew's cross and some stripes (Lääne & Selirand 1979, 62).

The hilt of a sword consisted of a guard, a grip made of wood, bone, leather, or metal attached to the tang, and a pommel, the latter possibly being composed of several parts. The pommel was

Fig. 152. *Characters on the blade of the sword found as a stray find from Vatku, Virumaa (RM 2397; Lääne & Selirand 1979, fig. 4).*

Fig. 153. *Migration Period sword pommels from graves: 1 Proosa; 2 Paju (TLM 14335: 18; AI 4868: 191; photo: Andres Tvauri).*

often massive to help to hold the hilt firmly and to balance the sword. The guard and the pommel of the swords of the second half of the first millennium that have been found in Estonia were, as a rule, made from iron and rarely from bronze, and the hilts of more luxurious swords were decorated with silver or gold. Also, there are at least seven Pre-Viking or Viking Age sword blades found without any hilt remains. These swords may have had bone or wooden hilts, although one cannot exclude that metal hilt parts may have been lost during the burial ritual or later. Of the swords of the 10th–11th centuries found in Scandinavia, as many as 39% lack hilts or parts thereof (Jakobsson 1992, 45–49). Also, the Finnish cemeteries of the Viking Age have yielded numerous sword blades or their fragments without any hilt parts (Lehtosalo-Hilander 1985, 6).

Few pommels of the Migration Period have been found in Estonia. Most of them are *triangular pommels*. An iron triangular pommel was unearthed at the fort at Peedu, Tartumaa (Moora 1939, 114, fig. 69); similar finds in eastern Europe and in Finland suggest that it dates from the 6th century (Mandel 1985, 82). The most stylish, ornamented, and gilded triangular pommel was found in the stone grave-field at Proosa, not far from Tallinn (Fig. 153: 1). A similar but badly preserved pommel was found in Presti grave at Rebala, also near Tallinn. The gilded triangular pommels come from the so-called ring swords, which have a decorative ring attached to the lower part of the pommel; such swords were common in Scandinavia and in Finland. No intact hilts of ring swords or even parts of pommels with a ring have been found in Estonia.

A *pommel with animal-head tips* was unearthed in the mortuary site of Paju, Saaremaa (Fig. 153: 2). Such items have been more numerous among Danish bog finds and burials of the Late Roman Iron Age and Migration Period. At least a few similar pommels have been found in southern Norway, as well as one in Bornholm, one in Öland, and one in southern Germany (Menghin 1983, map 1).

The hilts in northern Europe of the 8th–13th centuries are usually classified in accordance with the typology of hilts worked out by Jan Petersen (1919). This hilt typology covers 26 types (marked by letters) and 20 sub-types (marked by numbers) based on Norwegian finds. Although Petersen worked out his typology on the basis of a single region and almost one hundred years ago, it is still used, though with some additions, in Scandinavia, Finland, and the Baltic countries (e.g. Lehtosalo-Hilander 1985; Mandel 1991a; Jakobsson 1992; Kazakievičius 1996). The hilt typology of the British Isles (Wheeler 1927; Oakeshott 1960) cannot be adapted to the Estonian material, as most of the local hilts do not fit into any types by Wheeler and Oakeshott. On the other hand, almost all the Estonian sword hilts of the 8th–13th centuries can be fit into Petersen's typology. The Pre-Viking and Viking Age sword hilts found in Estonia represent types A, B, E, H, I, S, V, X, and Z according to Petersen's typology.

A *sword hilt of type A* together with fragments of single-edged blades was found in boat burial I at Salme (Fig. 154: 1). Swords with *hilts of type B* total three in Estonia: one was found from the Paluküla hoard in southern Harjumaa, and two in the vicinity of Tallinn, at the inhumation burial near Kanama (Fig. 150: 1) and at the settlement site at Lehmja, respectively. This hilt type dates from the late 8th century (Mandel 1991a, 102; 1992, 21). Only one sword with a *hilt of type E* has

Fig. 154. *Hilt types of Pre-Viking and Viking Age swords: 1 Petersen's A-type, Salme I, grave; 2 I-type, Paluküla, hoard; 3 H-type, Paluküla, hoard; 4 X-type, find place and context unknown; 5 Z-type, Õvi, grave (SM 10601: 288; AI 2483: 58; 2483: 56; 2612: 1; 3790: 1; photo: 1 Marge Konsa, 2–5 Kristel Külljastinen).*

been uncovered in Estonia, in the subterranean cremation burial at Püssi, Virumaa; however, some hilt parts of this type have also been found separately at other sites (Mandel 1991a, 114; 1992, 22). Petersen (1919, 79) dated this hilt type to the 9th–10th centuries.

Only one sword with a *hilt of type I* has been found in Estonia, in the Paluküla hoard in Harjumaa (Fig. 154: 2). This hilt type was common in western Europe and Finland in the 7th–8th centuries (Mandel 1991a, 102; 1992, 21). Eight swords or intact *hilts of type H* (Fig. 154: 3) have been found in Estonia, complemented by numerous hilt parts (guards and pommel parts), mainly from the hoard found at Järve, Virumaa. This hilt type spread mostly in Scandinavia, Finland, and Rus in the 9th–10th centuries. The Estonian hilts of type H date from no later than the 9th century (Mandel 1991a, 114; 1992, 21). Types H and I are so similar that sometimes they are regarded as a single type H-I (e.g. Lehtosalo-Hilander 1985).

The *hilts of type S* have been dated to the 10th century and the beginning of the 11th century (Mandel 1991a, 115; 1992, 22). Only one intact sword with a hilt of type S has been found in Estonia (AI 3131); its find site is unknown. However, several separate pommels and guards of hilts of this type have been found. Five swords or intact hilts of *type V* are known, two from Saaremaa (Figs. 150: 2; 151), two from continental western Estonia, and one from the cemetery at Raatvere, Virumaa; in addition, some hilt parts of this type have been discovered. Such hilts are dated to the later 10th and the earlier 11th century (Mandel 1991a, 118; 1992, 22). The *hilts of type X* and *type Z* are dated to the same period (Mandel 1991a, 119; 1992, 22).

Hilts of type X are represented by two swords in Estonia — one as a stray find from Kaersoo, Harjumaa (AI 4888), while the find site of the other one (Fig. 154: 4) is unknown. Seven swords with hilts of type Z have been found; in addition, there are some hilt parts from a few sites. Most of the swords with hilts or separate hilts of type Z have been uncovered in Saaremaa or Läänemaa, the only exceptions being a sword from the inhumation burial at Õvi not far from Tartu (Fig. 154: 5) and the above-mentioned single-edged sword from Suure-Jaani (Fig. 150: 3).

Judging by the written, pictorial, and archaeological sources, in Germanic culture the sword was the weapon of utmost ritual and symbolic significance (Jakobsson 1992, 79–83). The same could be true of Estonia. Considering the complicated production technology of sword blades and their foreign origin, the sword was definitely an expensive item. Nevertheless, one can see that along with an increased proportion of swords in weaponry they became less expensive. The simplification of swords over time is a sign of this development. While in the Migration Period and the Pre-Viking Age, sword hilts with highly intricate and detail-rich design, often decorated with gold and silver, were common in Scandinavia and its neighbouring regions, sword hilts of the Viking Age had a much simpler design and gilded hilt parts are rare. While in the 8th–9th centuries the sword blades were often pattern-welded, afterwards this was not the case. In the Final Iron Age sword hilts became rather simple and uniform; this previous luxury item became a consumer item (Mandel 1991a, 125).

4.4.1.2. Seaxes

Seaxes are larger knives that could be used as weapons. Mati Mandel, who studied seaxes in Estonia, regarded seaxes as knives with a blade of over 25 cm in length (Mandel 1977; 1992). Seaxes differ from single-edged swords by the length and shape of the blade — a sword is at least 65–70 cm in length, and the blade is wider and thinner than that of a seaxe (Mandel 1977, 236). Also, the grip of a seaxe is simpler than that of swords, without a pommel or guard, and is usually made of wood or bone.

There is general agreement that the seaxe was brought to Europe by the Huns in the 4th century. In the area of the Baltic peoples in the south-eastern region of the Baltic Sea, seaxes appeared in graves in the mid-5th century (Šimenas 1992, 100), although they were adopted on a larger scale not before the turn of the 5th–6th centuries (Gjessing 1934, 98; Salmo 1938, 156; Nørgård Jørgensen 1999, 44f.). Seaxes were used in Scandinavia, the Baltic countries, and Finland, but were not very common among the Finno-Ugric tribes and the Slavs east of the Baltic countries. There is some evidence to suggest that, in fact, seaxes could have been used already before the Migration Period. For example, a large knife with a wide blade and a curved back, which has been dated to the Pre-Roman Iron Age, was found in stone grave A at Jäbara, Virumaa (Lang 2007a, fig. 96: 1). Also, the graves and hoards of the Late Pre-Roman Iron Age and Roman Iron Age in Estonia, Latvia, and Finland have yielded some knives that by their size could be regarded as weapons (Mandel 1977, 238). Such large edged blades could be also used as tools, for example, for cutting brush.

Curve-backed seaxes (Fig. 155: 1–2) are characterized by a rather wide blade tapering towards the point and a slightly arched spine; usually the broadest section is in the middle of the blade. They can reach 40 cm in length. Sometimes the tang features a hilt band of sheet iron for attaching the wooden handle (Fig. 155: 1). Some of the curve-backed seaxes have horizontal grooves on the sides of the blade in the dorsal section (Fig. 155: 2). The Rikassaare find in central Estonia yielded seven broken curve-backed seaxes; they are also known from the stone graves at Jäbara

Fig. 155. *Seaxes of various types: 1 Jäbara E, grave; 2 Kirimäe, grave; 3 Lehmja-Loo III, grave; 4 Otepää, fort; 5 Luige, grave (AI 2604: 63; 2509: 47; 4444: 170; 4036: 57 NW; ÕES 1999: 25; photo: 1, 4 Andres Tvauri, 2, 5 Kristel Külljastinen, 3 Mandel 1977, pl. II: 3).*

and Türsamäe in Virumaa, and elsewhere. They have been dated to the 5th–6th centuries (Schmiedehelm 1955, 103; Mandel 1977, 239; 1992, 4). Similar or rather similar knives were used also in Latvia during the Migration Period (LA, pl. 40: 27). Apparently, those Estonian knives thought to be weapons had been imported from the former Prussian settlement areas in the south-eastern region of the Baltics (Mandel 1977, 239).

Only two *straight-backed seaxes with grooved sides* are known, both from the cremation burial of the Migration Period at Kirimäe (Mandel 1977, pl. I: 2). The better-preserved seaxe measured 28 cm in length. The sides of the dorsal part of the seaxes show three grooves. Mandel (1977, 239) claimed that these knives originated in the East Prussian areas on the south-eastern coast of the Baltic Sea, where similar finds have been made (Engel 1931, 321, fig. 3a). Such seaxes were also used in Lithuania during the Migration Period (Šimenas 1992, 99).

One *seaxe with a broad blade, straight back, and curved edge* was found in the 7th-century stone grave III at Lehmja-Loo (Fig. 155: 3). So far no such finds have been made elsewhere in Estonia. Such seaxes were common first and foremost in Finland, where they dated from the end of the 7th century and the 8th century (Salmo 1938, 139–146). There is also only one *seaxe with a blade broadening towards the point*, found in the hill fort at Otepää (Fig. 155: 4). Such weapons were used by Semigallians, Zhemaitians, and Latgalians in the 7th–11th centuries; especially large numbers of them have been found in Semigallia (Vaškevičiūtė 2007, 219, figs. 6–8).

Thick-backed seaxes with a narrow blade (Fig 155: 5) constitute the most recent type of seaxes used in Estonia. They are characterized by a blade with an almost even width, usually slightly broadening towards the point, and a straight back 0.6–1 cm in thickness. Because of their narrow blade and thick back, these seaxes have a wedge-shaped cross-section. The specimens found in Estonia measure up to 54.5 cm in length; however, in most cases they are 40–50 cm in length. This type is also characterized by the clearly visible sharpening angle, and most examples have longitudinal grooves on the back of the knife. The latter resulted from forging the blade together from several, usually three or even more, different

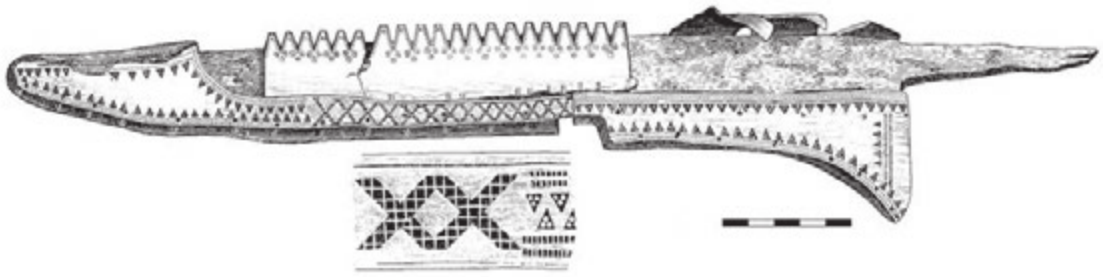


Fig. 156. *Sheathed seaxe from the Laadjala inhumation burial (Aspelin 1884, no. 1957).*

steel or iron layers, wherein the middle steel layer, projecting as the blade, is slightly thinner. Altogether about 50 such seaxes have been found from all over Estonia (with the exception of the south-east) mostly in the context of cremation burials, and they date from the 10th century (Mandel 1977, 240, 243; 1992, 13). At that time similar knives were also common in Mälaren Valley in eastern Sweden, as well as Gotland, Finland, and Latvia (Mandel 1977, 242; Stjerna 2007). As for the European part of Russia, 13 narrow-bladed seaxes were known as of a dozen years ago; as a rule, they were found in graves that yielded items of Scandinavian origin (Artem'ev 1998). The differences between the seaxes of this type found in different regions indicate that they were made locally (Mandel 1977, 243).

Most seaxes have been unearthed from cremation burials, and therefore it is not known how they were worn. One notable exception was the seaxe found at Laadjala, Saaremaa, in an inhumation burial in which the narrow-bladed seaxe, with a bone handle, was positioned between the knees of the deceased (Holzmayer 1868, 12; Fig. 156). The seaxe of Laadjala is also the only one that was found together with a handle and a sheath (see below, 4.4.1.3). According to Mandel, the seaxe acted as a replacement of a sword, which in the Viking Age was still an expensive weapon restricted in distribution. There is only one known case in Estonia — at Püssi in Virumaa — where a burial revealed both a double-edged sword and a seaxe (Mandel 1977, 243, 249; 1992, 15).

4.4.1.3. Scabbard fittings

In Estonia scabbards are represented only by metal chapes, and even they are few. Apparently, scabbards had other metal fittings and decorations, but it is difficult, if not impossible, to recognize them among the mixed remains of cremation burials. It is possible that some of the previously described belt mounts of the Migration Period (see 4.3.2.3) had actually been decorations of scabbards. Better preserved was the sheath of the Laadjala seaxe.

The scabbards of the Migration Period are represented by *U-shaped chapes*. The chape found in the stone grave-field at Proosa, Harjumaa, had been made from iron (Fig. 157: 1). Rather similar

Fig. 157. *Scabbard chapes: 1 Proosa, grave; 2 Tõnija in Saaremaa, stray find (TLM 13943: 179; AI 2479: 3; photo: 1 Kristel Külljastinen, 2 Andres Tvauri).*

bronze chapes were found in stone grave I at Lagedi, Harjumaa (Spreckelsen 1927, fig. 99), stone grave Varetemägi at Ehmja, Läänemaa (Mandel 1984, pl. XI: 10), and the fort at Peedu, Tartumaa (Moora 1939, fig. 70). The U-shaped iron chape found in the grave of Paju in Saaremaa (Tamla & Jaanits 1977, fig. 1: 10) is so small that it could have been part of a knife sheath. Similar chapes were used in Gotland and Finland during the Migration Period and also later (Kivikoski 1973, nos. 293–294; Nerman 1935, nos. 271–272, 586, 589–591; Pihlman 1990, 72).

In the find assemblages of the Pre-Viking and Viking Ages, scabbard chapes constitute a rare type of find, as only two of them are known, both from Saaremaa. The older one is a U-shaped chape of sheet bronze, found in boat burial I at Salme. Tõnija, in eastern Saaremaa, yielded as a stray find an *openwork chape with the image of a falcon* (Fig. 157: 2), cast in bronze and dating from the middle or the later 10th century or the 11th century (Paulsen 1953, 17–34, 142).

The 10th-century seaxe of Laadjala (see 4.4.1.2) was in a leather sheath, which had sheet bronze edging at the end and at the seam, the bronze decorated with punched notches, triangles, and zigzags (Fig. 156). One side of the sheath featured a separate decoration of sheet bronze, with one edge resembling saw teeth.

4.4.1.4. Spearheads

The spear was the most widespread weapon throughout the Iron Age. Mostly it is the spearheads that survive while fragments of shafts are extremely rare. Spears are divided into thrusting spears and throwing spears (javelins), distinguished from one other mostly by their weight and dimensions. Such a distinction between types is not always possible as several types of spearheads include both large and small specimens. Various barbed spearheads in the find assemblages of the Middle Iron Age can be viewed as representing mostly throwing spears. Graves of the Viking Age sometimes contain two spearheads of the same type but of different sizes, which possibly represent a thrusting spear and a throwing spear. Spears were used both as fighting and hunting weapons although there is no evidence that could enable one to relate some spearhead type of the Middle Iron Age or the Viking Age to only war or hunting.

Although in Estonia, as in neighbouring countries, spears constitute the most common type of weapon, no general overview of Estonian spearheads has been attempted. There are only some specialized studies of certain types of spearheads or their manufacturing or decorating methods (Anteins 1962; Selirand 1974, 109–115; 1975; Kuiv 1991a; Mägi-Lõugas 1993; Creutz 2003). Consequently, there is no generally accepted or consistent typology to describe Estonian spearheads. The following classification of spearheads of the Migration Period and the Pre-Viking Age is based on the various studies performed previously (e.g. Salmo 1938; Mandel & Tamla 1977; Pihlman 1990); where necessary, some types will be defined more precisely, and some new types will be suggested. The spearheads of the Viking Age and some of those of the Pre-Viking Age can be described by means of Jan Petersen's typology of spearheads, which encompasses altogether twelve types (Petersen 1919). Some other typologies have been suggested (Kirpičnikov 1966; Selirand 1975; Solberg 1984), but Petersen's typology, in a refined and supplemented form (e.g. Lehtosalo-Hilander 1985; Creutz 2003), is the most widely used.

Spearhead types are mostly defined according to the shape of the blade. Another important feature is the part with which the spearhead was attached to the shaft — either a hollow tubular socket or a tang. Among the Estonian spearheads of the Middle Iron Age and the Viking Age, socketed spearheads form an overwhelming majority.

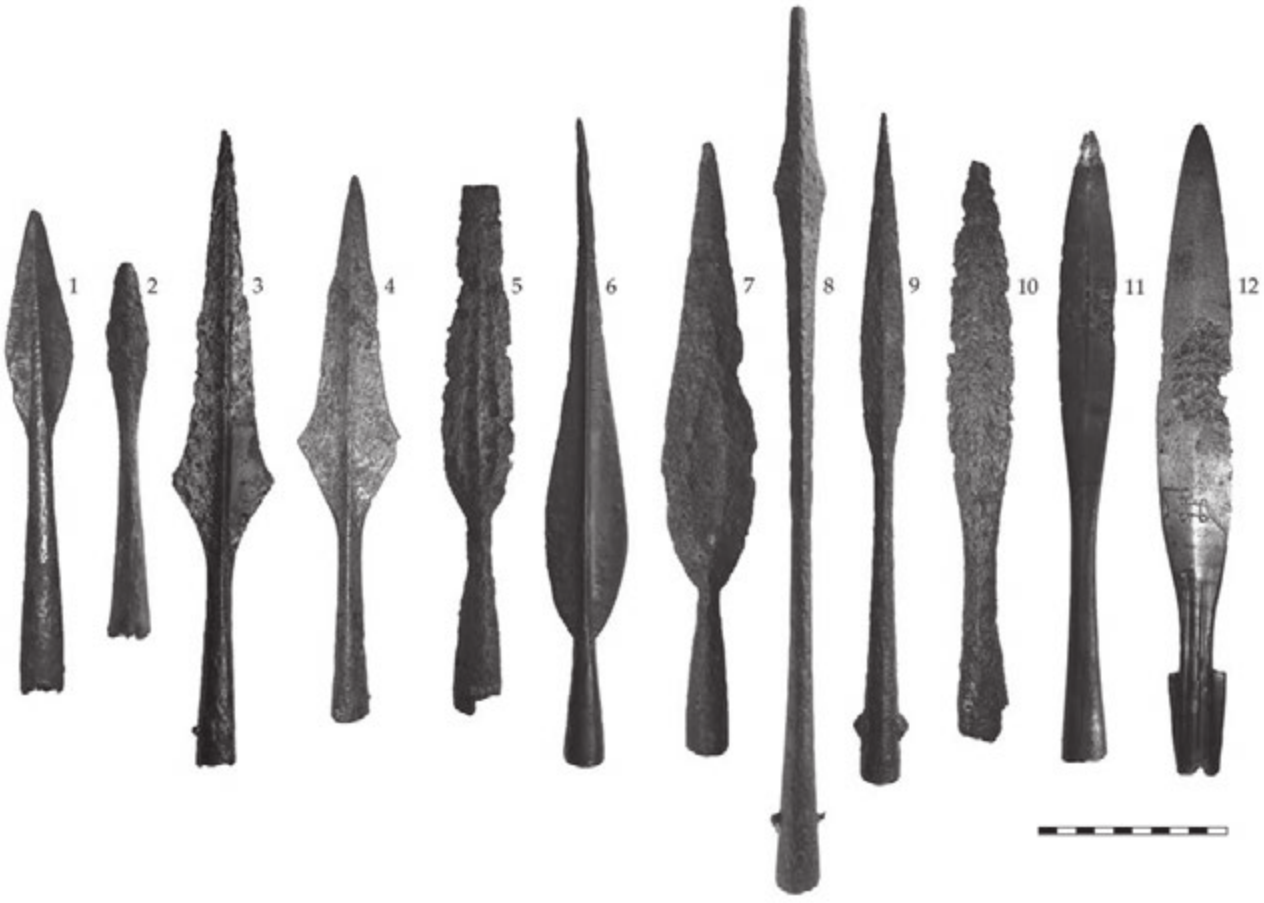


Fig. 158. *Migration Period and Pre-Viking Age socketed spearheads of different types: 1–2 Kirimäe, grave; 3 Esna in Järvamaa, stray find; 4 Haljava in Harjumaa, stray find; 5, 10 Paluküla, hoard; 6–7 Kurna IA, grave; 8 Lehmja-Loo III, grave; 9 Sõrve, grave; 11 Iilaste in Saaremaa, stray find; 12 Hõbeda in Virumaa, stray find (AI 2509: 74; 2509: 75; AM A 118: 4; AI 2643: 72; AI 2483: 43; AM A 29: 173; 29: 174; AI 4444: 123; AM A 286: 1; AI 2483: 47; SM 7635; AI 2712: 7; photo: 1, 4, 10, 12 Andres Tvauri, 2–3, 5–9 Kristel Külljastinen, 11 Külli Rikas).*

Socketed spearheads with a narrow lozenge blade were predominant during the Migration Period. Such spearheads were found, for instance, in burial sites at Kirimäe in Läänemaa (Fig. 158: 1), Proosa in Harjumaa, and Taadikvere (Kõõre) in northern Viljandimaa; most spearheads of the Rikassaare hoard from central Estonia also represent this type (Fig. 210; Mandel & Tamla 1977, 159). *Socketed spearheads with a pointed-oval-shaped blade* (Fig. 158: 2) were less common. The Rikassaare hoard contained a few such spearheads. This type, with its rather simple shape, was used until the beginning of the Viking Age (see below).

Many spearheads of the Migration Period feature a midrib with a convex or triangular cross-section proceeding along the blade (Fig. 158: 1). A raised midrib is common also in spearheads of the 7th century, but in that case they always have a triangular cross-section. Ridged spearheads were common in Sweden, Finland, and Latvia since the Pre-Roman Iron Age; in the east their distribution

area reaches the basin of the Oka River (Mandel & Tamla 1977, 160; Kazanski 2007, 241).

The range of Pre-Viking Age spearheads is wider. Besides socketed spearheads, tanged varieties were widespread, too. Typical of this period are various long-necked and barbed spearheads. Characteristically, spearheads of the Migration Period and the Pre-Viking Age were decorated by means of bronze domed heads fixed to the rivet that attached the spearhead to the shaft (Fig. 158: 8–9).

Yliskylä-type spearheads are characterized by a socket, extensions in the basal part of the blade, and a midrib with a triangular cross-section. Such finds were uncovered in the cremation burial at Kirimäe and the Kunda I hoard, for instance; also, similar to this type is a spearhead from the Rikassaare hoard (Mandel & Tamla 1977, 160, pl. IV: 4), and stray finds from a field of Esna manor in Järvamaa (Fig. 158: 3) and from Haljava village in eastern Harjumaa (Fig. 158: 4). The Haljava spearhead differs from the other specimens of the same type in that it has a stepwise tapering blade; however, this may not have been the original shape of the item, but a result of sharpening a damaged point. Spearheads of the Yliskylä type were common in central and northern Europe (Solberg 1984, 13f., fig. 6). A similar type was common in Gotland mostly in the second half of the 6th century (Nerman 1969, nos. 555–556, 561–565). In Finland, where this type was named after the cemetery at Yliskylä, Perniö, they were used between the end of the 6th century and the mid-7th century (Salmo 1938, 165, 174; Kivikoski 1973, no. 534). In Lithuania such spearheads have been dated to the 6th–7th centuries (Kazakevičius 1979, 59; Vaškevičiūtė 2007, 216).

Vendel-type spearheads have a socket and a wide oval blade, which is characterized by two deep and wide longitudinal grooves on both sides. Only two such spearheads have been discovered in Estonia, both from the Paluküla hoard, found in Harjumaa (Fig. 158: 5). The type was named after the cemetery at Vendel, Sweden (Stolpe & Arne 1912, pl. XXVIII, fig. 6). Such spearheads appeared in central Europe in the middle of the first millennium, from where they spread to Scandinavia (Gjessing 1934: 45–50). In Finland Vendel-type spearheads were used in the 7th century (Schauman-Lönnqvist 1996).

A *socketed spearhead with a teardrop-shaped blade* has a pointed-oval-shaped blade with the greatest width in the socketward part, so that the spearhead resembles a teardrop; the middle of the blade often bears a midrib with a triangular cross-section. Such spearheads date mostly from the 7th century, as shown by several spearheads of this type found in the stone graves of Lehmja-Loo III and Kurna IA in Harjumaa (Fig. 158: 6–7). One spearhead from Kurna has oval concavities in the middle of the blade on both sides, making the blade thinner in the middle than at the edges (Fig. 158: 7). A spearhead with a teardrop-shaped blade was found as a stray find in a field of Alavere manor in south-eastern Harjumaa (AM A 72: 1).

Socketed spearheads with a narrow lozenge-shaped or a pointed-oval-shaped blade, and a long neck were found, for instance, in the stone grave of Varetemägi at Ehmja in Läänemaa, the stone graves of Kurna IB and Lehmja-Loo III (Fig. 158: 8) in Harjumaa, and the Kunda I peat-bog hoard in Virumaa; there are also a few stray finds. A better preserved spearhead of this type was unearthed at Sõrve village, western Harjumaa, possibly from a destroyed grave (Fig. 158: 9). It is distinctive because of the well-preserved decorative dome heads of sheet bronze at the ends of the shaft-attaching rivets. Also, at least some of the spearheads found in stone grave III at Lehmja-Loo had decorative dome heads. In Finland spearheads of this type are dated to the 7th century (Kivikoski 1973, no. 538), which fits well with the find context of similar spearheads in Estonia.

Socketed spearheads with a short, pointed-oval-shaped blade, which were introduced during the

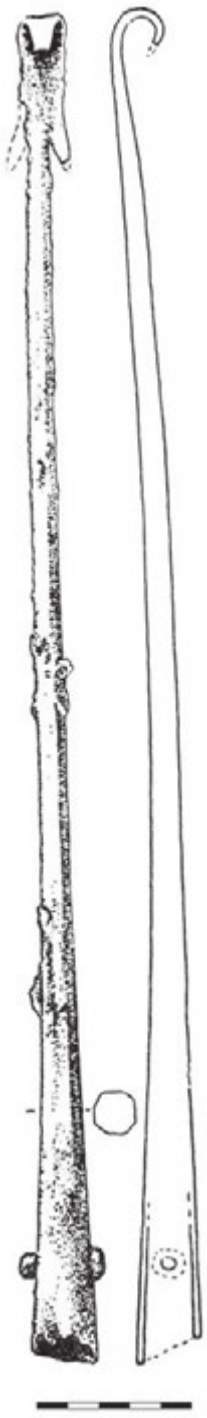


Fig. 159. *Barbed spearhead with an elongated socket from the cairn grave at Lihula (Mandel 1976, fig. 57).*

Migration Period, continued into the Pre-Viking Age. They resemble spearheads of Petersen's type A (Petersen 1919, 22f.), which spread in Scandinavia and Finland mostly in the 8th–9th centuries (Salmo 1938, 248–250; Lehtosalo-Hilander 1982a, 25f.). In Estonia such spearheads were found in boat burial I at Salme in Saaremaa, which dates from the late 7th or the early 8th century, and the Paluküla hoard from Harjumaa (Fig. 158: 10), which had been deposited possibly in the later 8th century. A distinctive spearhead with a longitudinal groove proceeding in the middle of the blade was uncovered as a stray find at Iilaste village, Saaremaa (Fig. 158: 11).

A unique spearhead was found as a stray find in a field at Hõbeda village, western Virumaa (Fig. 158: 12). Its shape resembles Petersen's type B, which is distinguished from type A by two extensions on the socket (see Petersen 1919, 23). However, the extensions of the Hõbeda spearhead are different from the extensions of type B spearheads. Similarities to spearheads of types A and B nevertheless suggest that the Hõbeda spearhead could also be dated to the 8th–9th centuries. This spearhead is exceptional also because its blade shows an incised looped quadrangle. No other prehistoric weapon with this symbol has been found in Estonia.

All *socketed barbed spearheads* are different with regard to the length and shape of their blade. The longest (46 cm) spearhead of this type was found in the cairn grave at Lihula, Läänemaa (Fig. 159). Its affixing nails have decorative domed heads made of sheet bronze, which is a typical decoration of the Migration Period and the Pre-Viking Age (see Sarvas 1973). Spearhead of this type, though with a much shorter socket, were unearthed in the Rikassaare hoard (Mandel & Tamla 1977, 160, pl. V: 2) and the fort at Rõuge; also they have been found as stray finds in several places in Estonia (Fig. 160). In Finland such spearheads are dated mostly to the 5th–7th centuries (Kivikoski 1973, no. 548; Pihlman 1990, 114–121, 144–146). Socketed spearheads with a barbed blade were used in the Roman Iron Age and the Migration Period in Scandinavia, western and central Europe, the territory of the Baltic peoples, and the upper reaches of the Dnieper. Such weapons have also been found east of Estonia up to the upper reaches of the Volga River, an area inhabited by Finno-Ugrians (Pihlman 1990, 144–146; Kazanski 2007, 238–241, fig. 4).

Fig. 160. *Short barbed spearhead from Simuna, Virumaa (AI 2438: 4; photo: Andres Tvauri).*

The *angon* or a *spearhead with a barbed blade, an extended neck, and a stepwise tang* is rather rare in Estonia. Two such spearheads were found in a disturbed burial site at Sõrve, western Harjumaa. Usually, such spearheads are very long — for instance, the intact angon found at Sõrve reaches 60.5 cm in length (Fig. 161). The angon was modelled after *pilium*, a late variant form of the throwing spear of Roman legionnaires, which was common in central Europe. The angon was not very frequent in what today are the Baltic and Scandinavian countries, but it became highly popular in south-western Finland in the 7th and the early 8th century (Salmo 1938, 211f., 218–222; Cleve 1943, 132; Lehtosalo-Hilander 1982a, 39).

Fig. 161. *Angon from the grave at Sõrve, Harjumaa (AI 2643: 83; photo: Kristel Külljastinen).*

The angon had also a short variety of less than 40 cm in length, which was more common in Estonia than the long angon. Such spearheads were found in the burial site at Hinniala and the fort at Rõuge (Schmiedehelm 1959, pl. VIII: 11) in Võrumaa, the Kunda I hoard in Virumaa, and the settlement site at Suure-Kambja in southern Tartumaa (Fig. 162: 1). In Finland they are contemporaneous with the long angon; however, archaeologists have found half as many short angons as long in Finland (Lehtosalo-Hilander 1982a, 39).

Tanged spearheads with a pointed-oval-shaped blade have two main varieties. The simple variety consists of spearheads with an evenly tapering tang, examples of which were found in the fort at Rõuge (Schmiedehelm 1959, pl. VIII: 1). The older spearheads of this type are lighter and have a shorter blade, such as the one found in Presti grave at Rebala, eastern Harjumaa (Fig. 162: 2). Such spearheads have also been found in Finland, where they are regarded as the oldest type of tanged spearheads; the earliest ones are dated to about AD 500 (Kivikoski 1973, no. 311).

The second variety of tanged spearheads with a pointed-oval-shaped blade is characterized by a stepwise tapering tang (Fig. 162: 3–4); in some specimens the thinner part of the tang is twisted. In Finland, where spearheads of this sub-type are common, the designation 'Aspelin 1651' is used, which comes from their number in the illustrated catalogue by Johannes Reinhold Aspelin (1880). One spearhead of this type was found in the burial site at Metste, south-eastern Estonia, where the find context dates it no earlier than to the 11th century. A spearhead of this type also occurred as grave goods in grave VIII at Raatvere from the early 11th century (Fig. 208). In addition to grave finds, spearheads of this type have

Fig. 162. *Pre-Viking and Viking Age tanged spearheads: 1 Suure-Kambja, settlement; 2 Presti at Rebala, grave; 3–4 Koorküla, hoard (TÜ 238: 9; AI 5490: 419; ÕES 1570; 1571; photo: 1–2 Kristel Külljastinen, 3–4 Ester Oras).*

been found in hoards and as stray finds all over Estonia, whereas the shapes of the blade and the tang vary. According to Helmer Salmo (1938, 242), this type evolved from socketed spearheads with an oval blade, as it is much easier to forge a tang than a socket. They are believed to have been used in the 7th–8th centuries in Finland (*ibid.*) and in Semigallia in the 6th–9th centuries (*Žiemgaliai*, nos. 616–620). According to Ain Mäesalu (1992, 20), spearheads with both evenly and stepwise tapering tangs in Estonia were used in the 8th–13th centuries, and criteria have yet to be found that could date them more precisely. Also, in northwestern Rus, both previously mentioned varieties were used until the 12th century (Kirpičnikov 1966, fig. 1). One should point out, however, that no spearheads with a pointed-oval-shaped blade and a tang have been found in Estonia in find contexts that could be dated to later than the first half of the 11th century. In burial VIII at Raatvere, a spearhead of this type was coupled with a massive thrusting spear of type M; thus, one might assume that spears with a stepwise tapering tang were used as throwing spears.

Among the Viking Age spearheads, Petersen types E and M are predominant in Estonia. Spearheads of type A belong partly to the earlier period, but they were still used as late as in the 10th century. There are also some spearheads of types G and K, although the main period of use of these types in Estonia mostly coincided with the Final Iron Age. Petersen's types D and I are both represented with a single find.

According to Petersen (1919, 23), *spearheads of type A* date from the 8th–9th centuries. As noted, spearheads similar to this type had been adopted in Estonia already in the Migration Period, and some are known from the Pre-Viking Age, too. Judging by the find context, however, the two spearheads that were found in burial XIV at Käku, Saaremaa, date from the 10th century (Mägi 2002, 84, pl. 16: 1–2). In Finland, too, several spearheads of this type have been found in 10th-century burials (Lehtosalo-Hilander 1982a, 25f.). This evidence suggests that spearheads corresponding to Petersen's type A have been made and used at the eastern shore of the Baltic Sea longer than in Norway.

Slightly over 60 spearheads found in Estonia belong to Petersen's *type E*, which is characterized by a narrow blade with the shape of a lancet or willow leaf and a smooth transition to the socket (Fig. 163: 1–3). Spearheads of this type were common around the Baltic Sea since the beginning of the 9th century (Kivikoski 1973, no. 853). It is likely that they had evolved from the slightly earlier spearheads of Petersen's type A. Many spearheads corresponding to type E have also been found in Russia, where they are classified as type I according to Kirpičnikov's typology (Kirpičnikov 1966).

The spearheads of type E differ by their design and size. The largest Estonian spearhead of this type (ÕES 132), found without an authoritative find context in Saaremaa, reaches 57 cm in length. At least 18 spearheads of type E found in Estonia have a pattern-welded blade (Selirand 1975, 176). In Scandinavia the majority of such spearheads are pattern-welded, which is not the case in Estonia and Finland, which suggests that the non-pattern-welded spearheads of type E on the eastern shore of the Baltics are of local origin (Lehtosalo-Hilander 1985, 13). The socket of a more distinct sub-type of type E is decorated with deep longitudinal grooves (Fig. 163: 2). At least five such spearheads have been found in Estonia. According to the typology of Bergljot Solberg, they belong to sub-type VI.4B, which was common in the first half of the 9th century (Solberg 1984, 67). A stray find from Kaarma, Saaremaa, represents a spearhead of type E, the socket of which is decorated with a silver damascene inlay (Fig. 163: 3).

Data from the cemetery at Luistari in Finland show that spearheads with an unornamented socket of type E were used until the mid-10th

Fig. 163. *Viking Age socketed spearheads of different types: 1 Petersen's E-type, Tõrvase in Võrumaa, stray find; 2 E-type with grooves on the socket, Saaremaa, stray find; 3 E-type with silver damascene inlay (after Aspelin 1884, no. 1960), Kaarma in Saaremaa, stray find; 4 D-type, Saaremaa, stray find; 5 K-type, Pöide, fort; 6 M-type, Keava, fort; 7 M-type with silver damascene inlay (after Mägi-Lõugas 1993, fig. 2: 2), Rabavere, grave; 8 I-type, Kärneri in Saaremaa, stray find (TÜ 711; AI 132; ÕES 499; AI K 85: 113; SM 9946: 700; AI 2712: 5; AI 3316: 1; AI K 46: 1; photo: 1–2, 4–6 Andres Tvauri, 3, 7–8 Kristel Külljastinen).*

century (Lehtosalo-Hilander 1982a, 26–29). The smaller varieties of spearheads of type E, for example those found in the Iila burial in Virumaa, spread mainly along the eastern shore of the Baltic Sea and were in use later than larger specimens of this type, dating from the 10th century (Mandel 1991a, 115; Mägi-Lõugas 1995b, 519). During its period of use, type E was overwhelmingly the most popular spearhead type — 91% of the spearheads of Mälaren Valley in Sweden in the 9th century and the first half of the 10th century and 84% of Finnish spearheads are of this type (Lehtosalo-Hilander 1985, table 6). In Estonia, too, during the period of their use, spearheads of type E formed an absolute majority by comparison with the other spearhead types.

Type D is close to type E, but differs from the latter in that its socket has triangular extensions (Petersen 1919, 24f.). Only one spearhead of this type is known in Estonia (Fig. 163: 4); it was found in Saaremaa, but unfortunately the precise find location is unknown. It has a pattern-welded blade (Selirand 1975, 175f., no. 204), and is an imported item of Scandinavian origin. Such spearheads were used in the 9th–10th centuries (*ibid.*, 176).

Several sites in Saaremaa have yielded narrow-bladed spearheads that resemble *Petersen's type K*, which were used in Norway during the second half of the Viking Age (Petersen 1919, 32f.). In Saaremaa spearheads resembling type K occur mostly in sites of the Final Iron Age or as stray finds, but some of them, for instance a specimen found in the fort at Pöide (Fig. 163: 5), could be dated on the basis of the find context to no later than the 10th century (Mägi 2002, 85). Because in Sweden type K was the most popular spearhead type at the end of the Viking Age, it has been assumed that the relative abundance of spearheads of this type in Saaremaa might indicate close ties with Sweden (Kuiv 1991a, 18). On the other hand, in the Baltic Sea region, the main distribution area of spearheads of type K is western Courland (see Anteins 1968), and the spearheads of this type in Saaremaa could have originated from there.

Spearheads of type M (Fig. 163: 6–7) are numerous. They are characterized by a long lozenge-shaped blade and a long socket (Creutz 1995; 2003). This type was used in the first half and middle of the 11th century, and is common everywhere in Scandinavia, Finland, Latvia, and north-western Russia (Fig. 173). Slightly more than a hundred such spearheads have been found in Estonia — the largest number in Saaremaa, but many also in Läänemaa and north-western Estonia, somewhat fewer on the western shore of Lake Peipsi. Spearheads of this type show distinct regional features. For instance, the spearheads of type M found in Saaremaa have a lozenge-shaped cross-section, a blade with a high midrib, and bulges in the junction of the blade and the socket. Very few spearheads with such features have been found elsewhere — a reason to assume that they were made in Saaremaa (*ibid.*).

Spearheads of type G have a long and broad blade in relation to the socket; the greatest width is at the basal part of the blade, which is straight. According to Petersen (1919, 29), in Norway these date from the last quarter of the 10th and the 11th centuries. In Finland it was the most common type of spearhead in the later part of the Viking Age, used until the end of the 11th century (Lehtosalo-Hilander 1982a, 15, 34). In Estonia no spearheads of type G have been found in find assemblages entirely of Viking Age date. However, in stone graves of Läänemaa, they occur alongside spearheads of type M (Mandel 1992, 12), which might indicate that in Estonia, too, they could have been used as early as in the first half of the 11th century.

Spearheads of type I, characterized by a narrow blade, a long socket, and rivets for the attachment of the shaft along the socket, are represented by a single specimen in Estonia, which was found at Kärneri village, eastern Saaremaa (Creutz 1996; Fig. 163: 8). Spearheads of this type were rather common in Scandinavia but extremely rare east

of the Baltic Sea (Lehtosalo-Hilander 1985, 14). These spearheads date from the second half of the Viking Age, i.e. the 10th century and the first half of the 11th century (Creutz 1996, 326).

At the end of the Viking Age the spearhead sockets began to be decorated with silver plating, more precisely, with silver damascene. In Estonia, such decorations occur in spearheads of types E, M, and G. True, of the known spearheads of type E only one has been decorated in this way — a stray find from Kaarma, Saaremaa, the socket of which has a geometric ornament formed by lozenges (Fig. 163: 3). However, of the spearheads of type M approximately 45% could have been decorated with silver. At least seven such spearheads feature a Scandinavian animal style silver decoration, which in six cases (incl. Fig. 163: 7) represents the Ringerike style (Creutz 2003, 207). Such spearheads were common mostly in Saaremaa.

Spearheads could have been adorned with textile flags or ribbons. For instance, the spearhead of type M found in grave VIII at Raatvere (Fig. 208) was supplied with a preserved oaken shaft fragment of 8.5 cm in length about a dozen centimetres below the socket as well as a bronze wire with traces of textile around it (Lavi 1999b, 51).

In individual graves of the Viking Age spearheads usually occur in pairs; as a rule, spearheads of the same type, usually E or M, but of different sizes are coupled. There are also some burials in which the grave goods include a single spearhead (e.g. the Mäetaguse inhumation burial and one inhumation burial in the cemetery at Lahepera, see also 6.1.9). However, in these cases it could well be that not all the items that had been placed in the grave reached the archaeological collections. The paired occurrence of spearheads in graves is especially characteristic of burials on the eastern shore of the Baltic Sea and partly in Gotland (Mägi-Lõugas 1995b, 518f.). It is possible that the smaller spearhead was used in a throwing spear and the larger spearhead in a thrusting spear.

4.4.1.5. Arrowheads

So far no arrowheads of the Migration Period have been found in Estonia, while the sites of the Pre-Viking and the Viking Ages have revealed a few of them. The majority of the arrowheads have been found in forts and settlement sites; graves contained arrows only occasionally. All the arrowheads that could be dated to this period (except for one uncertain specimen) had been attached to the shaft by means of a tang.

Arrowheads with a pointed-oval-shaped blade (Fig. 164: 1–2), sometimes called willowleaf-shaped arrowheads (e.g. Lang 1996a, 95), constitute the most common variety in the Estonian sites of the Pre-Viking and Viking Ages. These arrowheads differ in their size and proportions while they are similar with regard to their pointed-oval-shaped or willowleaf-shaped blade, which smoothly proceeds into the tang. The find sites of such arrowheads of northern Estonia include, for instance, the forts of Iru and Tarakallas at Purtse (Fig. 164: 1) as well as the stone grave of Toila I; those of south-eastern Estonia include the forts of Tartu, Unipiha (Fig. 164: 2), Alt-Laari, Otepää, and Rõuge, as well as the fort-settlement of Rõuge. In Saaremaa, the fort at Asva has yielded arrowheads of this type. In Scandinavia such arrowheads were used from the late 4th to the early 7th century (see Lindbom 2006, fig. 61). In Finland they have been found mostly in the find contexts that could be dated to the period AD 600–1050 (Hiekkanen 1978, 71f.). These arrowheads have the simplest shape, and they could have been in use over a very long period indeed.

Arrowheads with a lozenge-shaped blade are very similar to the previous type, or could even be classified into the same type. They have been found in the hill forts at Iru and Otepää, at stone gravefield II at Maidla, and in the inhumation cemetery at Lahepera (Fig. 164: 3). Close counterparts are known from Latvia (Urtāns 1977, 164, fig. 73: 1), Finland (Hiekkanen 1979, 76–78, type 3B IV),

north-western Russia (Nosov 1990, fig. 40: 13), and Scandinavia (Arbman 1940, pl. 12: 2). The find contexts suggest that in Estonia such arrowheads could have been adopted at the very end of the Viking Age, as late as in the 11th century, and they are more common to the Final Iron Age (Mäesalu 1989, 31).

Arrowheads with a teardrop-shaped blade, with their greatest width in the basal part, are similar to the previously described arrowheads. Three such arrowheads were found in the fort and settlement at Rõuge (Schmiedehelm 1959, pl. VIII: 1, 7, 10), and one from the forts at Iru (Lang 1996a, pl. XXVIII: 14) and Peatskivi (Fig. 164: 4) and in stone grave-field of Maidla II (Mandel 1991b, pl. XVIII: 6). This type of arrowhead has been dated to the second half of the Viking Age (Lang 1996a, 95f.).

Arrowheads where the pointed-oval-shaped or lozenge-shaped blade is distinguished from the tang by a clear step were adopted in Scandinavia at the beginning of the Viking Age at the latest (Lindbom 2006, fig. 61). In the typology of Scandinavian arrowheads by Erik Wegraeus such arrowheads constitute type A1 (Wegraeus 1971). It is the most numerous arrowhead type in the Estonian sites of the Viking Age, while no definite specimens are known from the find context to date from the Pre-Viking Age. For example, five such arrowheads were found in the fort and one in the settlement site at Iru, one at settlement site III at Kuusalu, one in the fort at Pöide, two in fort Tarakallas at Purtse, and one in the settlement site at Rõuge. Also, some of them have been found in graves, for example, two from Iila, one from Toila II, and three from Maidla II (Fig. 164: 5). This arrowhead type is very common in Scandinavia and less common in the Viking Age sites of Finland, Latvia, and north-western Russia (Hiekkanen 1979, 118–120; LA, pl. 47: 1; Nosov 1990, fig. 41: 3). Their spread to the east of the Baltic Sea could be associated with Scandinavian raids, since in Russia they occur in those sites that could be associated with the Scandinavians (Mäesalu 1989, 33). In Estonia, too, the distribution of the arrowheads of this type has provided grounds to suggest that they are indicative of the contacts between the coastal forts in northern Estonia and Scandinavian Vikings (Lang 1996a, 94). However, the previously found arrowheads do not definitively demonstrate that the coastal forts had been attacked by the Scandinavians.

Some arrowheads found in Saaremaa (in boat burial I at Salme and the fort at Valjala) and in Läänemaa (stone grave II in Maidla) represent *type C according to Wegraeus* (Fig. 164: 6). This type is characterized by 'wings' that are positioned crosswise with the lozenge-shaped or pointed-oval-shaped blade in the middle part of the arrowhead. Their apparent function was to make the arrow rotate in-flight, thus improving its flight characteristics. The majority of the reported arrowheads of this type have been found in Dalarna County in the interior of Sweden; fewer arrowheads of this type have been found in the interior of southern Norway, and occasional specimens have been reported in Denmark and in Finland (Wegraeus 1971, 24; Lindbom 2006, map 3). Wegraeus dated the arrowheads of type C to the Viking Age (1971, 23–25), but the find made from boat I at Salme proves that arrowheads of this type were used as early as in the second half of the 7th century or at the beginning of the 8th century. The find assemblage of stone grave II at Maidla dates from the 10th–13th centuries (Mandel 2003a, 59), and the finds from the fort at Valjala that can be dated stem from the 11th–13th centuries (Tõnisson 2008, 245). However, it is impossible to claim only on the basis of the arrowhead found at Valjala that the arrowheads of this type were used as late as the Final Iron Age.

Awl-shaped tanged arrowheads (Fig. 164: 7–8) are also of Scandinavian origin, and in the typology of Wegraeus they form type D. In such arrowheads, too, the tang is distinguished from the slender blade by a step. Wegraeus divided arrowheads of

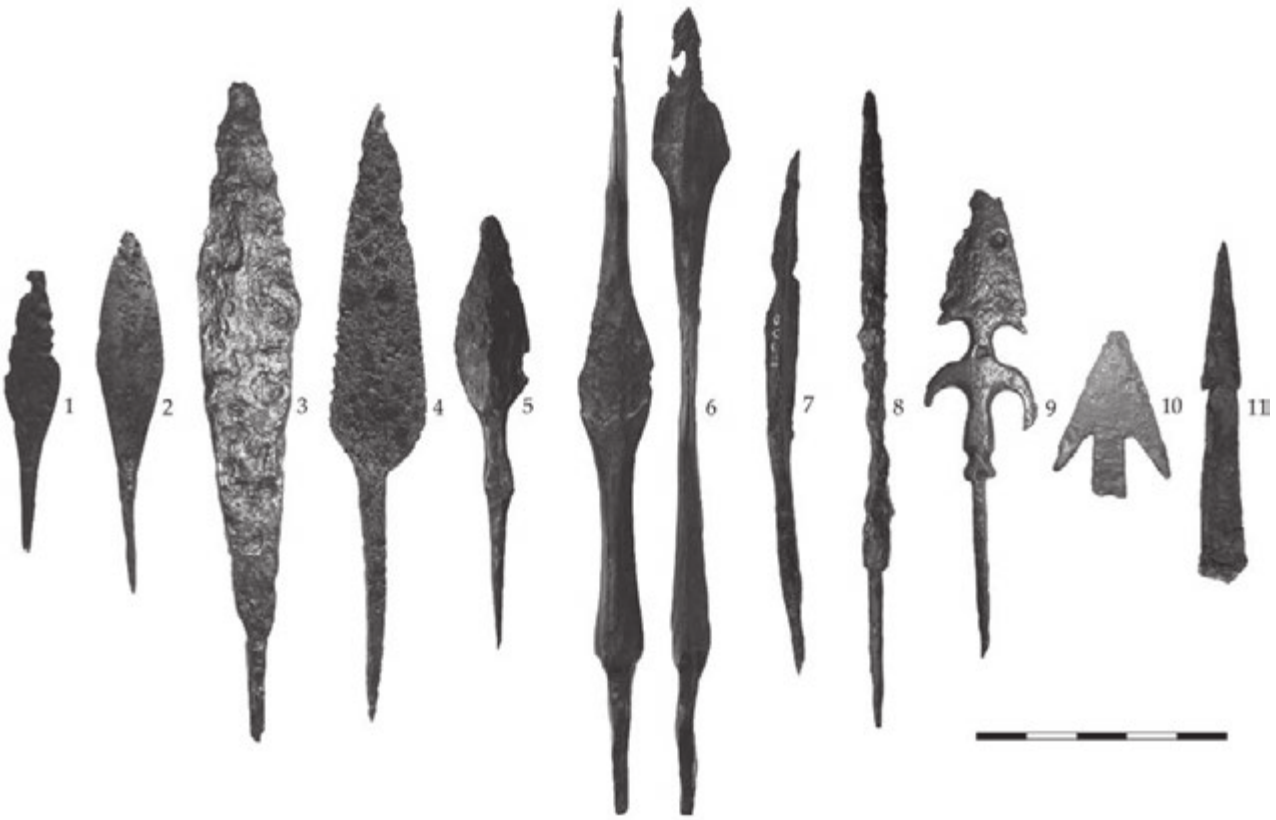


Fig. 164. *Arrowheads of various types: 1 Tarakallas at Purtse, fort; 2 Unipiha, fort; 3 Lahepera, grave; 4 Peatskivi, fort; 5–6 Maidla II, grave; 7 Tartu, fort; 8 Iila, grave; 9–10 Rõuge, fort-settlement; 11 Tartu, fort-settlement (AI 5038: 12; 4472: 412; ÕES 1978: IV 1; AI 4723: 288; AM A 580: 965; 557: 132; TM A 14: 209/2; AI 3358: 309; 4100: 4790; 4100: 1181; TM A 188: 1042; photo: 1–2, 4–7, 11 Kristel Külljastinen, 3, 8–10 Andres Tvauri).*

type D on the basis of the cross-section of the blade into two sub-types (Wegraeus 1971, 26–30) — the blade of D1 has a triangular cross-section, and the blade of D2 has a quadrangular cross-section. These sub-types occur side by side, but D1 is more numerous. Such arrowheads became common in the 9th–10th centuries in connection with the spread of chain mail armour, as the long and awl-shaped blade was capable of penetrating chain mail (Mäesalu 1989, 33). In Sweden they are common in the easternmost part of the country in Mälaren Valley. At least six awl-shaped tanged arrowheads have been found in Estonia — three in the fort in Tartu (one of them having a blade with a quadrangular cross-section and two with a triangular cross-section — Fig. 164: 7), one in the fort at Iru in Harjumaa, one in the Iila inhumation burial in Virumaa (Figs. 164: 8; 206), and one in the fort at Pöide in Saaremaa (the latter three having a blade with a quadrangular cross-section). Thanks to the Scandinavians who served in the retinues of the Rus princes, such arrowheads were widespread also in Rus in the 10th–11th centuries (Kainov 1999, 54f.).

An entirely unique *arrowhead with a triangular blade and barbs* (Fig. 164: 9) was found in the settlement site adjacent to the fort at Rõuge; so far no even roughly similar counterparts have been

found. It is a sophisticated and masterfully made item. The find context and the step between the blade and the tang suggest that the arrowhead probably dates from the Pre-Viking or Viking Age. The same settlement site yielded another unique *arrowhead with a broad barbed blade* (Fig. 164: 10); however, it has an asymmetrical shape and a very simple execution — it was cut out from sheet iron.

So far no counterparts are known for a *socketed awl-shaped arrowhead with two barbs* (Fig. 164: 11), found from the settlement site in Tartu. The find context suggests its origin in the period of ca 1030–1060, although one cannot exclude that it was deposited in the layer of the 11th century somewhat later. The arrowhead was found about 150 m away from the hill fort, and it may have originated from an arrow that was shot from the fort and entered the ground during the defence of the fort in 1224.

Besides iron arrowheads, *bone arrowheads* probably span the entire period covered in this book. It is likely that they were made for personal use, and for this reason they vary both with regard to their shape and workmanship, including mostly arrowheads with a pointed-oval-shaped blade and arrowheads with a triangular barbed blade. In Estonia, bone arrowheads have been found exclusively in forts, for instance, at Iru, Tarakallas at Purtse, and Rõuge.

The bow was also used as a hunting weapon. Iron arrowheads with a broader blade and bone arrowheads were better suited for hunting, while awl-shaped iron arrowheads have been regarded as more suitable for fighting (Wegraeus 1971; Lindbom 2006, 165). Some arrowheads, such as the broad-bladed barbed arrowhead from Rõuge had probably been made specifically for hunting. As among the Estonian archaeological finds the arrowheads suited for hunting prevail, one might assume that in the Middle Iron Age and in the Viking Age the bow and arrow was a weapon used primarily for hunting.

In the lands east of the Baltic Sea arrowheads were rarely used as grave goods, in contrast to the Viking Age burials in Scandinavia, where arrowheads are common (Mägi-Lõugas 1995b, 520). In Estonia arrowheads are found mostly in graves of the coastal area. One might assume that in early cultivated landscapes in southern Scandinavia, as well as in coastal Estonia, hunting had become an elitist pastime by the second half of the first millennium, and, thus, there was some reason to place hunting implements as status symbols in graves. In the forested areas on the eastern shore of the Baltic Sea, including southern and eastern Estonia, where judging by at least the osteological record hunting still played an important role as a source of subsistence (see 3.3.2), hunting weapons were probably too commonplace to be used as grave goods.

4.4.1.6. Shield parts

In Estonia, prehistoric shields are represented only by their iron parts — bosses, grips, and rivets — and they are much less numerous than, for instance, in Finland and Latvia.

The boss was a circular cone-shaped or a hemispherical metal guard that was riveted onto the centre of the shield front to protect the hand of the shield user against blows (Stephenson 2002, 17). It covered the opening in the wooden shield where the handgrip was attached. At least those shields which were equipped with a pike mounted on the boss could have been used as offensive weapons, if necessary. One might also assume that in combat one tried to guide the sword strike of the opponent into the substantial boss, so that the blade would be damaged or break (see also below). Nordic peoples adopted bossed shields from Roman weaponry.

The Estonian shield bosses of the Migration Period can be best described by means of the typology of Finnish shield bosses worked out

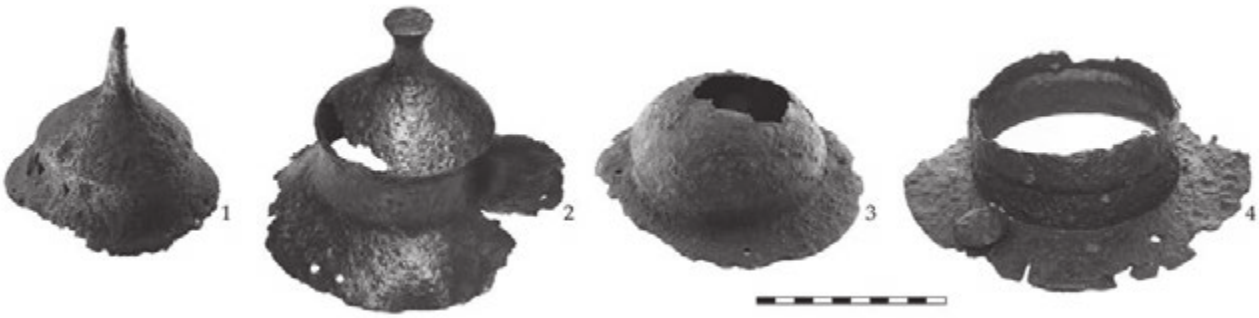


Fig. 165. *Shield bosses of different types from graves: 1 Proosa; 2 Varetemägi at Ehmja; 3 Kirimäe; 4 Jõelähtme (TLM 12891: 234; AM 554: 831; AI 2509: 45; AM A 691: 4; photo: 1 Andres Tvauri, 2–4 Kristel Külljastinen).*

by Sirkku Pihlman (1990, 126–137). *Shield bosses of Pihlman's group 1* are low, with a cone-shaped dome distinguished from the flange by a short neck. Bosses of sub-group 1a have the upper part forming a flat cone. Such bosses were found in the stone grave-field at Proosa near Tallinn (Lang 1996a, pl. LI: 5). A distinctive feature of sub-group 1b is a pike protruding from the cone. Examples of this sub-group have been found in the graves of Proosa, Kirimäe in Läänemaa (Fig. 165: 1), and Paju in Saaremaa. Pihlman (1990, 134) claims that sub-group 1b dates entirely from the Migration Period. In the typology of Lithuanian Roman Iron Age and Migration Period shield bosses by Daumantas Kiulkys the bosses of group 1 correspond to the variant forms D and E of the type V, used in Lithuania from the early 3rd century to at least the end of the 6th century (Kiulkys 2010, 56–66, fig. 32).

The *shield bosses of group 2* have an especially high neck, which is narrower than the basal part of the cone, so that a carination is formed in the place where the cone meets the neck of the boss. They are also characterized by a massive flared apex with a flat surface. Pihlman divided this group into three sub-groups. In Estonia only the sub-group 2b is represented, although only by the single specimen found at the stone grave of Varetemägi at Ehmja, Läänemaa (Fig. 165: 2), which has been dated to the turn of the 6th–7th centuries or to the 7th century (Mandel 2003a, 35). Bosses of sub-group 2b are greater in diameter than in height. According to Pihlman (1990, 134), in Finland shield bosses of this sub-group were in use both in the Migration Period and the Pre-Viking Age.

In Estonia *shield bosses of group 3* have been found only in the burial site at Kirimäe (Fig. 165: 3). Such bosses are characterized by a hemispherical upper part, which proceeds without an overhanging carination to a straight short neck. In Finland they have been found in the find contexts of both the Migration Period and the 7th–8th centuries (Pihlman 1990, 134). In the typology of Lithuanian shield bosses, group 3 of Pihlman matches the varieties A and B of type I. In Lithuania these shield bosses were used from the early 3rd century to the end of the 5th century (Kiulkys 2101, 42–46, fig. 32).

In addition to the above-mentioned types, several burial sites of the Migration Period (Lepna, Paju, Proosa, Jäbara E, and Pada) have yielded fragments of shield bosses that are too small to be classified into types.

The graves or settlements of the inhabitants of Estonia have yielded no shield bosses that could with certainty be dated to the Pre-Viking Age.[8]

[8] In the summer of 2010 a Pre-Viking Age boat burial (boat II) was found at Salme, Saaremaa, which included shield bosses. The results of the investigation have not yet been published, and therefore the Salme shield bosses will not be discussed here.

They re-appeared among the funeral furnishings in the second half of the Viking Age. The shield bosses of this period are simpler in design than before, usually being *hemispherical*. A destroyed burial site of the Viking Age at Jõelähtme, Harjumaa, yielded a 10th-century shield boss with a hemispherical dome and a tapering neck (Fig. 165: 4) alongside two spearheads of Petersen's type E. A simple hemispherical shield boss of a Viking Age date was also found in the village of Kuusalu in Harjumaa, probably from a burial site (AI 4725: 1). It was found together with two spearheads of Petersen's type M, which date to the early or mid-11th century. It is likely that some other simple hemispherical shield bosses of the Viking Age might have reached museum collections. However, in those graves that contain finds of both the Viking Age and beyond, they are indistinguishable from the specimens of the Final Iron Age.

Two types of iron shield handgrips are represented in the find assemblages of the Estonian Migration Period. *Long grips*, which reached almost the edges of the shield and were riveted to the shield boards, have been found in the burial sites of Paju, Kirimäe, Ehmja, Pada, and Proosa (Fig. 166: 1). Shields with a long grip were common all over northern Europe during the Migration Period, mostly in the 6th–7th centuries (Nerman 1935, no. 608; Kivikoski 1973, nos. 295–297, 299; Pihlman 1990, 58, fig. 16). Besides long grips, *short grips* were used during the Migration Period. They have been found in the stone graves of Proosa in Harjumaa and Jäbara E in Virumaa (Fig. 166: 2). No grips have been obtained from the find contexts of the Pre-Viking and the Viking Ages in Estonia.

The rivets attached to the shield bosses from the stone grave-field at Proosa provide evidence that the shield was approximately 2 cm in thickness. The Late Viking Age shield boss found at Kuusalu had a rivet with a gap of 4 mm between its head and its washer, while another rivet of the same boss had a gap as wide as 4.5 cm between its head and washer. Apparently, the longer boss rivet had stretched through the wooden handgrip. As for the smaller rivet, some shields could have been rather thin indeed. The rivets of the shield found in Ylipää cemetery in Lieto in south-western Finland indicate that this shield had been only 4 mm in thickness (Salmo 1938, 275).

Fig. 166. *Shield handgrips from graves: 1 Proosa; 2 Jäbara E (TLM 15109: 104–105; AI 2604: 73; photo: Kristel Külljastinen).*

Some idea of the appearance of shields of the time is provided by the almost intact shield of the 9th century found in the hoard of the Tīra bog in Courland. It was circular in shape, made of thin boards, and covered in leather; its diameter was 90 cm, and there was a simple hemispherical iron boss in the middle (Urtāns 1961, 221–223, fig. 6; Kiulkys 2010, fig. 38).

In the Migration Period and at the beginning of the Pre-Viking Age the shield was probably used actively in fighting. In other words, warriors tried to avoid deflecting the opponent's sword blows with their own sword, fearing that it could be damaged; instead, the opponent's sword could be blocked by the shield, preferably with the massive shield boss which could even damage the opponent's sword. Spears with long barbed heads of the Migration Period and the earlier part of the Pre-Viking Age were most likely adopted to neutralize the effectivity of shields. Even if a spear failed to hit the opponent but hit his shield, the barbed spear got stuck in the shield and made its further use difficult.

At the end of the Migration Period and the beginning of the Pre-Viking Age, swords with elaborate hilts, iron shield grips, and massive shield bosses disappeared from use at the same time, probably indicating changes in the techniques of hand-to-hand combat. A heavy shield reduced the mobility of a warrior, and it could well be the reason why the massive shield boss fell into disuse. The use of bossed shields decreased all over northern Europe during the Pre-Viking and the Viking Ages, and such shields were no longer used in the second millennium. The decreased significance of the shield in fighting at close quarters is proved by the fact that the sword guards became increasingly longer during the second half of the first millennium — the sword guards of the Final Iron Age are about twice the length of those of the Viking Age.

4.4.2. Riding gear

In Estonia the riding gear of the Middle Iron Age and the Viking Age is represented only by its metal parts — stirrups, spurs, and parts of the bridle, such as bits, buckles, loose buckle plates, strap distributors, strap ends, and decorative mounts. All remains of riding gear have been found in burial sites, mostly in western Estonia.

4.4.2.1. Bridle parts

In Estonia the remains of one definitive bridle set have been found only in Varetemägi stone gravefield at Ehmja, Läänemaa, which revealed a large cluster of bridle fittings buried together (Fig. 167). This find included a bit with flat rings together with two iron strap distributors, two iron strap loops, one iron strap end, and one bronze buckle. In addition, the deposit included another bridle bit of iron; both of its rings feature two buckle plates, and one of them includes a bronze buckle. The latter bridle bit has been dated in accordance with their Gotlandic counterparts (Nerman 1969, no. 682) to AD 550–600 (Mandel 1983, 301; 2003a, 32), although the date of the earlier 6th century can by no means be excluded. However, bridle parts are usually found separately, and in the case of cremation burials it is usually impossible to understand which bridle parts belong together.

Bits are rather rare in the artefactual record of the Estonian Migration Period and Pre-Viking Age, reported only in stone graves of western Estonia. The bits of this period represent mainly two different types. *Bits with wide flat rings* have a jointed mouthpiece consisting of three or four S-shaped links. Such bits were found in stone graves at Lihula, Maidla I, and Varetemägi at Ehmja (Fig. 167: 2). This bit type is characteristic of Läänemaa, as no bits of this type have been found elsewhere. A *bit with large rings* was reported from the burial site at Lepna on the

Fig. 167. *Metal bridle fittings from Varetemägi at Ehmja (AM A 554: 286–293; photo: Kristel Külljastinen).*

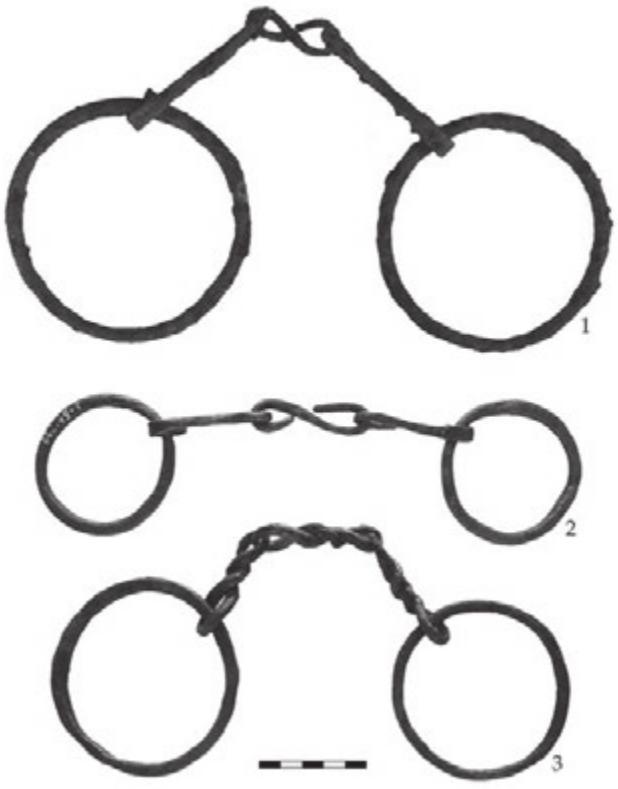


Fig. 168. *Iron bridle bits from graves: 1 Lepna; 2 Iila; 3 Kehra (SM 10372: 52; AI 3358: 322; 3584: 4; photo: 1 Andres Tvauri, 2–3 Kristel Külljastinen).*

island of Saaremaa (Fig. 168: 1), and a ring from what was probably a similar bit was found in the stone grave at Liiva-Putla, also in Saaremaa. The stone grave Varetemägi at Ehmja revealed an elaborate bit with small round rings and mouthpiece of five S-shaped links, which already have been mentioned above (Fig. 167: 1).

No bits have been found in a definitively Pre-Viking Age context. An iron bit fragment from stone grave III at Lehmja-Loo, Harjumaa, that has been mentioned in the literature (Lõugas 1973, 124, fig. 5: 21) could well be a belt divider. However, from the 10th century onwards bits and other bridle components are common in graves in western and northern Estonia (Lang 2009, 77). Bits of the Viking Age comprise mostly two main types. Both types have simple iron bit rings with a round cross-section and a jointed mouthpiece usually of three links; the difference lies in the shape of the links. *Bits with S-shaped links* (Fig. 168: 2) can have differently sized links; for instance, the middle link could be smaller than the others. The second type covers *bits with twisted wire links* (Fig. 168: 3), which, judging by the find contexts, appeared not before the early 11th century. Both types have many counterparts all around the Baltic Sea, for instance, in Finland (see Taavitsainen 1976).

The excavation of grave III at Keskvere, Läänemaa, produced a *bit decorated in the Jellinge style*; instead of rings these bits have bar cheek-pieces (Fig. 169). It occurred in the burial together with a standard axe of type C (Mandel 2003a, pl. LV) and, accordingly, was dated to the 10th century. The bit is unique in Estonia, and is probably of Scandinavian origin.

In cremation graves, other bridle components are difficult to distinguish from, for instance, components of girth straps. It is likely that the buckles, strap distributors, mounts, etc., that belonged to bridles were mostly made of iron, unlike the belt parts, which belonged to clothing and were made of bronze. Undoubtedly, *one-piece iron buckles*, which were usually larger than the bronze buckles, belonged to horse tack. Such buckles were, for

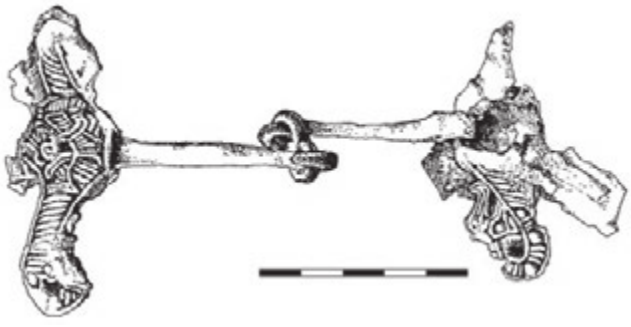


Fig. 169. *Iron bridle bit decorated in the Jellinge style from grave III at Keskvere (AM A 996: 62; Mandel 2003b, fig. 1).*

Fig. 170. *Fragment of a bridle strap from the inhumation cemetery at Lahepera (ÕES 2053: 22; photo: Kristel Külljastinen).*

example, found in a find cluster of the first half of the 11th century in the burial site at Randvere, Saaremaa (Mägi 2002, pl. 45: 25, 27). Among the strap distributors of bridles, Varetemägi grave at Ehmja revealed some unusual *three-branch strap distributors with flat discs* (Fig. 167: 3, 6), which belonged to the previously-mentioned set together with a bit in the same style.

Bridle straps had possibly been decorated with metal mounts already before the end of the Viking Age, although the previous finds do not allow distinguishing bridle, belt, scabbard, etc., mounts from each other. At the beginning of the 11th century, bridles started to be adorned with *mounts with a serrated edge made of sheet bronze*. A fragment of a leather bridle strap with such ornamentation was found in the cemetery at Lahepera (Fig. 170). It has preserved so well that even the birch bark between the two layers of leather survive.

4.4.2.2. Stirrups

Stirrups were brought to Europe by Asian nomadic peoples during the Migration Period, and reached the Nordic areas in the 8th century. The earliest reported stirrups in Scandinavia, dated to AD 720–750, were found in grave III at Vendel (Jonsson 1954, 234f.; Sundkvist 2001, 236). In the find assemblages of the Estonian Viking Age, stirrups are still extremely rare, as only a single stirrup fragment found somewhere in Saaremaa could be dated to the Viking Age. This stirrup has a characteristically long triangular shape, and its upper end has a rectangular eyelet for a strap (Fig. 171). Such stirrups were common in Scandinavia and in England in the second half of the 10th century and in the 11th century (Jonsson 1954; Seaby & Woodfield 1980).

Fig. 171. *Fragment of an iron stirrup, a stray find from Saaremaa (AI K 89: 28; photo: Kristel Külljastinen).*

4.4.2.3. Spurs

The Estonian archaeological record contains only two spurs that could be dated to the second half of the first millennium. The older one is a small iron spur only 4.5 cm in length, which was found in stone grave IB at Kurna not far from Tallinn (Fig. 172: 1). Judging by the find context, this spur could date from the Migration Period or

Fig. 172. *Spurs (1 iron, 2 bronze): 1 Kurna IB, grave; 2 Paluküla, hoard (AM A 29: 260; AI 2483: 26; photo: Kristel Külljastinen).*

the Pre-Viking Age. The bronze spur included in the Paluküla hoard from Harjumaa (Fig. 172: 2) has Semigallian counterparts of the 10th century (*Žiemgaliai*, no. 189). Single occurrences of spurs in earlier find contexts could be explained by the fact that until the 10th century the spur was attached only to one leg (Šnore 1962, 578; Sundkvist 2001, 135).

In Sweden spurs can be found in graves of the Pre-Roman and the Roman Iron Ages. Afterwards they disappeared almost completely and became once again common as late as in the 10th century (Wikborg 1997; Sundkvist 2001, 135). In the forest belt of eastern Europe, spurs earlier in date than the 11th century can be found mostly in richly furnished burials of the Baltic peoples. In Rus spurs became more common as late as in the 11th century (Perhavko 1978, 126), and in Estonia, too, they spread more widely no earlier than the Final Iron Age.

4.4.3. Development of weaponry

During the 600 years covered by the present study weaponry and warfare in northern Europe witnessed considerable change and development. Although in Estonia much fewer weapons of the second half of the first millennium have been found than, for instance, in Scandinavia or even in Finland, the local weaponry equalled that of the neighbouring areas. Innovations in weaponry spread rapidly from region to region, because one had to be as well armed as one's potential enemies. Trends in weaponry reached Estonia from two directions: at the earlier part of the discussed period mostly from the area of the Baltic peoples, which is the home for the types of seaxes and axes of the Migration Period, the Pre-Viking Age, and the earlier part of the Viking Age, while with the passage of time Scandinavian-style weaponry became increasingly predominant. The most popular spearhead types (Petersen E and M) and axe types (Petersen C and M) in the Viking Age Estonia were Scandinavian-like. All the sword hilt types found in Estonia originated in Germanic areas or followed Germanic examples. The Viking Age sword blades of superior quality originated in the faraway west, in the weaponry workshops on the banks of the Rhine.

Throughout the Migration Period in Estonia the main weapons were spears and seaxes, and defensive weaponry was represented by the shield. However, the content of a standard weapon set is difficult to establish because no closed burial assemblages equipped with weapons have been found. These are present in Scandinavia, revealing that a typical weapon set of the mid-6th century probably consisted of a two-edged sword, a spear, a small seaxe, and an iron-boss shield (Nørgård Jørgensen 1999, fig. 132). Largely the same items made up the equipment of a warrior in south-western Finland in the 5th and the early 6th centuries (Pihlman 1990, figs. 25–26). Because the separate finds of weaponry in Estonia of the Migration Period include the same weapons as a typical Scandinavian weapon set, one might assume that the Estonian standard weapon set of the time was generally the same. Examples of weapons of this period could be found in Roman weaponry, which accounts for an extensive distribution area of most types from western Europe to the Volga and Oka rivers in the east.

As for the standard weapon set of the Pre-Viking Age, the Estonian archaeological record provides an even poorer picture than that of the Migration Period because of the paucity of weapons in graves and absence of closed find sets. Spears, swords, seaxes, axes, and bows were used; during the period shield bosses disappeared from the archaeological record. The weaponry of this time was rather similar all over northern Europe. The weapon set of richer male graves in south-western Finland of the middle and the second half of the 6th century included a two-edged sword, a thrusting spear, a barbed

angon, and a shield with a massive iron boss (Pihlman 1990, fig. 27). A typical Scandinavian weapon set around AD 600 included a two-edged sword, a seaxe, a spear, and an iron-boss shield (Nørgård Jørgensen 1999, fig. 134). In the late 7th and the early 8th century the weapon set still included a spear, an iron-boss shield, and a two-edged sword, the hilt of which had a much simpler design than earlier. However, the seaxe had usually been replaced by a single-edged sword (*ibid.*, fig. 136). By the mid-8th century a standard weapon set had become simpler and usually consisted of a single-edged sword, a spear, and an iron-boss shield (*ibid.*, fig. 138). The burials of the 8th–10th centuries suggest that the most common weaponry of the Latgalians consisted of a spear, an axe, and a seaxe (Radiņš 1999, fig. 39).

In the Viking Age, similarly to the earlier periods, the most common weapon was probably the spear. During this period spearheads were more massive than ever before. The majority of them belong to a small number of main types — spearheads of Petersen's type E were predominant in the 9th–10th centuries; spearheads of Petersen's type M predominated in the first half of the 11th century. By comparison with the earlier periods, the role of the axe seems to have been increased in the weaponry of the Viking Age. Male burials of the 10th century have revealed, alongside weapons, some axes of Petersen's type C, with traces of wear showing that they had been used both as tools and weapons. At the end of the Viking Age axes of Petersen's type M were adopted, which are regarded only as weapons. Compared with the earlier period, double-edged swords became more common; in a lighter and less expensive weapon set they were replaced by the narrow-bladed seaxe. The second half of the Viking Age has revealed once again some shield bosses, although they are considerably lighter than those of the Migration Period or the earlier part of the Pre-Viking Age. Viking Age sites have also yielded some arrowheads; however, it is likely that the bow was first and foremost used as a hunting weapon.

The second half of the 10th century has revealed some closed burial deposits including weapons. Most of them have been found in Virumaa. Two differently sized spears (one of the spearheads being half as long as the other), an axe, two arrowheads, and a horse bit had been placed in an early *tarand* grave at Iila as grave inclusions for a man inhumed to this grave many centuries after its construction (Fig. 206). A spear and a seaxe, as well as a horse bit, lay next to a male skeleton found at Mäetaguse (Mägi-Lõugas 1995b, pl. VII). The weapon set of the Püssi cremation burial included a double-edged sword, a seaxe, and three spearheads (*ibid.*, pl. V). The equipment of a cremation burial at Väike-Maarja included an axe, two spearheads, and a seaxe (*ibid.*, pl. VI). All the spearheads of the above-mentioned weapon sets are of Petersen's type E and the axes of type C. One may conclude that at least the weapon set of a Virumaa warrior of the second half of the 10th century could have included a sword or a seaxe, an axe, and two differently sized spears (probably a thrusting spear and a throwing spear).

Examples of weapon sets of the early or the mid-11th century can be found in the inhumation graves at Raatvere and Lahepera in northern Tartumaa. The weaponry of burial VIII at Raatvere included a double-edged sword and two variously sized spears, the larger one being a socketed spear and the smaller one tanged (Fig. 208). The grave goods of burial XV at Raatvere included among other things an axe and a spear (Lavi 1999b, fig. 10). Also, a male buried at Lahepera had been equipped with an axe and a spear (Mägi-Lõugas 1995b, pl. X). Both the axes and the spearheads of the early 11th century, as a rule, represent Petersen's type M. The burials show that in the 11th century the most common weaponry of the Latgalians consisted of a spear and an axe or a spear, a sword, and a seaxe (Radiņš 1999, fig. 39).

Naturally, not all warriors needed to wear several weapons of different types. For example, the inhumation cemetery with rich grave goods at Luistari in south-western Finland revealed that among the burials of the 9th–10th centuries that included weapons, burials with only one or two spears predominated (Lehtosalo-Hilander 1982b, 48). It could well be that many males had no other weapon but a spear, or it might have been customary not to place all the weapons in the grave.

More elegant weapons were decorated with gold and silver. Luxurious swords of the Migration Period had bronze hilt parts that had been gilded. However, only one example has been found in Estonia — a gilded pommel from the stone grave-field at Proosa (Fig. 153: 1). No gilded weapons or their parts of the Pre-Viking Age have been found in Estonia,[9] but one has to point out that this period is poor in other finds, too. From the 10th century onwards the most elaborate sword hilts, spearhead sockets, and axe blades were decorated with silver damascenes, which means that a decoration of silver wire or silver sheet metal was hammered into a previously roughened iron surface. The design was thus either formed by silver wires or it was engraved into silver sheet metal. The earlier silver decorations of the 10th century were made up of geometric designs, mostly by lozenges and lines (Fig. 163: 3). In the later 10th century or the earlier 11th century the Scandinavian animal ornament style became predominant (Fig. 163: 7), or more precisely, the Ringerike and Urnes styles (Kuiv 1991a, 21). In earlier times the Estonian and Finnish spearheads with silver damascene inlays were regarded as imported items from Scandinavia (Lehtosalo-Hilander 1985, 28–30). However, more recently it has been assumed that this technique could have been applied also on the eastern shore of the Baltic Sea by using templates made of leather or birch bark brought from Scandinavia (Creutz 2003, 215). It could well be that the Estonian archaeological finds contained more weapons with silver damascenes than have been reported so far, as on many occasions the silver decoration melted away from the weapon in the funeral pyre and is no longer visible to the naked eye.

Pattern-welding was used to make high-quality sword blades and spearheads. It consisted in forging together iron and steel varieties of different carbon contents, which provided an edge tool with improved physical and mechanical properties while at the same time forming a decorative pattern on the surface of the blades. Pattern-welded blades are characteristic of swords of the 7th–8th centuries. The midsection of the blades was pattern-welded, while the cutting edges were made of pure steel and were forged to the midsection. In later swords pattern-welding was no more than a decorative element — only a thin pattern-welded iron sheet was welded to both sides of the midsection of the sword blade, or the blade has only an inscription forged from a pattern-welded iron bar (Tomanterä 1982). Pattern-welded spearheads are of later origin than pattern-welded swords, dating from the 9th–11th centuries. In Estonia pattern-welding has been found on spearheads of Petersen's types D, E, K, and M (Selirand 1975). While it is assumed that all pattern-welded sword blades had been imported into Estonia, some pattern-welded spearheads are thought to have been made locally. This assumption is supported by the fact that the main distribution area of pattern-welded spearheads covers only eastern Sweden, Gotland, south-western Finland, Estonia, and Latvia (Selirand 1975, 185f., fig. 4).

Weapons made later were larger than their earlier counterparts. Also, the archaeological record of the Viking Age shows a considerable increase in the quantity of weapons. These trends could at

[9] Boat burial II at Salme represents an exception here, but this material is not discussed in this book (see footnote 8).

least partly be explained by the fact that the main material for weapon making — iron — became less expensive because of refinements to production methods and the development of long-distance trade. When weapons started to be mass produced, they became increasingly standardized and simple in construction, and also less expensive. While rather many spearhead types were used in the Migration Period and in the Pre-Viking Age, and each spearhead differed with regard to details, by the 10th century the overall number of spearhead types had remained almost the same, but the majority belonged to some popular type, such as Petersen types E and M. In the case of axes, Petersen types C and M were most common.

Along with weapons, riding tack appeared in the graves of the Migration Period. No finds of horse gear are definitively known from the Pre-Viking Age, but from the later 10th century onwards riding tack together with weapons constitute common grave goods in northern and western Estonia (Lang 2009, 79). This demonstrates that riding and warfare went hand in hand, or at least shared a symbolic meaning. Because in Estonia the studied 600-year period is represented only by two spurs and a fragment of a stirrup, the use of the horse in battle seems unlikely. The Scandinavian Vikings, too, used the horse primarily as a means of transport and very rarely in battle (Roesdahl 1982, 139; Wikborg 1997, 236).

4.5. Production volumes and organization

The previous sections discussed the known production sites, craftsman's tools, and handicraft products that have been preserved in large numbers. Proceeding from this, it is now time to assess which products were made locally, the level of local handicraft by comparison with the neighbouring areas, as well as the organization of handicraft and the level of specialization among craftsmen.

The iron smelting sites discovered and studied in Estonia prove that, during the period discussed in this book, iron was produced locally, at least in Saaremaa and in northern and eastern Estonia. Also, the blacksmithing tools and slag found in forts, settlement sites, and graves show that blacksmithing was a major type of handicraft. However, in the case of most iron objects it is difficult to determine where they were made because the greater part of the locally found iron everyday items, tools, and weapons represent types that were common also in other Baltic lands or even elsewhere. Nevertheless, the appearance and production methods of spearheads of Petersen C and M types and axes of types G and M enable one to identify local sub-groups, which probably indicate local production.

According to Jüri Peets, who has studied ancient blacksmithing in Estonia, the developmental level of blacksmithing can be assessed on the basis of three principal technological methods: the ability to weld iron and steel, the ability to treat the blade of a cutting tool by carburization, and the use of tempering and quenching. In Estonia all these methods were used for making local iron objects at the beginning of the Viking Age at the latest. Thus, one can conclude that by about the 7th–8th centuries in Estonia blacksmithing had reached the level that equalled the standard of the Baltic Sea region (Peets 2003, 267f.). In the later half of the Viking Age, if not earlier, some Estonian blacksmiths made weapons of utmost quality — for instance, Kristina Creutz (1995; 2003) identified on the basis of spearheads of type M at least two masters in Saaremaa who were able to make pattern-welded products (Fig. 173). Also, the know-how of adorning weapons with silver was present in Estonia — for example, a master who operated in the neighbourhood of Pöide in Saaremaa may have coated the spearheads that he forged with silver (Creutz 2003).

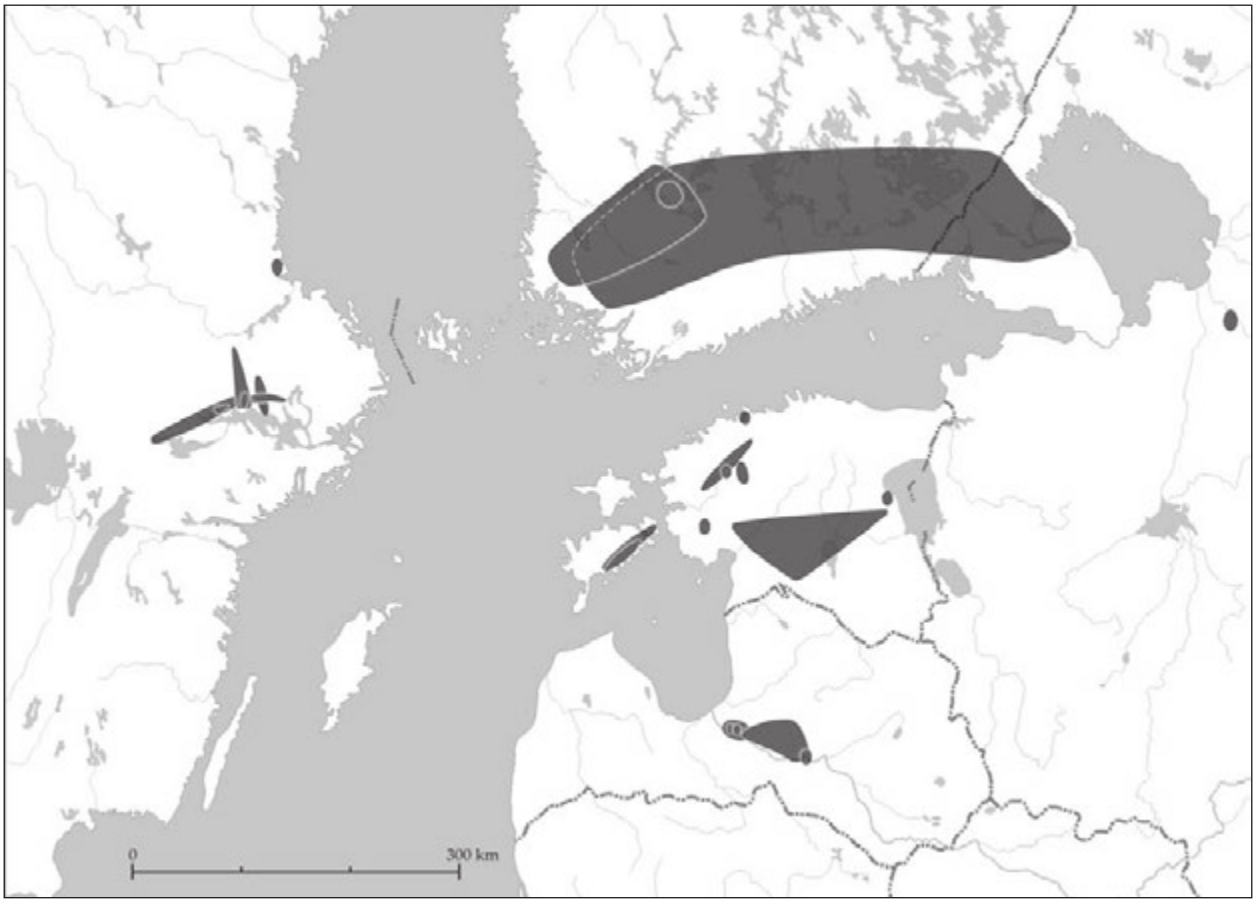


Fig. 173. *Distribution areas of the production of blacksmiths who made M-type spearheads in Estonia and neighbouring areas (after Creutz 2003, fig. 11: 17).*

Stencil plates could be used for this purpose, which means that even in those cases in which the silver adornment of weapons showed a Scandinavian design and motives, the object could have been made and adorned on the eastern shore of the Baltic Sea. However, the simplified and less expensive technologies, which became common in the urban centres of northern and eastern Europe in the 10th–11th centuries, were not used in Estonia during this period. It shows that in the Viking Age the local blacksmiths did not produce for the market but for individual customers (Peets 2003, 268).

The distribution of different types of crossbow fibulae has been taken to attest that, as early as in the Roman Iron Age, small independent workshops in the Baltic countries produced jewellery for small regions (Bliujienė 2002, 153). This assumption is supported by the fact that differences can be found not only in the design of fibulae but also in their production methods. In Lithuanian and Polish crossbow fibulae the pin and the spiral were made from the same bronze wire, whereas in the fibulae found in the area where *tarand* graves spread the pin is separate from the spiral, and usually made from iron

(Rohtla 2003, 76). It is likely that the production of fibulae might have continued locally into the Migration Period. The differences between Estonian and East Prussian fibulae are even more considerable during this period than in the Roman Iron Age (*ibid.*).

When compared to the jewellery finds from the Migration Period, by the Viking Age both the amount and the assortment of the jewellery items increased several times. Despite the fact that the more extensively excavated Estonian forts of the Pre-Viking and the Viking Ages revealed traces of producing bronze or tin objects, the production volume of this variety of handicraft is rather modest. This is supported by the fact that the entire period of 600 years covered in this book is represented by only a few dozen moulds or their fragments in Estonia; moreover, the majority of them were found in a single site — the hill fort at Rõuge. This may be compared to the workshop of the Early Viking Age at Birka, where the abundant artefactual record included about 25,000 mould fragments (Ambrosiani 1997, 167). Even Asva, a Late Bronze Age fortified settlement in Saaremaa, yielded over 800 mould fragments, although only 571 m² of its surface area has been excavated (Lõugas & Selirand 1989, 204). Further, at Birka and Asva, as well as in all the Scandinavian handicraft centres, where bronze items were mass-produced, single-use clay moulds were used. Fragments of clay moulds that could indicate the mass production of bronze objects are absent in the Estonian archaeological record of the discussed period. There are only three mould halves that are made of clay, uncovered in the barrow cemetery at Loosi, and these are multiple-use moulds, not single-use ones like those found in Scandinavia (Fig. 73). Similarly, all the other local examples represent multiple-use two-piece moulds; however, they are made from limestone.

In addition, one should not ignore the fact that all the previously found mould halves were intended for casting small pendants or tin plaques. The making of such products does not require a high level of metal jewellery forging skill. Not a single mould of a dress pin, bracelet, brooch, or decorative chain has been found in Estonia. This suggests that local variations in jewellery are not sufficient proof of their local origin.

The production of pottery during the period under review is demonstrated only by some inconclusive evidence in the form of spoilage, and even this is limited to the Viking Age. However, there is no doubt that most earthenware vessels were made locally. First, this view is supported by the very simple design of vessels and their distinct regional specificity in form and decoration methods. Second, the fragile clay vessels of the time would have been difficult to transport over long distances. Also, the kind of clay suitable for making clay vessels can be found almost everywhere in Estonia. Imported vessels, to be precise, Slavonic wheel-thrown pottery, started to reach eastern Estonia as late as in the first half of the 11th century.

It is certain that bone working was practised in the local forts and settlements. Most bone objects are very simple, and no special tools were needed to make them. Such objects were probably made for personal use, i.e. the producer was the person who needed one or another item. The found semi-finished products also confirm that simpler bone objects (e.g. pendants) were made locally. Nevertheless, traces of making more elaborate bone objects (e.g. combs) are absent, and, thus, they could be regarded as imported goods (Luik 2005, 45).

It is clear from the above that handicrafts were made for different reasons and at various professional levels. The level of professionalism can be characterized in terms of the relation between the manufacturer and the consumer, as did Axel Christophersen in his study of medieval handicraft in Lund (Christophersen 1980, 14–16):

(1) In the case of *home craft* the necessary non-agricultural products are made in one's household

for personal use. In the archaeological record this kind of handicraft is visible through a small amount of production waste or blanks in dwellings or their immediate vicinity that indicate the production of a wide range of objects. All these objects are different with regard to details.

(2) *Customer production* is characterized by direct contact between the producer and the customer — an object is made to order in accordance with the customer's wish. The greater part of this kind of production is intended for consumers in the non-manufacturing sector of society (rulers, merchants, clergymen, etc.). This mode of production presumes the existence of a socially specialized and stratified society including craftsmen who have specialized in some branch of handicraft and are not involved in agricultural production or are involved in the latter as a sideline. A master craftsman could work at a centre or travel around marketing his products. In the archaeological record this kind of manufacturing is usually manifested by a relatively small amount of waste generated over a short period of time, usually in the context of some central settlement. Production waste need not be related to a building or workshop. The products reveal remarkable variation.

(3) *Market production* implies production by professional craftsmen intended for sale to anonymous consumers. It presupposes the existence of stable 'market economy' and money (either by nominal value or silver by weight). Market production requires a much larger amount of circulating capital than does customer production (raw materials are supplied by the craftsman or his 'superior'). This kind of manufacturing is always organized in a special workshop in a central settlement. The manufacturing of a product requires several stages, and a larger amount of products is made at a time. In the archaeological record this kind of production is manifested by production waste accumulated in the vicinity of the workshop over time. Characteristically, there is specialization in the production of some definite product. The production is standardized and uniform.

Traces of home craft have been found in all the more thoroughly excavated Estonian forts and settlement sites. This category encompasses first and foremost the working of textile, leather, bone, and wood, as well as the making of the simplest earthenware vessels. On Estonian farms until the 19th century, people made most clothes and other textiles, simpler footwear, leather clothing and belts and straps, tools from wood, bark, and bone, as well as other everyday items themselves (Vunder 2008).

Customer-oriented products probably included the majority of locally made weapons, iron tools and household implements, jewellery, more expensive festive clothes (e.g. clothes with spiral adornments) and footwear, more sophisticated wooden products (wagons, looms), and quality earthenware vessels (fine ware). This kind of production was common in forts and adjacent settlements. It is likely that members of the societal elite constituted the principal customers; in many cases they funded and organized the production, i.e. hired the craftsman and offered accommodation. Control over raw materials (especially metal) and handicraft acted as a means of executing power. In the case of weapon ironwork, in particular, one might assume that noblemen would order a larger amount of similar weapons for distribution among their followers. There is no reason to assume that the objects produced in the local forts might have been exported outside the territory controlled by the fort. Some products might have been ordered by merchants, who then resold them to consumers. In this way also some objects produced at some foreign handicraft centre could have reached Estonia.

The only branch of production that filled the prerequisites for market production was iron smelting from bog ore. Among the iron smelting regions, the largest production volumes have

been reported from the Tuiu region in Saaremaa, where iron smelting began in the first half of the Viking Age at the latest (see 4.1.1). By the Final Iron Age, iron smelting in this region had reached industrial volumes, and a large proportion of the production was exported from Saaremaa (Peets 2003, 135f.). One might assume that iron production was directly organized by the local nobility, or was at least under their direct control, as the extraction of the bog ore and the subsequent iron production is relatively easy to control and tax. Iron smelting was a large-scale business in Saaremaa, which besides direct evidence is proved by the fact that the fort at Kärla was established in the iron smelting region — away from a permanent settlement but at a good port location.

Despite the fact that there are very few traces of market-oriented handicraft production, it does not necessarily mean that products manufactured in this way were not consumed. Products of this kind — weapons, jewellery, wheel-thrown clay vessels — could have been obtained directly or through merchants from the urban centres of the neighbouring regions (see Chapter 5).

A professional craftsman was involved in the processing and sometimes also the production of raw materials (for instance, the production of iron), for which special knowledge and skills were needed. A society without towns undoubtedly needed professionally manufactured products but afforded poor conditions for the emergence of resident specialists who could make their living from a single branch of handicraft. In order to support himself and his family, a craftsman could practise his trade under one of three conditions (Martens 1995, 176):

(1) as a part-time specialist who resided in one place and subsisted by farming and handicraft;

(2) as an itinerant specialist who subsisted only by handicraft and serviced a large region;

(3) as a versatile specialist who was skilled in several varieties of handicraft out of which he made a living to support himself and his family.

Naturally, there could be combinations of these three options — for instance, a part-time specialist could travel around for some time of the year or practise several trades. At any rate the family of a sedentary craftsman had to grow the larger part of their food by themselves. This claim is supported by the fact that the majority of craftsmen and small merchants, or their family members, of Estonian towns in the Middle Ages and the Early Modern Age were engaged in cattle rearing and growing crops along with their main trade.

In the conditions of the Estonian Middle Iron Age and the Viking Age it seems likely that the group of sedentary (part-time) specialists included first and foremost blacksmiths. Blacksmithing presupposes the existence of a smithy with specialized equipment and of sufficient demand for blacksmithing products and services. There may have been a fairly large number of blacksmiths all over the country. For example, Kristina Creutz (2003, 166–176) concluded from the regional distribution of differences between spearheads of Petersen's type M used in the early 11th century that there had been at least nine blacksmiths in Estonia who made spearheads of this type; their production was confined to a rather small distribution area (Fig. 173). The largest number of products of known origin, 18 spearheads, has been identified in the production of a blacksmith who operated at Maidla in Läänemaa.

Sedentary master craftsmen may also have included makers of more sophisticated clothes and clay vessels, as well as jewellers. Itinerant specialists probably offered those products and services for which there was little demand or which were needed only occasionally. These craftsmen could include, for example, construction carpenters and shipwrights.

In the conditions of the Iron Age, handicraft need not have been 'economically feasible' in the modern sense of the word because there was no free market for marketing one's products. One

might assume that craftsmen often did their work in exchange for security, shelter, and a patch of land from a nobleman. From the perspective of noblemen the profit from this arrangement need not have been restricted to the products themselves — also the organization of production and the distribution of products might have enhanced their reputation and authority. The social position of a craftsman operating in a fort was definitely different from a craftsman working in an ordinary farm. One might also assume that the master craftsmen who operated in forts or adjacent settlements could have been relatives or retainers of noblemen.

When one begins to look for craftsmen in graves it is important to realize that handicraft tools were rarely placed in graves in Estonia, at least by comparison with jewellery and weapons. Nor is it possible to judge from the handicraft tools in burials whether the buried person had been a craftsman, an organizer of production, or whether certain handicraft tools had some symbolic significance or were a sign of status.

Migration Period graves in northern and central Estonia have revealed some leatherworking implements: small curved knives, awls, and eyed needles. Unfortunately, the burial practices of this period do not enable us to associate them with specific buried individuals. It is possible that women may have been engaged in leatherworking, since in Germanic areas in the Roman Iron Age leatherworking implements were placed in female graves (see 4.2.3).

Graves of the Pre-Viking and the Viking Ages have occasionally revealed some metal- and textile-working implements. The latter are represented only by spindle whorls, numbering in no more than two or three. Clay spindle whorls have been uncovered in two barrows (nos. 2 and 6) of the Rõsna-Saare II cemetery in Võrumaa, and they constituted the only grave goods in the burials they were found from (Fig. 85: 2; Aun 1985b, table 2; Vedru 1999, 94–97). A spindle whorl made of Ovruč slate (AM A 580: 2053) found in the Maidla II stone grave-field in Läänemaa could be dated to the first half of the 11th century. Unfortunately, it cannot be associated with any burials, and it is not impossible that the object might have been placed in the grave only in the Final Iron Age.

Three barrows of the Pre-Viking Age revealed implements related to the working of non-ferrous metals (see also 4.2.2). A barrow at Arniko, Võrumaa, contained a cremation burial that included a clay casting ladle (Fig. 76) and fragments of a stone mould intended for casting small mounts, as well as six bronze bell-shaped pendants (Fig. 114: 3), three glass beads, and an iron rivet head (Moora 1963, 357). A burial in the barrow cemetery at Loosi, Võrumaa, yielded two small spiral tubules, two small pieces of slag, and three clay mould halves (Fig. 73; Schmiedehelm & Laul 1970, 161f.). A cremation burial under a barrow at Lemmaku in eastern Virumaa revealed fragments of smelting crucibles and clay vessels (Aun & Ligi 1986, 357).

Tools of iron smelting and ironworking were found in graves VIII and XV of the Late Viking Age inhumation cemetery at Raatvere on the western shore of Lake Peipsi (see 4.2.1 and 6.1.9). It has been assumed that the tools and the other iron objects found in these graves represent the work of the deceased themselves (Lavi 1999b). On the other hand, there are opinions that these are not the burials of blacksmiths but that the buried might have been chieftains (Creutz 2003, 121, 198–200). In Norway, graves with blacksmithing implements constitute a tenth of male burials of the Merovingian and Viking Ages, which has been taken as evidence that there was a blacksmith on each large farm (Petersen 1951, 72).

4.6. Summary

In Estonia in the Middle Iron Age and the Viking Age, the greater part of handicraft products were

made in one's household for one's own consumption. Such products included the majority of objects that were necessary in land cultivation and in the household, simpler textiles, clothes and leather items, as well as simpler bone and clay objects.

The main products of professional handicraft included jewellery, quality textiles, more sophisticated clothes and footwear, as well as weapons. The amount and assortment of such products seem to constantly increase during the second half of the first millennium. Unfortunately, it is very difficult to judge from archaeological artefacts where they were manufactured, because the greater part of jewellery and almost all the weapons belong to types that were common also in the neighbouring regions. When characterizing the level of metal jewellery forging in Estonia, one has to emphasize that no tools or production waste that would indicate the production of bronze items larger or more elaborate than small mounts and pendants have been found. Since the Pre-Viking Age the most developed type of handicraft was iron smelting and the production of iron objects. The distinctive features of weapons suggest that the majority of the spearheads and axes found in Estonia were of local origin. It could well be that also the majority of smaller iron everyday items, such as knives, were made locally. Estonian blacksmiths were familiar with sophisticated technologies, such as pattern-welding and damascene inlay of silver. However, there is no evidence about local production of sword blades.

Thus, there were professional blacksmiths and weapon-smiths, but the spread of their production was, as a rule, limited to a certain settlement area. There is no doubt, however, that the farms of blacksmiths were engaged in agricultural production as a sideline. There were probably some craftsmen whose main activity or a sideline was to make high-quality textile and leather products and clay vessels. In addition, there might have been itinerant craftsmen who worked as master builders or ship carpenters. The kind of techniques used in crafting (for example in the making of iron objects) and the absence of production sites and production waste indicative of mass production demonstrate that craftsmen made their products to order and not for the market. Taking into account the fact that the greater part of the finds indicating production were revealed from centres of a fort and a settlement, one might assume that professional handicraft was largely organized by the nobility and under their control. Apparently, members of the elite were the main consumers of the production of professional craftsmen. The elite also controlled iron smelting, which was the only type of production in which volumes might have exceeded the local demand and in which the prerequisites for market-oriented production can be seen. Starting with the 10th century, Saaremaa was a major iron production region.

Chapter 5

Trade and Exchange

In the life of the people of the Iron Age, land cultivation and cattle rearing, supported by home handicraft, ensured everyday sustenance and were the major occupations. Despite this, the archaeological record reveals that people of what today is Estonia owned and consumed also raw materials and items that were brought over long distances. It is reasonable to think that goods were also exchanged with neighbouring settlements or even within a settlement unit, although this kind of exchange is extremely difficult to trace in the archaeological record.

In traditional societies, the exchange of goods was based on principles that were different from contemporary commerce in which the aim of mediating goods from the producer to the consumer is to earn revenue. In addition to the voluntary exchange of goods for other goods or for currency between two equal partners, which in the Iron Age context could be regarded as trade, items and raw materials also exchanged hands as loot, gifts, and as a result of redistribution in a family or a community (Stjernquist 1985, 61–64):

(1) *Exchange* is a voluntary transaction between two equal parties in which products change hands. It involves the exchange of different products, exchange of a service for a product, or exchange by means of currency (e.g. precious metal or money). Only exchange of goods for goods or exchange of goods for currency can be called trade.

(2) *Gifts* were mostly prestige items aimed to define or cement political and social relations between the giver and the recipient of the gift. A gift could be reciprocated by another gift but also by a service, hospitality, or in some other non-material way.

(3) *Redistribution of material wealth* occurs either by voluntary mutual agreement or by arrangement of a leader. It is difficult to uncover signs of redistribution in the archaeological record because in prehistoric times, redistribution mostly involved hunting, gathering, and agricultural products. Typical examples of this phenomenon include equal share of the hunted game between all the hunters and redistribution within families. Usually, redistribution takes place within a small group, and objects of redistribution do not move over long distances. Nevertheless, some items could travel over long distances even in the course of redistribution within a family — for instance, in situations where the ruling elite or merchants had family ties in faraway power or trade centres.

(4) *Taxation and looting* involves the recipient party resorting to violence or threats for obtaining wealth; the provider does not earn any profit from the 'transaction', or the 'profit' is, for instance, security provided by a chief.

In the archaeological record these types of ownership transfers are merged and extremely

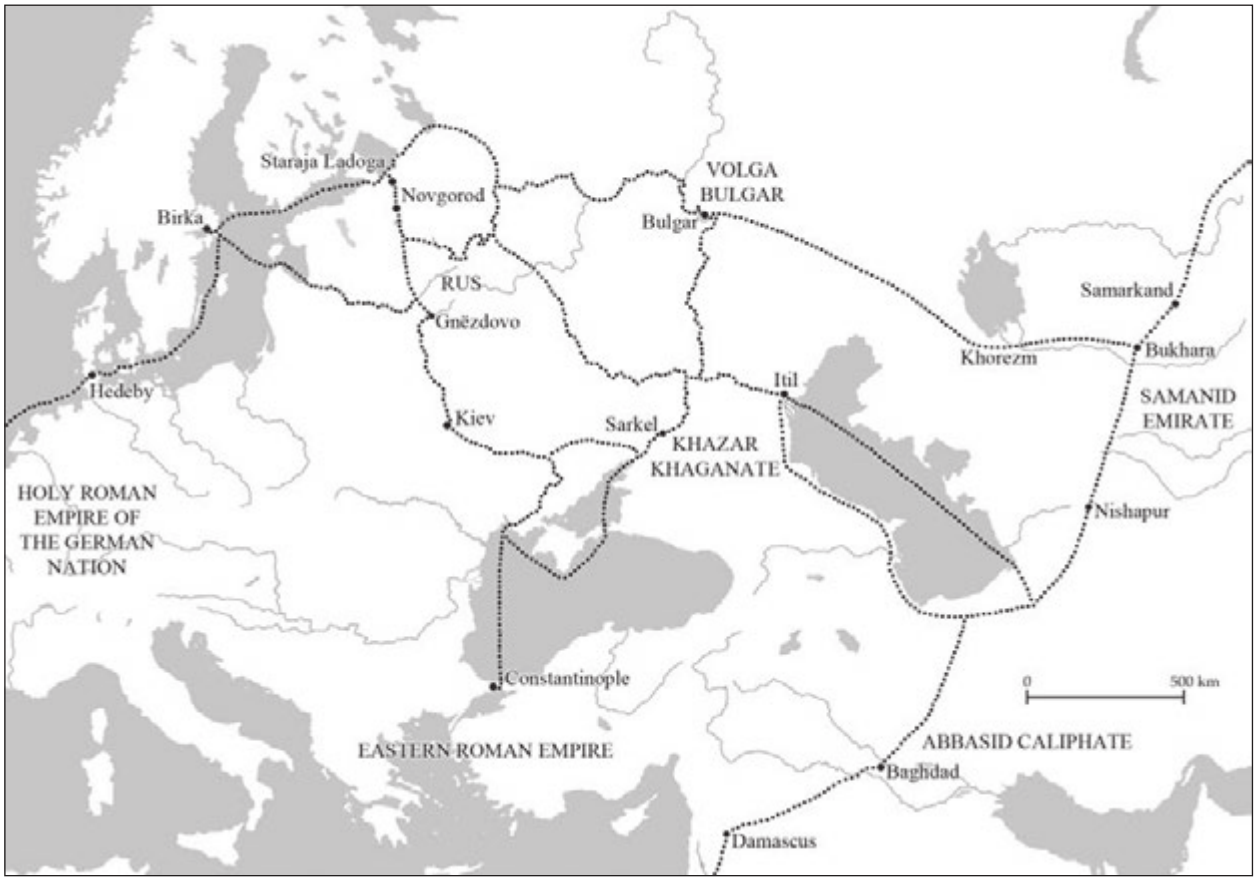


Fig. 174. *Main trade centres and routes in northern Europe and central Asia in ca 925.*

difficult to distinguish from each other. Usually it is impossible to establish how certain items changed ownership. Even what can be regarded as trading in a stricter sense leaves behind very few indicative finds that could indisputably be related to this activity. In the Baltic Sea region, direct evidence of trade is represented by balances and weights; indirect evidence consists of currency (silver coins, silver items, and their fragments) and imported items. The majority of the currency found in Estonia comes from hoards hidden in the ground, and therefore the find context and composition of the hoards constitute one of the most important sources of trade history. Unfortunately, the hoards provide rather one-sided information, mostly about circulation and accumulation of silver; how the owner of a hoard obtained his or her silver is impossible to determine today. An even more indirect type of evidence of trade and exchange, or rather their prerequisites, is provided by transport means and transport-related structures such as roads, bridges, landing sites, and harbours.

Chronologically, the Estonian archaeological sources that are related to trade (or movement of goods in general) are distributed very unevenly. Movement of goods in the Migration Period and the Pre-Viking Age is mostly evidenced by imported items, whereas relevant hoards are rare. On the other hand, Viking Age remains provide

much more source material about trade because from the 9th century onwards silver coins started to reach Estonia, part of which were buried in hoards. Transport-related sites are rare throughout the period covered in this book.

5.1. Trade space of northern Europe

Trading, first and foremost long-distance trade and trade with foreigners, has always been a part of the larger regional political and economic system, where Estonia was undoubtedly also involved. For this reason, the research findings of European trade networks, especially those of northern and central Europe, apply indirectly to the case of Estonia and imply the role of the local people in long-distance trade.

During the Migration Period, and partly in the Pre-Viking Age, trade in Scandinavia was undeveloped. Ulf Näsman (1984) concluded that Germanic households produced most necessary items themselves with a little surplus production. The societal elite gathered the surplus and exchanged it for prestige items, which were used for ensuring their power and for diplomatic gifts. The purpose of this practice was not economic profit but reputation, which was of central importance for the execution of power. As a result of regifting some items could rapidly travel over long distances. Noblemen ordered the majority of luxury handicrafts from the craftsman in their service, and until the end of the 7th century, power centres served at the same time as handicraft and trade centres (Skre 2008, 343). Craftsmen produced items for elite consumers upon request (Hjärthner-Holdar *et al.* 2000, 164–169), and there was no need to transport the products elsewhere for sale.

In the Viking Age, northern and central Europe witnessed rapid development of trade. At the beginning of the 8th century the first permanent marketplaces emerged in southern Scandinavia (see Fig. 5), for example, in Ribe and Århus in Denmark, where the first signs of mass production of standard handicrafts (glass beads and bronze jewellery) in Scandinavia have been discovered (Skre 2008, 346). Between about 750–800, several early urban trade and handicraft centres in the Baltic Sea region (e.g. Hedeby, Kaupang, Birka, Wolin, and Truso) were founded by local kings. In the mid-8th century, Scandinavians established trading posts also in Staraja Ladoga and at Rjurik's Fortress close to Novgorod, and in the mid-10th century the city of Novgorod was founded. From there Scandinavian power and settlement spread southwards to Gnëzdovo, close to modern Smolensk, and to Kiev. The emergence of urban centres had been rendered possible by the intensification of agricultural production in southern Scandinavia in the 7th–8th centuries (Näsman 2000, 60–62), as the resulting surplus of agricultural produce could feed the urban populace (Skre 2008, 353).

The development of early urban trading posts was accompanied by the emergence of independent professional merchants (Näsman 1984, 124–129; Clarke & Ambrosiani 1993; Jansson 1997, 17). Merchant networks that developed between the centres made proper long-distance trade possible (Skre 2008, 343). Indeed, the long-distance trade of the Viking Age could be regarded as a professional activity. However, the merchants of early urban trading centres constituted only a small proportion of society, and therefore, in the Viking Age, a large proportion or the greater part of material wealth continued to change ownership not by means of trade but by giving, taxation, and redistribution.

In the Viking Age, northern Europe was divided into two large economic systems, both dominated by the Scandinavians. The North Sea area — the Anglo-Saxon territories in England, Friesland, and the western coast of Denmark — adopted pennies

or denarii minted in the Frankish state as early as at the beginning of the 8th century. Already at that time in the North Sea area, money was valued by face value and not by weight (Steuer 2004, 69). The main axis of trade of this region was between the Frankish realm, the British Isles, and western Scandinavia.

Another vast trade area of northern Europe was a long-distance trade network that covered the Baltic Sea region and eastern Europe as far as the Volga River (Fig. 174). This trade area probably developed as a result of expeditions by Scandinavians from eastern Sweden to the eastern coast of the Baltic Sea, from there along the rivers of present-day Russia and Ukraine, and furthered to the east, south-east, and south. The trade route to the east was called the East Way (*Austrvegr*), a term which also designated the territory (Jackson 1995). During this period some Scandinavians, called Varangians in East Slavonic chronicles, settled permanently in the areas of Rus. From the 860s until the late 10th century, all the princes of Rus were of Varangian origin. The destination of the goods gathered by the Varangians and other local traders in northern and central Europe was the Arab Caliphate, more precisely, the areas of the present-day Iraq, Iran, and Central Asia, where traders received mostly Arab silver coins — dirhams — in exchange.

In the Baltic Sea region and eastern Europe, silver was adopted as a currency at the beginning of the 9th century. Silver was well suited for this purpose because it preserves well, is easy to transport, and, if needed, can be cut into sub-units of precise value (Hårdh 2008). Therefore, in the mid-9th century in early urban centres and more widely in the early 10th century, standard units of weight for gold and silver, as well as balance scales and weights for weighing silver were adopted, i.e. silver-based weight economy developed (Steuer 1987). Nevertheless, barter exchange remained the main method of exchange, especially outside the early urban centres (Skre 2008, 343).

Although in the Viking Age more silver was brought to northern Europe than ever before, the Scandinavians of the Baltic trade area did not use it when trading with the North Sea trade area — almost no Arab silver coins have been found there. Hedeby served as the trans-shipment point between the two trade systems (Steuer 1987, 466).

5.2. Economic hoards

5.2.1. Concept of 'hoard' and its varieties

Hoards are defined here as item collections that were buried in the ground or sunk in bodies of water. Hoards consisting of items of precious metal or coins are sometimes called treasures.

In Estonia the period between the 5th–8th centuries has revealed at least 19 hoards consisting of jewellery, weapons, and tools amounting to slightly over 400 items (Oras 2009, 16, 26). The period between the 9th century and ca 1050 has revealed about 55 hoards consisting of mainly silver coins (Molvõgin 1994; Leimus 2007d). The coin hoards of the period are complemented by a weaponry find from Järve, a cache of gold pendants in a bog pool from Essu, a hoard of bronze jewellery from Pühaste, and a bronze pin of the Late Viking Age found in the vicinity of a sacrificial spring at Kunda.

Based on the motive for concealing the hoards, they can be divided into two groups. First, there are *economic hoards* which are hidden for the purpose of recovering them when needed, and, second, *votive or ritual hoards* which consist of items offered to gods or intended for afterlife use. Traditionally, all those item collections that are hidden in bodies of water, wetlands, or burial sites are viewed as votive, while the rest are classified as economic (Urtāns 1977, 73;

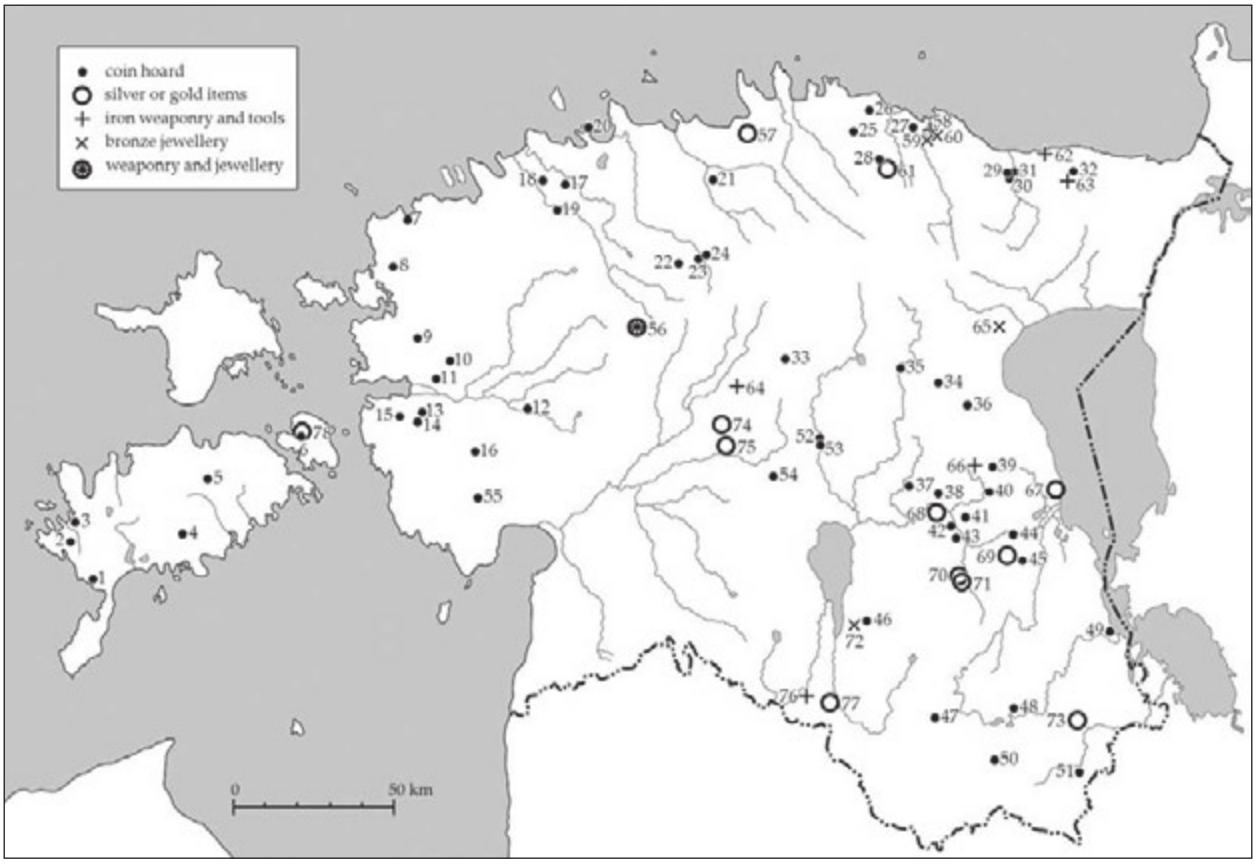


Fig. 175. *Distribution of hoards in Estonia in ca 450–1050 AD. The figure does not include three relevant coin hoards, the precise find place of which is unknown. 1 Lõmala; 2 Lümanda; 3 Rootsiküla; 4 Uduvere; 5 Räägi; 6 Viira; 7 Nõva; 8 Suur-Nõmmküla; 9 Võnnu; 10 Suure-Lähtru; 11 Väike-Rõude; 12 Vigala; 13 Lihula; 14 Parivere; 15 Järise; 16 Koonga; 17 Saue; 18 Metsaküla; 19 Äästmäe; 20 Paljassaare; 21 Kehra; 22 Alansi; 23 Paunküla IA; 24 Paunküla IB; 25 Kavastu; 26 Vihula; 27 Kaliküla; 28 Kloodi; 29–31 Erra-Liiva I–III; 32 Kohtla I; 33 Koigi; 34 Rääbise; 35 Rohe; 36 Levala; 37 Väänikvere; 38 Sootaga; 39 Vara; 40 Vesneri; 41 Raadi; 42 Tartu (fort); 43 Ropka; 44 Mäksa; 45 Võnnu; 46 Rõngu; 47 Vaabina; 48 Kirumpää; 49 Võõpsu; 50 Rõuge (fort); 51 Meeksi; 52–53 Põltsamaa I–II; 54 Imma; 55 Võlla II; 56 Paluküla; 57 Uuri; 58 Kunda (sacrificial spring); 59 Kunda I; 60 Kunda II; 61 Essu; 62 Alulinn; 63 Järve; 64 Rikassaare; 65 Piilsi; 66 Igavere; 67 Varnja; 68 Kardla; 69 Kriimani; 70 Paali I; 71 Paali II; 72 Pühaste; 73 Loosi; 74 Villevere; 75 Navesti; 76 Koorküla; 77 Hummuli; 78 Viira.*

Oras 2008; 2009). In the Middle Iron Age, ritual hoards were prevalent, whereas in the Viking Age economic hoards prevailed. In many cases it is impossible to be certain of whether one is dealing with an economic or a ritual hoard, and for this reason the classification is to some extent subjective. Because the hoards regarded as votive are not directly related to trade, they will be discussed at greater length below, in connection with beliefs (see 6.2).

As for their composition, the Estonian hoards of the Middle Iron Age and the Viking Age, both economic and votive, could be divided into the following main groups (Fig. 175):

(1) *Iron weaponry or iron weapons and tools.* Six hoards of this type are known (Rikassaare, Alulinn, Kunda I, Igavere, Koorküla, and Järve), and it is likely that they were left in the ground for votive reasons (e.g. sacrifice).

(2) *Bronze jewellery.* Hoards of this type include two economic (Piilsi and Pühaste) and two votive hoards (Kunda II and the pin found near the sacrificial spring at Kunda). The most numerous type of jewellery in such hoards is neck rings, and next in occurrence are bracelets and pins; other ornaments are less numerous.

(3) *Silver and gold items.* There are a dozen hoards of this kind (Hummuli, Kardla, Kriimani, Loosi, Navesti, Paali I and II, Uuri, Varnja, Viira, Villevere, and Essu), all votive hoards. Neck rings and bracelets are most numerous in them, although two hoards (Kriimani and Varnja) contain only a single silver vessel.

(4) *Coin hoards.* In Estonia the earliest hoards of coins were buried at the beginning of the Viking Age when silver coins appeared. Coin hoards constitute the most numerous type of hoards in the Baltic Sea area. As noted, slightly over fifty coin hoards are known from the Estonian Viking Age. Many coin hoards contain also hacksilver, and on rare occasions even intact jewellery. Coin hoards are regarded as economic hoards.

The only exception to this classification scheme is the hoard from Paluküla, which contains a rather equal share of weapons and jewellery (Oras 2009, 28; see also below, 5.2.2).

Economic hoards could be divided into *emergency hoards* and *savings hoards*. Emergency hoards were buried to hide wealth during looting raids, military campaigns, etc. Savings hoards developed in the course of longer periods of time, and they included property that the owner did not use at the moment, i.e. the surplus wealth saved in the course of everyday economic activity. Such hoards contain mostly currency, first and foremost coins, and were usually buried underground. For various reasons (e.g. owner's death), some hoards of this kind remained unused and left behind (Oras 2008).

5.2.2. Economic hoards consisting of jewellery or jewellery and weapons

The period under review has revealed only three non-coin hoards — containing jewellery and/or weapons — that could be regarded as economic hoards. The Paluküla hoard includes both weapons and items of jewellery, while the Piilsi and Pühaste hoards include only jewellery. Despite the fact that such hoards need not be directly related to trading, it is expedient to study all the economic hoards together.

The riverside of the Piilsi River in the northern part of historical Tartumaa revealed a hoard consisting of 5 neck rings, 17 bracelets, 11 fragments of what was possibly a set of stacking armlets, 2 eye fibulae, a crossbow fibula with a star-shaped foot, a bronze penannular brooch with enamelled decorations, and a few ambiguous metal fragments. Most ornaments are made of bronze; one neck ring is made of iron. Most jewellery items stem from the Roman Iron Age; however, a crossbow fibula with a star-shaped foot comes from the beginning of the Migration Period. The hoard was discovered in the flood plain of the Piilsi River at a depth of 80–90 cm, in the old riverbed. It remains unclear whether the items had originally been deposited on the bottom of the river, or they had been buried in the riverbank from where they were later washed out (Moora 1935). The location of the hoard favours its interpretation as votive; on the other hand, its composition — jewellery of different dates and in crushed condition — shows that it could be a collection of scrap metal, perhaps obtained by means of grave robbery. In Finland there is a hoard with a similar composition from Hattelmala in Hämeenlinna

which consists of a large number of bronze ornaments and fragments thereof. The earliest items of this hoard had been made at the end of the 8th century and the most recent ones in the 10th century (Ailio 1928). There are also some other Finnish finds that include items obtained by means of grave robbery (see Taavitsainen 1990, 45).

One of the largest and most diverse hoards, in terms of its composition in the context of the entire second half of the first millennium, was uncovered on the lands of Kunilepa farm at Paluküla, Harjumaa, in the 1920s. This hoard includes 5 swords (Fig. 154: 2–3), 3 of which had been deliberately deformed, 21 spearheads (Fig. 158: 5, 10), 4 knives, a spur (Fig. 172: 2), 21 fibulae (Figs. 93: 4–5; 95: 1; 97: 1), 2 ring-headed pins (Fig. 100: 3), 2 neck rings, 4 bracelets, and more, totalling 70 items. After the original discovery, a bracelet was found at what was probably the same place. The hoard was found during ploughing at the edge of a bog, and it is dated to the second half of the 8th century (Tallgren 1924; Mandel 1991a, 102; Oras 2009, 64, 162).

The Paluküla hoard has been interpreted in several ways. Tallgren (1924, 52, 54) held that it was a cremation burial, which is doubtful because only one knife shows traces of burning (Mandel 1991a, 102). It has also been regarded as a plunder of a grave robber (Lang 2007a, 257), or a cache of scrap metal linked to a smithy; the latter view is supported by bloom iron found in the same place and the findings of a metal detector that indicates abundant iron in the ground (Mägi & Haljak 2000). The co-occurrence of jewellery and weapons makes this find clearly different from the other hoards. The view that it is a collection of scrap metal can be probably regarded as the most plausible, which does not exclude the possibility that at least some items came from robbed graves.

The hoard found at the village of Pühaste, southern Tartumaa, includes a double crosshead pin, two chain holders (Fig. 110: 2–3), a few chain fragments, three bronze neck rings, eight finger rings (Fig. 131: 2), abundant tin plaques (Fig. 149), a few dozen rumbler bells, as well as enamel, glass, amber, and tin beads (see 4.3.1.5; Fig. 111: 8–9), etc. All the items were arranged inside the neck rings, and found at a depth of 20–30 m directly below the turf (Vassar 1938a). The hoard has been dated to the first half or the middle of the 11th century (Mägi 1997, 47). It seems to be a female jewellery set which was intentionally buried in the ground.

5.2.3. Distribution and find context of coin hoards

About 55 Viking Age coin hoards that have the earliest date of burying (*tpq*) of 1050 or before have been found in Estonia (Fig. 176; Molvõgin 1994; Leimus 2007d). The majority of the coin hoards have been found in the coastal region, mostly in Läänemaa, Harjumaa, and Virumaa (Fig. 175). In inland Estonia the richest region with regard to coin hoards is the vicinity of Tartu and the southern part of northern Tartumaa north of the Emajõgi River. Elsewhere in Estonia coin hoards are less common.

Unfortunately, the majority of the coin hoards have been found in the 19th or the early 20th century,

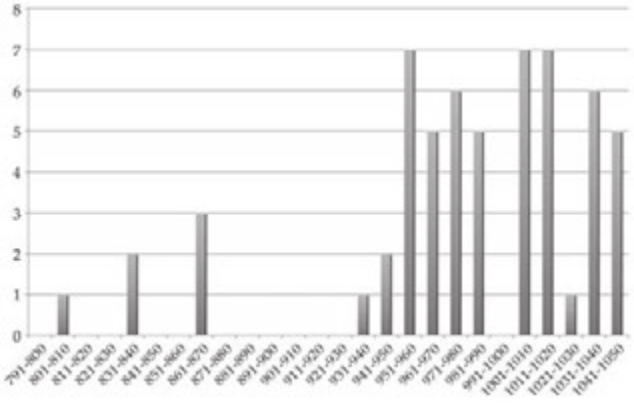


Fig. 176. *Temporal distribution of Viking Age coin hoards in Estonia (data: Leimus 2007d; Molvõgin 1994).*

when little attention was paid to find contexts. Despite this, one can conclude that most of the coin hoards had been buried within a settlement site. As a rule, they were buried up to a depth of 30 cm, usually inside the dwelling or its close vicinity. In that case the property remained under the owner's control and could be recovered quickly if necessary. Fort sites have revealed two Viking Age coin hoards: one of them is a small four-coin hoard from Rõuge (*tpq* 808/809; Fig. 177); the other is a hoard from Tartu that consists of at least 41 coins (*tpq* 984/985). In fact, the latter was found from the foot of the fort, but it is likely that the hoard had moved there from the fort as a result of erosion or earthwork (Leimus 2007d, 48f.).

Sometimes, however, cash hoards could be hidden farther from the residences. For instance, the Paljassaare hoard (*tpq* 1010/1011) in the territory of present-day Tallinn was discovered on the seashore at a depth of 30 cm. It had originally been hidden at the bottom of the sea near a former islet. That this hoard of 130 coins had not been lost or sacrificed is evidenced by the fact that the coins were found between two rotten wooden piles, which could have been driven into the sea bottom to mark the hiding place (Friedenthal 1932/1934). The find site of the Metsaküla hoard in Harjumaa (*tpq* 964/965) did not show any traces of the settlement layer either. This hoard was uncovered next to a large boulder, probably serving as a marker of the hiding place (*ibid.*). Such hoards could represent emergency hoards.

In the cases in which the hoard was found in a container, or the finder noticed this circumstance, this container has usually been made of clay (Fig. 178). However, some hoards were buried in wooden or bark containers or in textile or leather bags.

Fig. 177. *Hoard from the fort at Rõuge (AI 4040: 1231, 1105, 1258; photo: Kristel Külljastinen).*

5.2.4. Composition of coin hoards

The Viking-era coin hoards consist mainly of *silver dirhams struck in the territory of Arab Caliphate*, with the standard weight of 2.97 g (Figs. 177–178; 179: 1). The earliest dirham finds in Russia, Sweden, and Poland date from the end of the 8th century, and they consist mainly of North African mintage. The oldest European hoard that included Arab coins (*tpq* 786/787) was found in Staraja Ladoga (Noonan 1982). The youngest coin in the earliest Estonian hoard of Arab coins, a small four-coin hoard from the fort at Rõuge (Fig. 177), was struck in 808/809 (Leimus & Kiudsoo 2004, 32). The earliest large-scale hoard of Arab coins (*tpq* 837/838) is from Kohtla, eastern Virumaa. Originally it contained over 500 coins, most of which had been minted in Baghdad and at other mints in the territory of present-day Iraq; all in all the hoard contained over a kilogram of silver (Anderson 1926; Leimus & Kiudsoo 2004, 32f.).

Over 80,000 Arab dirhams have been found in Sweden, and approximately 67,000 of them come from Gotland (Östergren 2009). The latter has indeed more Viking-era silver treasures than any other area of comparable size. The traditional

explanation is that this is a result of the Gotlanders' active participation in eastern trade. More recently, however, researchers have started to believe that in Gotland the silver remained buried in the ground because the use of silver as currency was limited, and it was not 'invested' (Blomkvist 2009, 182f. and citations therein). It may be that Gotlanders were first and foremost active as shipowners who transported the goods bought by merchants. About 100,000 dirhams have been found in Russia and 30,000 dirhams in Poland. As for Estonia, there is firm evidence of about 5000 Arab dirhams found here. This figure is higher than, for example, the case of Denmark (4000), Finland (1700), Latvia (2340), or Lithuania (300) (Leimus 2007d; Talvio 2002, table 1).

In the 9th-century finds, coins of the Abbasid dynasty prevail (Fig. 177: 1). These coins reached the Vikings mostly via the Khazar Khaganate, located in the steppes between the Black Sea and the Caspian Sea. At that time the Scandinavians sailed south-east from Kiev via the Dnieper River to the Black Sea and across the Sea of Azov, or from Kiev via the Don River, to the Khazar centre Sarkel (Fig. 174). The Khazars, who spoke Turkic languages and whose elite practised Judaism, spread the silver of the Caliphate northwards; they prevented a Muslim invasion of eastern Europe by fighting constant wars with the Arabs.

In the 10th century, the Abbasid coins were replaced by dirhams of the Samanid Emirate in central Asia, which had been minted in Samarkand, Bukhara, Toshkent, and other places (Figs. 178; 179: 1). After the destruction of the Khazar Khaganate sometime during the period of 965–969 by the army of Svjatoslav, the Grand Prince of Kiev, the trade expeditions of the Scandinavians were re-located, now proceeding along the Volga as far as the Volga Bulgar state, which had close trade links with the Samanid Emirate (Fig. 174). It has been estimated that about 125 million dirhams were struck on behalf of the Samanid dynasty in the 10th century

Fig. 178. *The Kehra hoard (AI 3893; 5000/18; photo: Jaana Ratas).*

(Noonan 2001), which were intended mostly for trade with northern and central Europe (Kovalev 2002). This means that each year about 3.75 tons of silver coins were transported from central Asia to northern Europe. In those decades the amount of trade between the Samanid Emirate and the Volga Bulgar state exceeded the amount of long-distance trade in the entirety of western Europe (Noonan 2001). According to another estimate, about 380 million (mostly Samanid) dirhams reached Rus in the Viking Age, which amounts to over 1000 tons of silver (Leimus 2006, 19 and citations therein).

This period is represented by the largest known Estonian hoard of Arab coins — the Saue hoard of almost 1000 coins (*tpq* 951/952), found in Harjumaa. Originally it may have included up to 10 kg of silver, with coins being complemented by some silver ingots and neck rings (Leimus 2007c). The other larger hoards include those from Põltsamaa, central Estonia (over 500 coins; *tpq* 940/941), and Väänikvere, northern Tartumaa (490 coins; *tpq* 942/943) (Leimus 2007d, 18–22).

All of a sudden the flow of Arab silver into the Baltic Sea area dried up in the 970s (Noonan 1989;

Fig. 179. *9th–11th-century silver coins from various hoards: 1 Arab (Samanid) dirham (Kehra); 2 Byzantine miliaresion (Võlla II); 3 denarius of Otto and Adelaide, minted in Germany, presumably Goslar (Linnakse); 4 English penny (Vaabina); 5 srebrenik of Jaroslav Vladimirovič (Kose?) (photo: 1–4 Kristel Külljastinen, 5 Ivar Leimus).*

for possible reasons see Leimus in print). Despite this, Arab coins prevailed in the Estonian hoards until the 980s–990s (Leimus 2007b, 36). A typical example of this period is the hoard from Kehra, Harjumaa (*tpq* 979; 421 coins), of which dirhams still form 98% (Fig. 178). However, in the Vaabina hoard, which is slightly younger (*tpq* 1012/1013; 374 coins) the proportion of Arab coins decreased to 58%. From that time onwards this figure declined rapidly, and by the mid-11th century only a few Arab coins remained in circulation along with German and English minted currencies (Leimus 2007b, 34). The end of the inflow of Arab coins was accompanied by a decrease in the size of hoards — the coin hoards from the beginning of the 11th century are rather small, including coins numbering between a few dozen and a few hundred (Molvõgin 1987).

The Arab coins from the end of the 10th and the beginning of the 11th century that have been found in Estonia did not originate from the Samanid mints but from the mints of the Buyid, Uqailid, Hamdanid, and other dynasties. The latest dirham in the Estonian finds was struck in 1013/1014. Interestingly enough, the Estonian coin hoards are somewhat richer in the latest Arab coins, mostly of Mesopotamian origin, than hoards elsewhere in the Baltic Sea area or in Russia (Leimus 2007a).

The relatively few 215 *Byzantine silver miliaresia* included in Estonian hoards belong to the same era as the latest Arab coins. The largest hoard including such coins was found at Võlla not far from Pärnu (Leimus 2009). In addition to Arab and German coins, the hoard contained at least 143 miliaresia, which had been minted in Constantinople mainly on behalf of the Emperors Basil II and Constantine VIII (Fig. 179: 2). The hoard had been buried at the beginning of the 11th century (*tpq* 1002/1003).

The end of the inflow of Oriental silver at the end of the 10th century brought about a need in Europe to put to use its own silver deposits. In 962 the Rammelsberg deposits were discovered in the Harz mountain range, which subsequently became the principal suppliers of precious metals to German and English mints. During the same period several new mints were set up in Europe. As their production exceeded considerably the needs of the domestic market, large amounts of

coins minted in what today are Germany and England were transported to the Baltic Sea lands from the end of the 10th century to the beginning of the 12th century. The spread of German coins to West Slavonic lands and Scandinavia, as well as to what today are the Baltic States, was clearly related to the eastward expansion of the Holy Roman Empire of the German Nation and the missionary work of the Magdeburg and Bremen-Hamburg bishoprics in these areas (Leimus 2007b).

So far at least 85,000 German coins of the 10th–12th centuries have been found in Sweden, 53,000 in Poland, 33,000 in Russia, 10,500 in Estonia, over 9000 in Denmark, 4000 in Finland, and 2000 in Latvia. The German pennies in Estonian hoards mostly originate from Rhineland towns — Cologne, Mainz, Speyer, and Worms; however, the so-called denarii of Otto and Adelaide (Fig. 179: 3), which were probably minted in Goslar, are most numerous. A few Estonian hoards contain among the German pennies occasional Frisian coins (Leimus 1996, 42f.). English pennies (Fig. 179: 4) were less common in the Baltic Sea lands — 43,000 have been found in Sweden, 5400 in Denmark, 3350 in Russia, 2000 in Estonia, 1300 in Poland, 950 in Finland, and 210 in Latvia. Coins of mintage from other areas, including Denmark and Sweden, are much rarer (*ibid.*, 43).

The earliest Estonian find containing coins from western Europe comes from Metsaküla not far from Tallinn (*tpq* 964/965). There were 57 coins, including 28 Arab dirhams, 4 coins minted in Germany, 1 in Italy, 2 in Bohemia, and as many as 22 in Hedeby. It is the only find of Hedeby bracteates in Estonia, probably pointing to some close contact with this centre (Leimus 1996, 43).

In about 1020 the flow of coins from western Europe to Estonia came to an end and was not restored until as late as ca 1060. As in the neighbouring countries coin finds from that time are numerous, their absence in Estonia probably indicates some domestic cause (Molvõgin 1994, 581f.). An example of an 11th-century hoard is the Rohe hoard from northern Tartumaa (*tpq* 1047); of its 154 coins 108 were German, 35 Anglo-Saxon, 5 Danish, 1 Swedish, and 1 Hungarian (*ibid.*, 169–175).

Fig. 180. *Spiral silver ingot from the Ääsmäe hoard (AM A 70; photo: Ivar Leimus).*

The history of coins in Estonia is not complete without mentioning a very rare type of coin — *srebrenik*, the silver coin of Jaroslav the Wise, the Grand Prince of Kiev (Fig. 179: 5). Three such coins have been found in Estonia: one in the land of Raadi manor close to Tartu (Kruse 1842, D 19), one somewhere in Saaremaa, and one presumed to be from the hoard found at Kose not far from Tallinn (Leimus 1995, 23). All in all only seven coins of this type have been preserved — beyond Estonia, one srebrenik was found in Germany, two in Sweden, and a quarter of a coin in Poland. The only coin of this type in former Rus lands was found in Kiev, but it was subsequently lost (*ibid.*). Coin historians assume that these coins were minted in Novgorod (Kunik 1860, 43; Sotnikova 1982; 1995, 208f.).

During the Viking Age, silver ingots were also used as currency. *Spiral silver ingots* (Fig. 180) are common especially in Gotlandic hoards of the 10th century, but they were not unknown elsewhere in the Baltic Sea region (Stenberger 1958, 226). Six spiral ingots have been found in

Estonia. One of them is of unknown provenance, while the others come from three hoards: the Metsaküla and Ääsmäe hoards have been dated to the end of the 10th century (Tõnisson 1962, 189, 214; Leimus 2007d, 34, 38), and *tpq* for the Väike-Rõude hoard is 1017 (Leimus 1991, 150). These ingots follow the ca 100-gram weight standard (Stenberger 1958, 226) — for instance, the Väike-Rõude spiral silver ingot has a weight of 94.83 g (Leimus 1991, 151). The hoard from Metsaküla revealed two fragments of a *flat silver ingot with rectangular cross-section* (Tõnisson 1962, 188). Ingots of this type that have been discovered in the neighbouring countries and in the Final Iron Age hoards in Estonia usually display marks of striking, with the intact ingots bent in the shape of a bracelet.

Viking Age hoards contain cut or broken silver jewellery, silver ingots, and coins, known as *hacksilver*. It indicates that silver trading took place mainly on the basis of weight. Usually such silver items had been hacked before they reached Estonia. This is proved by the fact that hacksilver includes some types of jewellery that have never been found in local graves, for example, the neck rings plaited of silver wire of the Paunküla IA and IB hoards (Jaanits *et al.* 1982, fig. 264).

5.2.5. Use of silver as currency

As stated above, in the Viking Age in Estonia and in the neighbouring areas, silver was regarded as a precious metal or a raw material, the minting of which had no significance since the value was measured by weight. In other words, it was a weight economy that was silver-based. Silver started to be weighed in the second half of the 9th century (Steuer 1987). To this end bronze balance scales with foldable beams were adopted, which were stored together with weights in a special bronze case. No balances or their parts of indisputably Viking Age date have been found in

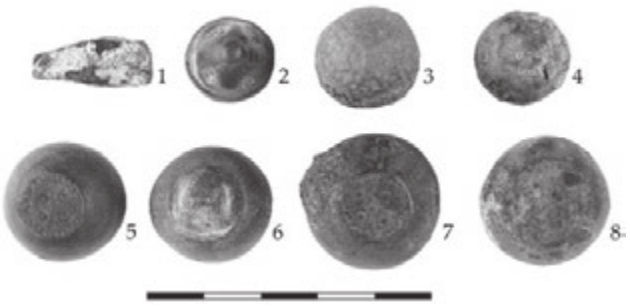


Fig. 181. *Weights found at the bottom of Lake Võrtsjärv at Vaibla (TÜ 434; photo: Kristel Külljastinen).*

Estonia — all the scale finds are Final Iron Age in date.

Five main types of weights can be encountered in the find context of the Viking Age in Scandinavia and the neighbouring countries: oblate spheroidal, cubo-octahedral, cylindrical, hemispherical, conical, and double conical weights (Kyhlberg 1980). Only the two first types are represented in the Estonian archaeological record. In Estonia and elsewhere one can find standard weights, the weight of which has been increased by attaching a piece of lead by melting or decreased by filing. Also, pieces of metal were used as weights. No in-depth study of Estonian prehistoric weights has been attempted, and for this reason it is impossible to even provide their total number. As of 1982, 145 weights of the Late Iron Age had reached the Estonian museum collections (Leimus 1982), and it is clear that at present this figure is higher. It is likely that most of them date from the Final Iron Age.

The majority of weights found in Estonia are *oblate spheroidal* in shape, with two flat poles where the unit of weight is indicated by dots; they have an iron core and are coated with bronze. Such weights emerged in the later 9th century (Steuer 1987), and continued into the 13th century. Unfortunately, all the weights have been found in burial places, hill forts, and settlement sites that had been used both in the Viking Age

and the Final Iron Age. More precise dates can be provided for weights that are included in hoards; for instance, the hoard from Vigala, Läänemaa (*tpq* 1036?), included at least three oblate spheroidal weights.

An extraordinary find is the set of mostly oblate spheroidal weights found at the bottom of Lake Võrtsjärv at Vaibla, near the northern shore of the lake (Fig. 181). On the basis of appearance, the Vaibla weights could be dated to the 11th century (see Steuer 1987). The set includes:

(1) a wedge-shaped piece of iron (4.015 g);

(2) a weight filled with lead, which had been made from a bronze chain distributor of balance scales (8.290 g);

(3) a bronze (?) spheroidal weight with an extensively corroded surface (12.970 g);

(4) a spheroidal weight with flat poles, each having two dots (13.610 g);

(5) a spheroidal weight with flat poles, each having four dots (30.035 g);

(6) a spheroidal weight with flat poles with attached lead (31.010 g);

(7) a spheroidal weight with flat poles, each having five (?) dots (36.610 g);

(8) a spheroidal weight with flat poles, each having five dots (36.610 g).

Apparently, several systems of units of weight were used in the Viking Age. The Vaibla find fits in with the most widespread system, which is based on the örtug (ca 8.43 g), a Scandinavian unit of weight. Twenty-four örtugs made up 8 öre, which equalled a mark (ca 200 g). The rather numerous weights found in the Baltic Sea lands suggest that the weight of the noted units was, in fact, somewhat less at that time, and far from precise. Also, the construction of the balance scales of this period did not allow accurate weighing (Leimus 1996, 47). The total weight of the Vaibla find amounts to 173.15 g, and the weights of the set had the values of 0.5, 1, 1.5, 2?, 4, and 5 örtugs. Their total value is therefore 23 örtugs or one örtug less than a full mark, which is probably not accidental (Ivar Leimus, oral report). It could well be that an örtug weight or two half-örtug weights were not found; also, the weight of the set may have decreased as a result of corrosion.

Fig. 182. *A bronze cubo-octahedral weight and bronze dog figurines — presumably weights — from graves: 1, 4 Maidla II; 2 Kõmsi III; 3 Varetemägi at Ehmja (AM A 580: 1800; 510: 180; 554: 777; 580: 1190; photo: Kristel Külljastinen).*

Very few *bronze cubo-octahedral weights* have been found in Estonia; examples include weights from the burial sites of Maidla II, Läänemaa (Fig. 182: 1), and Uduvere, Saaremaa. In the Baltic Sea lands and in northern Russia such weights were common since the 860s–870s until the end of the 10th century. Their weight was on average 4 g, and their quadrangular sides bear ring-and-dot designs (Gustin 2004, 100–107, 314).

Also, *bronze dog figurines* can be regarded as weights. As of 2010, they have been found only in stone graves in Läänemaa. Grave III at Kõmsi yielded a dog figurine 3 cm in length (Fig. 182: 2). The design of the dog resembles the Jellinge style, thereby dating the figurine to the 10th century (Jonuks 2006, 36). As it has no eyelet for attachment, it cannot be a pendant. The weight of the figurine — 7.97 g or almost one örtug — suggests that it could have been used as a weight (Mandel 2003a, 88). A bronze dog figurine found in Varetemägi grave at Ehmja (Fig. 182: 3) was 4 cm in length and 3 cm in height, also without a hanging eyelet, and could be dated to the 10th–11th centuries (Jonuks 2006, 35). Its weight is 23.28 g, i.e. approximately three örtugs or one öre. Two similar bronze dog figurines were found in stone grave II at Maidla (Fig. 182: 4; Jonuks 2006, figs. 5–6), but these may be of the Final Iron Age date.

A similar horse figurine, perhaps also a weight, was found in Finland (Kivikoski 1973, no. 1162).

By comparison with Viking Age trade and craft centres of northern Europe, the number of weights found in Estonian forts and settlements is notably small. Early urban centres in northern Europe, for example, have revealed about 100,000 cubo-octahedral weights alone (Steuer 2004, 76). Apart from weighing silver by traders, craftsmen utilized weights for measuring metals to be used as alloy ingredients in bronze casting (Steuer 2009, 294). As noted above (4.5), the small number of moulds in Estonian forts and settlements shows that bronze casting was not common. The paucity or absence of weights seems to support this view.

The proof marks on coins allow some conclusions to be drawn about the circulation of silver at that time. Pecking the coins with a sharp-pointed object, probably a knife, was one of the principal methods of determining the quality of a precious metal in the Baltic Sea lands. There are also coins that have been bent once or repeatedly, which must also have been a silver-testing method. In the case of hoards with different dates and find sites, a study of the amount of such pecks and bends could yield important results for the determination of the circulation speed of coin silver. Leimus (1991, 150f.) compared the hoard from Väike-Rõude, Läänemaa (*tpq* 1017), and the earlier part of the hoard from Kose, Harjumaa (*tpq* 1121), that chronologically matches the former hoard. The average number of pecks on the German coins of this part of the Kose hoard was 12–15 while that of the Anglo-Saxon pennies was 12. German coins of the Väike-Rõude hoard feature 10 pecks and Anglo-Saxon coins 9 pecks on the average. Thus, only 3–5 additional pecks appeared on the coins in the course of a century or slightly more that separated the two comparable hoards, which shows that circulation was rather slow. Naturally, one does not know where the coins of one or the other hoard had been pecked in the Baltic Sea area. Nor is it known whether or not the coins were tested at the time of each transaction or change of ownership (Leimus 2003a).

Usually, Viking Age silver coins of Estonia occur in hoards; single coins found in the forts and settlements of the second half of the first millennium are rare. For example, the hill fort at Iru revealed two Arab coins, and the settlement revealed a denarius from Friesland, struck between 1038 and 1057 (Lang 1996a, 101, 117). Two Arab dirhams were unearthed in the fort-settlement at Aakre, one each in the forts at Vooru and at Konuvere, and one in the vicinity of the fort in Viljandi (Leimus 2007d, 85, 87). The largest number of Viking Age single silver coins, all of them Arab dirhams, were found at Rõuge — the fort revealed ten (four of which were found as a small hoard — Fig. 177) and the settlement at least an additional six coins (Leimus & Kiudsoo 2004, 31). In graves, too, Viking-era coins are rare, and some of them have been used as pendants (see Leimus 2007d, 87–92). The small number of misplaced coins in the forts and the settlement sites shows that coins and silver in general were rarely used as currency.

It seems that barter trade predominated in Estonia throughout the Viking Age. The method of measuring coins by volume or weight, the occurrence of hacksilver in hoards along with coins, the large amount of precious metal in hoards excluded from circulation, as well as the low frequency of markers of coin testing, all demonstrate that silver was uncommon as currency in this area (Leimus 1996, 48).

Fig. 183. *Bronze ingot from the fort at Rõuge (AI 4040: 4021; Schmiedehelm 1959, pl. V: 1).*

5.3. Goods

5.3.1. Domestic trade

Here domestic trade implies movement of goods between the different parts of what today is Estonia and also within the areas what today are north-western Russia and northern Latvia, which at that time formed a single linguistic and probably also cultural region. Although it is virtually impossible to observe this kind of exchange of goods on the basis of archaeological material, it is nevertheless likely that people exchanged the produce of their own farm for some needed item, raw material, seed grain, or a domestic animal with one's neighbours or within an administrative unit. For instance, the land tillers of northern Estonia and the fishermen of the islands of the Gulf of Finland and the northern coast practised so-called friend barter between specific families well into the 20th century — salted fish from the coast and the islands was traded for grain and potatoes from the continent (Päiviö 2009). Similar exchange networks may have existed as early as in the Iron Age, and they enabled people to exchange, for example, agricultural produce for silver or for hunting products, honey, tar, etc.

5.3.2. Imported goods

Those goods designated here as imported goods primarily include the raw materials that could not be found locally and, secondarily those items about which no data regarding local production have been obtained or the foreign location of their production is assured.

Silver as an imported metal was discussed above, in connection with coin hoards. In Estonia there are no copper or tin deposits, and therefore all the *bronze* or its components *copper and tin*, which are needed to produce jewellery, was imported. Despite this, the artefactual record of the Estonian Middle Iron Age and the Viking Age includes only one bronze ingot — a small bronze ingot with trapezium-shaped cross-section from the fort at Rõuge (Fig. 183). It is likely that scrap metal was used extensively to produce items of non-ferrous metals. For instance, the find assemblage of the fort and settlement at Rõuge includes a large proportion of broken bronze ornaments, and the larger part of it is probably scrap metal. The previously described hoards of Piilsi and Paluküla may also have been collections of scrap metal. Several foreign items in the Paluküla hoard, for example, the penannular brooches of Finnish origin (see 4.3.1.1; Fig. 97: 1), suggest that part of its scrap metal had been looted from graves in Finland and, thus, had been imported to Estonia.

In addition to the imported nature of bronze, at least a proportion of the *jewellery* worn during this period had been imported as finished items. This is evidenced by the fact that, as noted above in connection with handicrafts, in Estonia there is no evidence of casting larger bronze jewellery locally; additionally, some jewellery indisputably originated from the area of the Baltic tribes or from Scandinavia. Nor is there any evidence of glass-work, which makes one think that glass beads were also imported. Beads of the Middle Iron Age probably originated from some westward location. Large multicoloured glass beads, which were common in the Viking Age, were imported from the Orient.

There are different views of the existence and scale of *weapon trade* in the Viking Age. The origin of some weapon types is rather generally agreed, for instance that sword blades with the inscription VLFBERHT were made in some Frankish weapon workshop in Rhineland. Traditionally, Gotland has been considered to be a place where luxury weapons were produced and exported (Nerman 1929; Sperber 1993). However,

Kristina Creutz (1995; 2003) argues that there were no traces of weapon export from Gotland. One might also doubt whether weapons were articles of commerce. Their production and distribution was probably organized by noblemen, i.e. a nobleman or a weapon user commissioned the production of a weapon (Creutz 1995). Nevertheless, it is likely that the Frankish sword blades may have reached Estonia by means of trade because it is unlikely that Estonian noblemen travelled to Rhineland to fetch the swords. One might even claim that the Rhineland sword blades reached Estonia by smuggling, as Charlemagne had in 805 once again strictly forbidden the sale of swords to pagans (Herrmann 1982, 140).

A vague idea of the prices of weapons and other goods in the Viking Age can be obtained from the written records of that time. In Rus the price of a sword was ca 125 g of silver in the 11th century; a spear cost ca 50 g. A common knife cost 3 g of silver or one dirham, and the same price applied to a glass bead. By comparison one might add that a horse cost ca 150 g of silver, a cow 80 g, and a pig 10 g. In fact, weapons were very expensive by comparison with food prices. In about 965 in Prague, a dirham could buy 25 hens or an amount of wheat that could feed a person for 75 days (Herrmann 1982, 106).

Also, *moulds* or their blanks were imported, as many of the moulds found in Estonian forts and settlement sites are made from varieties of rock that cannot be found in Estonia (see 4.2.2). It is possible that one part of *whetstones*, especially the carefully crafted specimens from fine-grained rock varieties, had been imported, for instance, from Norway where they were exported in large numbers in the Viking Age and also later (see Roesdahl 1982, 90).

As for bone items, *combs* were probably imported to Estonia (Luik 2005, 45). The fact the layers of the city of Novgorod from the end of the 10th century and the first half of the 11th century did not reveal any remains of double-sided bone combs (Smirnova 2002, 92f.) suggests that the bone combs of the Pre-Viking Age and the Viking Age in Estonia are of Scandinavian origin.

There are several *salt* deposits in the territories of the present-day Germany and Poland, which were put to use as early as in the 7th–8th centuries (Herrmann 1982, 107). Salt was one of the main articles of commerce also in the medieval Hanseatic trade in the Baltic Sea region.

5.3.3. Exported goods

There is only indirect evidence of exported goods, i.e. products procured or made in what today is Estonia and sold in other regions. There are no data about transit trade passing through Estonia.

The exported goods of the entire Baltic Sea region reached first and foremost the markets in Islamic lands, owing to Scandinavian merchants. Arab men of letters of the time mention various products that were supplied from the north and the west to the east. The main items were furs and slaves but also honey and wax. A more extensive list can be found in a work by the Arab geographer Al-Muqaddasi written in 985–986. According to this account, the following goods were brought from Volga Bulgar to Khorezm and then distributed: furs of sables, squirrels, ermines, steppe foxes, beavers, and hares; goat leather, as well as wax, arrows, poplar bark, hats, fish glue, fish teeth, castor, ambergris, tanned hides, honey, hazelnuts, falcons, swords and chain mail, birch bark, slaves of Slavic origin, sheep, and cattle (Abu Abdallah al-Mukaddasi, 325). Because Estonia is far from Volga Bulgar, only those goods that could be transported over long distances, and would be profitable to do so, would have reached this destination.

As noted above (4.5), in Estonia there are no traces of crafts that exceeded the needs of local consumption, or the production of items for which there could have been some demand beyond the

region of production. Thus, there is no good reason to speak about the export of craft products from Estonia during the period under review. The conclusion is supported by the fact that very few items have been found in other countries that are characteristic of Estonia and could have originated here. A stray find from Gotland represents a fragment of a triangular-headed pin with leaf ornamentation, which is characteristic of Saaremaa (Jansson 1995, 88, fig. 7). Another stray find from Gotland is a fragment of a double crosshead pin with open branches, which had been used as a pendant (*ibid*.). A similar pendant was found as a grave find in Västmanland in continental Sweden (Jaanusson 1971). The westernmost find that probably originated from Estonia is a fragment of a triangular-headed pin with leaf ornamentation from Hedeby (Hildeberg 2009, 101, fig. 22). One can see that the Estonian-style jewellery found in Scandinavia is represented by fragments, which suggests that it reached there as scrap metal. Also, the double crosshead pins could have reached Scandinavia as fragments, where they were turned into pendants. In the east, the layer of the first half of the 10th century in the Rjurik's Fortress of Novgorod revealed fragments of at least five fine ware bowls, which have precise counterparts in the hill fort at Iru (Plohov 1995). However, the number of such vessels found in the Rjurik's Fortress is so small that it does not substantiate claims about the export of fine ware clay vessels from northern Estonia.

Since the Viking Age, the most definite article of export from Estonia was *iron* — a raw material that was in short supply all over Europe in the Iron and the Middle Ages. In Estonia the raw material of iron in the form of bog iron can be found in many places. It has been estimated that about half of the iron produced in Estonia in the 12th–14th centuries — that is ca 1500–2000 tons — was exported. For this period, this was an enormous amount that could meet the need of iron for about a million people, based on the estimate that an average person consumed about two kilograms of iron during one's lifetime (Peets 2003, 135f.). Iron from Saaremaa with its low phosphor content was of an especially high quality, and, thus, it was a highly appreciated raw material. It is likely that the export of iron from Estonia began already before the Final Iron Age. Ivar Leimus (2003b, 52) has pointed out the fact that among the coastal areas of Estonia the density of hoards is highest in Saaremaa and Virumaa, which also provide ample evidence of ancient iron production.

Exported goods could have included *grain* and *livestock animals and their hide*, although there is no direct evidence of any trade in agricultural produce. Because of primitive transport methods it is unlikely that agricultural products could have been sold far away or in large amounts. It is likely that there was no demand for Estonian agricultural products in the south or in the west, as opposed to the north (Finland and Karelia) and the early urban centres of the eastern neighbouring areas (Staraja Ladoga, Novgorod, and Pskov), where the natural conditions for land cultivation were less favourable than in Estonia.

Unfortunately, *forest products*, such as furs, honey, wax, or tar, have left behind no traces in the archaeological record. Furs with the highest quality were obtained from areas farther north where animals grow thick winter furs. Among the Estonian fur-bearing animals, the beaver probably had the greatest economic significance, as the high proportion of beaver bones in the osteological record of the forts in southern and eastern Estonia show (see 3.3.2). Beaver furs and castor could have been the most profitable exports from Estonia, destined for the areas of the Arab Caliphate (Leimus & Kiudsoo 2004).

In Gotland the harbour site of Paviken reveals traces of shipbuilding, providing grounds to suppose that oakwood *ships and boats* there were an important export article in the Viking Age, which could be sold, for instance, to Finland and

Norway (Sperber 1993). The same could be true with regard to Saaremaa. Considering the active international contacts of the people of Saaremaa, which are proved by numerous imported items and which are mentioned in written records, there must have been many ships and boats in Saaremaa, and it is likely that the majority of them were built locally. The existing evidence does not enable researchers to claim whether they may have been exported or not. However, Saaremaa's natural resources provide all the raw materials that are necessary for shipbuilding — timber, iron, and tar.

The existence of extensive *slave trade* is revealed by sagas, as well as by Rus, Arab, and Byzantine written records. Arabs of Central Asia, the Middle East, North Africa, and the Iberian Peninsula used slaves from northern and eastern Europe as harem concubines, workers, and warriors. There were large slave markets even in the Christian Byzantine Empire (Herrmann 1982, 133).

The only reference to slaves of Viking-era Estonia is an episode in the saga of Óláfr Tryggvason (see 1.2.1). Among other things it appears that the price of a slave of noble birth was in one case 'a good goat' and in another case 'an expensive garment'. For background one might add that according to the Laxdæla saga, written down in Iceland in the 13th century, in the 10th century the price of a slave was one mark or ca 200 g of silver; a beautiful female slave, however, cost three marks (Laxdæla Saga, XII). One mark equalled by the amount of silver to almost 70 dirhams. By comparison one might add that in about AD 1000 in western Europe a good sword cost roughly 40 dirhams, and the price of a sword in Rus was roughly the same (Leimus 2007b, 31; Herrmann 1982, 106).

The previously discussed saga episodes mention also the purchase of freedom of slaves. Although the events described in the saga of Óláfr Tryggvason must have been exceptional, the sole fact of the purchase of freedom (and not liberation by force or escape with the help of a free relative) shows that the enslavement of people by abduction was regarded as acceptable. The fact that people could be sold from Estonia to other countries could be supported by the findings of a study of population genetics. It revealed that unlike the population of continental Sweden and the historical area of the Baltic peoples, the genes of the present-day inhabitants of Gotland include to a considerable degree a marker that could be interpreted as a trace of Baltic-Finnic immigrants (Beckman *et al.* 1998). Although the inhabitants of Gotland may have had some family ties with Courland Baltic Finns, Livonians, or the people of Saaremaa, it seems more likely that the remarkable eastern genetic heritage originated from the slaves brought from the eastern shore of the Baltic Sea, who in the course of time merged with the majority population.

5.4. Trading

5.4.1. Traders

During the Middle Iron Age and the Viking Age the proportion of the population that engaged in trade must have been rather small. State regulations to support long-distance trade in the Baltic Sea region were absent; there was constant danger of looting and shipwrecks; travelling took a lot of time, and the carrying capacity of transport vessels was small. Also, trade presupposed a substantial investment for the purchase of both merchandise and means of transport, as well as to ensure security. There is some Icelandic evidence that in the Viking Age, the price of a seafaring ship could equal value of a large farm, whereas the service life of such a ship did not exceed thirty years (Nielsen 2002, 108). When crossing inland bodies of water, tolls had to be paid to the local noblemen for safe passage; additionally,

the services of the local people were needed for trans-shipment, drawing vessels through or around waterfalls, and dragging the watercraft over watersheds. Other costs during the journey included paying guides, interpreters, and pilots, as well as accommodation and food.

Successful trade presumed knowledge of goods, currencies, navigation, and geography, as well as familiarity with foreign languages and customs. This implies that traders had to be involved in trading and trade expeditions as apprentices already at an early age. Also, a trader needed some relatives and acquaintances in the remote trading centre for staying overnight, warehousing the goods, and support in the case of shipwreck or robbery. Most of the turnover of goods was between people who were acquaintances or had family ties, and the prices of goods were traditional and stable (see Skre 2008, 344).

At that time trade expeditions were extremely time-consuming, and their duration was unpredictable because seafaring largely depended on weather and winds. The account by a traveller named Wulfstan of ca 870–890 describes a sea voyage from Hedeby in Denmark to Truso, an early urban trading centre in the Vistula estuary. The voyage was reported to have lasted for an entire week, wherein the boat had sailed the entire distance under the hoisted sail (Bately 2009, 15). Today the same voyage by a larger reconstructed Viking ship lasted slightly longer than four days (Englert & Ossowski 2009, 267). Thus, even a voyage to the opposite shore of the Baltic Sea presumed over a week-long absence from home. An expedition along the rivers of eastern Europe was even more time-consuming (see also 5.5.3), as an expedition of Russian researchers from the Baltic Sea to the Black Sea in ships resembling ancient Viking-era vessels shows. It appeared that the distance from Vyborg on the coast of the Gulf of Finland to Odessa on the Black Sea is 2720 km by inland waterways, and it takes 85–95 days of sailing to cover this distance. About 80% of the distance can be travelled by sails or oars. It took altogether as long as two weeks to portage the boats across the watersheds (Lebedev 1996, 17f.). However, an eastward expedition from Sweden to Islamic lands together with all the required stopovers could take several years depending on the destination (Leimus 2006, 17).

Thus, long-distance trade presumed a substantial material and temporal investment, which could hardly be made alongside farming, for example. Sagas reveal that during an expedition Scandinavians could practise both trading and looting. Thus, there is some reason to believe that it was the nobility that was involved in long-distance trading, as their spheres of activity, or one might say privileges and class behaviour, included looting and warfare. It is likely that in Estonia, too, trading was mostly a preoccupation of the nobility, as they accumulated the material wealth suitable for exchange by means of tributes and taxes, and they had the starting capital that was required for trade (Leimus 2003b, 51). One might assume that there was no uniform trade pattern — there were noblemen who rarely traded, and there were those for whom trading was their main activity; some noblemen traded on their own behalf, while others represented some kinsman; some limited their pursuit only to the funding of trading and trade expeditions, while others took an active part in trading or the transport of goods; some were visited by foreign merchants, while others travelled overseas to trade.

In the context of the Estonian Middle Iron Age and the Viking Age it is difficult or even impossible to find out who were professional merchants and whether they existed at all. The primary criterion of a professional merchant is that he mediates goods (and does not sell his own production), and his aim is to make a profit in order to make a living. As noted, it is thought that in Scandinavia prior to the Viking Age, goods changed ownership primarily by means of gift exchange system,

which focused first and foremost on prestige goods. There is no reason to claim that during this period there were any professional merchants in Scandinavia, let alone Estonia, which was much more sparsely populated. The prerequisites for the emergence of professional merchants were created only in the Viking Age by the development of the trading system together with the network of early urban centres in northern Europe and Rus. Even if the merchants who lived and operated there were noblemen, were funded by some nobleman, or were in their service, the fact that they lived and traded in a special trading and craft centre suggests that trade was their main occupation. In Estonia no such centres emerged in the Viking Age nor even in the Final Iron Age, and therefore the existence of professional merchants is unlikely during this period.

Nor does the artefactual record of the period under review reveal any direct evidence of merchants. It is true that some weights have been found in graves, but, unfortunately, they were found only in those stone graves in Saaremaa and Läänemaa where people were buried both in the later half of the Viking Age and in the Final Iron Age (e.g. Randvere, Viltina, and Maidla II). Consequently, it is disputable whether any weights can be attributed to Viking Age burials. Moreover, weights as grave goods do not reveal to what extent and why the dead person had been involved in trade during his or her lifetime. The inhumation cemetery at Luistari in Finland yielded some balance scales and weights also in female graves. Usually the weights occurred singly or in pairs, which is insufficient for weighing; therefore, it has been assumed that the weights symbolized the person's social status rather than his or her occupation (Lehtosalo-Hilander 1982a, 66–72). In Saaremaa, too, some weights were found as grave goods in what have been assumed to be female burials, but these finds date from the Final Iron Age (Mägi 2002, 94). Depending on the degree that one can define particular burials in the burial sites of Saaremaa and Läänemaa, there, too, weights can usually be found individually (*ibid.*). Weights as grave goods may also indicate that they were the everyday items of the elite (Leimus 2003b, 56).

5.4.2. Trade relations

There is no direct evidence of the extent to which Estonian nobles were related to the network of early urban trading and craft centres. Indirect evidence enables only conservative estimates. For example, the fact that Estonians travelled to Novgorod to trade could be proved by an episode in the saga of Óláfr Tryggvason, which mentions an Estonian at the Novgorod market (see 1.2.1). The composition of the hoards of Arab coins and the occurrence frequency of proof marks on coins have provided grounds to conclude that while oriental silver generally reached the Baltic Sea region by way of Rus, in the 9th century coins reached Estonia by way of Sweden; however, it is likely that in the 10th century coins may have reached Estonia directly through Rus (Leimus 2003a; 2004a). Accordingly, in the 9th century the inhabitants of Estonia traded mostly with Scandinavians, and in the 10th century also with merchants from the north-western Rus centres, whereas the latter, too, may have included Scandinavians. Trade between south-eastern and eastern Estonia on the one hand and Pskov and Novgorod on the other must have been considerably enlivened after Jaroslav Vladimirovič, Grand Prince of Kiev, founded a fort and a settlement at Tartu around 1030 (see 1.2.3 and 2.1.6).

Judging by the origin of imported items, different Estonian regions had different trade relations, which largely depended on their geographical situation and links with the sea and inland waterways (see Figs. 5, 174). These differences seem to have been stable throughout the entire period under discussion (see also 4.3.6 and 7.6).

In view of the common features between the archaeological record of western Estonia and Gotland, Estonian merchants may have travelled to Gotlandic harbours, and Gotlanders may have visited Estonian coasts. As the northern Estonian coast was located directly next to the eastward sea route, it is likely that the coasts of prehistoric Rävala and Virumaa were visited also by merchants from other regions of Scandinavia, first and foremost from eastern Sweden. Occasional mentions on rune stones prove such contacts (see 1.2.2). In coastal Estonia contacts with eastern Sweden are observable in the Migration Period already, in the form of, for instance, the agraffes and other bronze items decorated in Salin style I. In the Pre-Viking and Viking Ages, weapons used in northern and western Estonia included some that could have originated in eastern Sweden. In the Pre-Viking Age concavo-convex bracelets with flared ends and crayfish fibulae reached northern Estonia from Finland. Also, it is likely that belts from the Permic areas in the faraway east may have reached Estonia via Finland.

From the perspective of northern, eastern, and southern Estonia, the early urban centres of Staraja Ladoga, Novgorod, and Pskov in Rus were closer than Gotland or the Swedish coast. Therefore, one can presume that trade was more intense with these centres. Contacts with Pskov are visible through the abundant pottery of the first half of the 11th century from Pskov found in Tartu and northern Tartumaa. This pottery reached Tartu mostly during the period in which it was under the rule of Kievan grand princes (ca 1030–1061). Its presence could be regarded as a result of trade between two centres that were ruled by the Kievan grand prince.

Various items of jewellery were brought first and foremost to Saaremaa and southern Estonia from the territories of the Baltic peoples, mostly Curonians, Semigallians, and Latgalians. Precise details of how trade with the southern neighbours took place remain unknown. One might presume that here, too, prestige goods were exchanged in the Migration Period and the Pre-Viking Age. However, in the Viking Age, goods reached Estonia at least partly via the centres along the Daugava River (e.g. Daugmale). It is likely that these were first and foremost the inhabitants of Saaremaa who travelled to the Daugava River to trade with the Livonians and probably also with the Semigallians. The inhabitants of Saaremaa most likely had some trade links also with the inhabitants of Courland, which is the closest southern neighbouring region of Saaremaa.

In addition to Scandinavians, Livonians, and Balts, the foreign merchants who were engaged in trade with the inhabitants of Estonia may have included West Slavs. The active role of West Slavs in the Baltic Sea region since the second half of the Viking Age at the latest is revealed by the spread of West Slavonic wheel-thrown pottery and its local imitations (the so-called Baltic Ware) in all the Baltic lands and in north-western Rus centres (Gorjunova 1982; Malygin & Gajdukov 2001; Plohov 2002, 141). The fact that the inhabitants of Estonia had some contact with West Slavs is proved even by the Estonian and Finnish ethnonym *venelane/venäläinen* ['Russian'], which was derived from the name of Wends, a designation for Slavonic tribes that inhabited the southern coast of the Baltic Sea. However, it is difficult to locate any direct trade contacts with West Slavs in the Estonian archaeological record. It is possible that the West Slavonic traders brought from the trading centres on the southern coast of the Baltic Sea, such as Truso, some other goods to Estonia than those that were brought from Scandinavia, for instance salt. It has even been supposed that West Slavonic clay pots spread in the Baltic Sea region and in the centres of north-western Rus were containers used in salt trade (Herrmann 1982, 107).

Here it is important to consider in what language the traders may have communicated. Two language families met in the Baltic Sea region — the Finno-Ugric languages in the north and north-east,

and the Indo-European languages in the west and south (see Fig. 5). Around the mid-first millennium AD, in the Baltic Sea area, Indo-European languages were represented by Germanic languages (in what today are Scandinavian countries, northern Germany, and Poland) and Baltic languages (on the south-eastern coast of the sea, in the southern part of what today are the Baltic States, and areas east thereof). During the second half of the first millennium, Slavonic-speaking peoples appeared on the southern coast of the Baltic Sea. In the 10th century Slavs began to arrive to the cities of Novgorod and Pskov.

Communication between peoples who spoke Baltic-Finnic languages of the Finno-Ugric language family was not hindered by any language barrier. There was an unbroken dialect continuation from the Curonians and Livonians of western and northern Latvia to the Vepsians and Karelians around the lakes Ladoga and Onega. In terms of language, communication was thus unimpeded at the southern, eastern, and northern borders of what today is Estonia.

Baltic-Finnic and Germanic languages were separated by the Baltic Sea. In Scandinavia, Proto-Norse, a branch of Germanic languages, was spoken in the 1st–7th centuries; in the Viking Age it developed into Old Norse, which is the basis of modern Scandinavian languages. The Proto-Germanic speaking Scandinavians and Baltic Finns of the eastern shore of the sea had close contact ever since the Bronze Age, which is evidenced by the numerous old loanwords in Baltic-Finnic languages as well as by certain features of the Estonian and Finnish material culture of the time. The character of the oldest language contacts suggests that part of the communicating population was bi-lingual, and that the status of the speakers of Proto-Germanic was high (Strade 1992, 572). Kalevi Wiik, a Finnish linguist, concluded that the *lingua franca* on the eastern coast of the Baltic Sea was the language of the Scandinavians both in the Bronze Age and the Viking Age (Wiik 2002, 239–242). Therefore, at least part of the coastal population in Estonia in the second half of the first millennium, probably members of the societal elite, commanded Old Norse. It might be added that sagas, too, do not mention any language-related problems when describing communication with the inhabitants of Estonia or other peoples along the East Way.

5.4.3. Places and times of trading

Neither in the second half of the first millennium nor at the beginning of the 11th century were there any prerequisites or need in Estonia for the emergence of special trading settlements. Unlike Scandinavia or the West Slavonic areas on the southern shore of the Baltic Sea, where urban trading centres emerged, one can notice everywhere in Lithuania, Latvia, and Estonia that in the Late Iron Age the artefactual evidence of trade and foreign contacts are concentrated in forts and adjacent settlements (Tvauri 2002). In such places one could find a fort which could guard against looting, the infrastructure for keeping ships and horses, and a local nobleman and his retinue as customers. Also, the known harbours at Tornimäe and Viltina in Saaremaa (see 5.5.2) belonged to the local noblemen. Tornimäe was probably under the control of noblemen who resided at Pöide; Viltina, however, was the harbour of the local nobility, who buried their dead in the stone graves of Viltina and who in the Viking Age probably fortified the fort at Asva.

In the Iron Age, trade, especially overseas trade, was definitely a seasonal activity. In order to be successful in business, on the one hand, a foreigner had to know when the merchants of certain goods could be waiting for him; on the other hand, his arrival had to be anticipated. Thus, a market was held at a certain time or, to be more precise, within a certain period, for instance, in autumn when the crops were in, animals were

slaughtered, and the local authorities had collected the taxes. Another suitable period could be in spring, at the end of the hunting season, presuming the significance of fur trade. In the early spring, roads were still impassable; in the winter, fairs could not be held because of the cold climate and sea ice; summer was a busy working period, and in late autumn the Baltic Sea is too stormy to be safely navigated. These factors have led researchers to conclude that overseas goods could be brought in Estonia in the Iron Age only during two periods — in early autumn or in late spring (Leimus 2003b, 53). In the interior, however, winter was also suitable for trade, as then winter roads could be used for traffic, for example, the frozen surface of the basin of Lake Peipsi could be travelled to reach the centres on the other side of the lake.

5.5. Means of transport and roads

5.5.1. Boat and ship remains

In view of the foreign goods and raw materials in Estonia and also the geographical position of Estonia, one can conclude that from the Bronze Age at the latest, most international communication took place over the sea northwards, westwards, and southwards. In these circumstances the development of trade depended on the existence of seafaring ships. It is likely that eastward communication also took place first and foremost by way of the inland waterways.

During the later part of the first millennium, northern Europe witnessed a rapid development of ships and seafaring. By about AD 700, ships in the Baltic Sea started to be equipped with sails. In addition, new ships were supplied with a tall keel, which provided an increased longitudinal strength and enabled the ship to stay on course better and to sail under different angles with regard to the wind (Mäss 1996, 60). Faster ships with better seagoing capability definitely contributed to the activities of Scandinavians on the eastern coast of the Baltic Sea.

The Scandinavian ships of this period usually were open vessels 10–20 m in length and 4–5 m in width, with a high bow and stern, and a shallow draught. These so-called Viking ships had two main types — narrow and slender warships and broader cargo ships with a larger carrying capacity. The ships were built so that the hull was constructed from planks first, after which the timbers (ribs) were fitted into place. They were clinker-built, which means that the edge of a plank always overlapped downwards with the next plank, and the planks were secured with each other by means of rivets. The ships were powered by sails or by the oars of 20–30 rowers. The longest Viking ship, a warship found on the bottom of the fjord in Hedeby harbour, was 30.9 m in length and was manned by about 60 rowers. Most cargo ships could carry 5–10 tons of goods. Larger cargo ships, which could carry as much as 60 tons, are known from the beginning of the 11th century (Krumlin-Pedersen 2009 and citations therein).

There is very little evidence of ancient seafaring in Estonia. The only prehistoric seaworthy vessel in Estonia that has been published about to-date is the *Salme I funerary boat* (Konsa *et al.* 2008; see also 6.1.7). This vessel is worth discussing here, although it was not a cargo ship, and it probably did not belong to inhabitants of Estonia.

The data collected during the excavations of the boat (Fig. 201) allows Vello Mäss (2008), a nautical historian, to claim that the boat found at Salme was 11.5 m in length, the beam was 2 m, the broadside was 75 cm in height, the draught together with the keel was 40 cm, and it had eight timbers (Fig. 184). Altogether 275 rivets were found, although most of the rivets along with

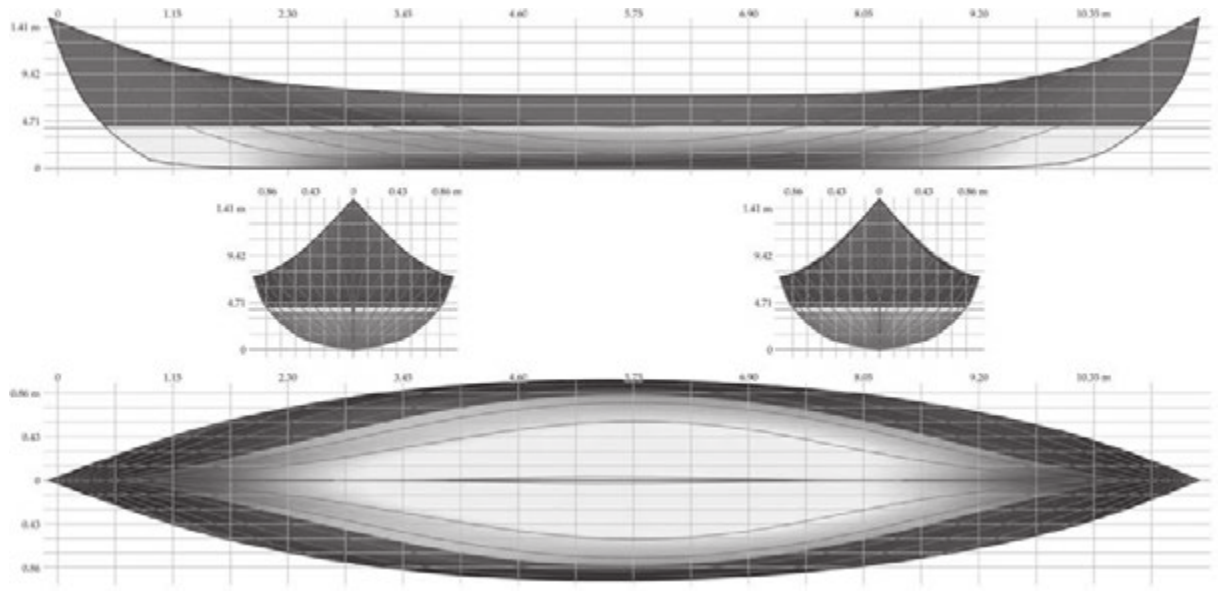


Fig. 184. *Reconstruction of boat I from Salme (graphic: Priit Lätti).*

the upper parts of the ship were no longer present. Judging by the distance between the rows of rivets, the side planks of the ship had been 27–28 cm in width. The main parts of the boat had been built out of pine. Apparently, the keel was of the skid keel type. No traces of a mast step or a vertical keel were found. Possibly, the timbers were attached by lashing. The bottom of the boat revealed round beach rocks of more or less the same size, probably used as dead weight to ensure the stability of the outbound vessel. There is a strong likelihood that the boat was a rowing boat without a mast, which had six pairs of oars. A vessel with such a light construction was suitable primarily for forays in coastal waters. The studies performed so far do not permit determining where the boat was built. Mäss (*op. cit.*) claimed that it was a local ship because its wood was of a coniferous tree, it had rather wide hull planks, and its metal rivets with quadrangular cross-section are different from the Scandinavian ship rivets. However, the artefactual assemblage of the boat suggests that the vessel was of Scandinavian origin.

The only known and recognizable watercraft remains of the Iron Age that had belonged to the local people are *iron boat and ship rivets*, which

Fig. 185. *Boat rivets from stone grave I at Rae (AM A 9: 67; photo: Kristel Külljastinen).*

have been found in burial sites of coastal northern and western Estonia (see 6.1.7). Usually a rivet has a rounded head, and a cove is quadrangular, mostly rhomboid in shape (Fig. 185). Because the rivets are scattered in graves and cannot be related to some specific burial, they do not provide enough information to the study of the history of ships. Nevertheless, they show that the local ships and boats were built in the same manner as Scandinavian vessels.

5.5.2. Harbours and landing places

Landing places, where boats were pulled ashore, have existed since the time that humans started to use watercraft. The identification of such places is extremely complicated. Because of the impact of waves, ice, and wind, traces of human activity usually disappear very quickly on the coast. The discovery of ancient coastlines and landing places is further complicated by the fact that due to land uplift, many of these places are now in the interior.

A simple landing place that a farmstead or a village used and where no buildings were erected does not leave behind any remarkable traces. Rows of rocks at the landing place, which intersect the coastline with some space between to pull the boats ashore, could be the only recognizable structures. Thinner round tree trunks were placed between the rows of rocks, parallel to the shore, so that the trunk ends were under the rocks; this method helped to protect the keel from wear. Such landing places were used on the Estonian coast in historical times, and they have been preserved in many places (Mäss 1985; 1996, 90). However, so far no prehistoric landing places of this kind have been identified.

A thicker cultural layer was left behind in those harbours where one stayed for a longer time or which served as a departure point for trading or military expeditions. One would also expect to discover a harbour, with accompanying buildings, in which seasonal trading was common, the rigging was supplemented, and repairs were done. In major and more popular harbours ships were not always pulled ashore, but landing stages had been built. These harbours were usually controlled by the local elite, and various customs and laws regulated their functioning (Mägi 2004a). In Estonia there are only two sites that could be interpreted as Viking Age harbour sites — Tornimäe and Viltina, both in Saaremaa (see Fig. 4). In addition, what are thought to be landing or harbour sites have been identified on the northern coast of Estonia at Tsitre not far from the fort at Muuksi (see Fig. 2), and at the foot of the fort at Iru on the bank of the Pirita River. The small number of harbour sites could be explained first and foremost by the fact that they have been largely neglected by researchers.

At the harbour site at Tornimäe in eastern Saaremaa, at one time on the shore of the strait Väike Väin, which separates the islands of Saaremaa and Muhu, a cultural layer 40–70 cm thick revealed a large number of potsherds, boat rivets, smithery waste, occasional tools (Fig. 61: 2) and broken jewellery, as well as animal and fish bones. Excavations uncovered the remnants of a large wooden building, which once had been located on a mound, the foot of which reached the sea. As no remnants of stoves were found at Tornimäe, one might suppose that the buildings were used only during the navigational season. In the 19th century, local peasants found a row of piles at the foot of the mound, which could have been part of a landing stage. The find assemblage suggests that the site could be dated to the 9th–10th centuries (Mägi 2005b).

The site at Viltina that is considered to be a harbour site is located about 2.8 km south-east of the fort at Asva on the south-eastern coast of Saaremaa. The Viking-era coast revealed a cultural layer 40 cm thick, which was not as rich in finds as the cultural layer of the harbour site at Tornimäe. The archaeological excavations

revealed some hearths, remnants of stone foundations of wooden buildings, and post pits. According to Marika Mägi, the supervisor of the excavations, the latter originated from two parallel landing stages that had been built at a distance of 4.2 m from each other. The finds included an axe, an awl, a spoon bit, three weights, two Arab silver coins, a fragment of a silver pin, and large amount of potsherds, nails, and boat rivets. Next to a large boulder a set of female jewellery from the 11th century was found, which included two pins, a chain holder, two buckles, and a rumbler bell. The harbour area revealed also a few clusters of burnt human bones, probably cremation burials. The find assemblage suggested that the harbour site at Viltina was used seasonally in the 10th–11th centuries and possibly in the 12th century as well (Mägi 2006b; 2007a).

Immediately next to the harbour site there is the Käo-Matsi stone grave, where a cluster of weapons, horse gear, and jewellery from the first half of the 11th century — probably grave goods — was found by means of a metal detector at a depth of about 30 cm beneath stones (Mägi 2000). There is another stone grave about 50 m southwards of the assumed harbour site — Rutiränk, of the 10th–13th centuries. Among other things, this grave revealed about one thousand boat rivets, almost half of which were found in an area about 15 m in length and 2 m in width (Vassar 1940). They probably came from a single vessel. It is not possible to tell if it was a funerary ship that had been cremated or left to decay together with the dead body, or simply an old vessel that had been left behind or burned at the stone grave.

What is thought to be a landing or harbour site at Tsitre in northern Estonia is located at a distance of 300–350 m from the hill fort at Muuksi, on the western side of a cove that once had reached farther inland. The altitude and landforms suggest that it must have been a bay with deep water, sheltered from the sea winds from the east by the Juminda Peninsula and from the west by the headland of Tsitre. Human activity is evidenced by a cultural layer 30 cm in depth, which includes pieces of charcoal and potsherds with slightly striated or smoothed surfaces. Based on the speed of land uplift and the revealed ceramics, the presumed landing place at Tsitre has been dated to the Migration Period (Vedru 2005; 2006).

Marika Mägi (2007d) has supposed that the cultural layer from the 6th–11th centuries that was discovered in a terrace about 11 m in width and 70–85 m in length at the western foot of the fort at Iru, between the hill and the Pirita River (see Fig. 13), represents a former harbour site. The area revealed remnants of buildings that had stood close to one another, preserved in the form of charred timbers, stones, and clay daubs (Lang 1996a, 105). The buildings lined the riverside edge of the terrace, leaving an empty space 3–6 m in width between the hillside and the buildings (Vassar 1939; 1956). According to Mägi, it was not an ordinary settlement but a riverside harbour site, and the remains of buildings were not of the usual dwelling houses but warehouses, trading halls, and possibly workshops. At the mouth of the Pirita River there allegedly was a trans-shipment point, where the goods were loaded into boats with a shallower draught because, due to land uplift since the beginning of the Pre-Viking Age at the latest, seagoing ships could not sail to the foot of the fort any more (Mägi 2007d, 33–35).

However, this interpretation is somewhat implausible. The terrace in question revealed, among other features, remnants of a limestone-floored building about 5 m in width and at least 6 m in length, which had a stone hearth in the centre and which contained many potsherds, bones, and a few sanding and grinding stones (Lang 1996a, 105). It thus seems that the buildings on the terrace were still ordinary dwelling houses. Also, the difference in height between the mouth of the Pirita River and the foot of the fort at Iru reaches about 33 m; this section of the river is fast-flowing and full of rapids, which makes it

dubious that it could even have been sailed by boat. Besides, the overland distance between the fort and the mouth of the river is about 4.5 km, while the distance along the winding river is not less than 8 km. All things considered, it is more likely that the transportation of goods to the fort at Iru, either from the mouth of the river or elsewhere on the coast, occurred using overland ways.

The view that forts were in some way related to harbours is, however, not ungrounded, and researchers have repeatedly pointed this out (see Vedru 2001, 119–121 and citations therein). The forts that were located in the coastal region, usually close to a river mouth, offered military defence to the harbours, and at the same time served as trading and warehousing places. Among such forts used in the Middle Iron Age and the Viking Age one should mention Asva, and possibly Pöide, which are located in Saaremaa and may have been related to the harbours at Viltina and Tornimäe, respectively; as for northern coast of Estonia, besides the discussed fort at Iru the forts of Padise, Ussimägi at Toolse, Koila, Pada II, and Tarakallas at Purtse can be mentioned (see Fig. 7).

Those forts that were located on the banks of a navigable river also may have had a harbour somewhere in the vicinity. The forts of this kind include, for instance, the fort at Joaorg in Narva, which was located directly on the left bank of the Narva River. The Narva River is, after the Neva River, the most water-abundant river that flows into the Gulf of Finland; it is also the most water-abundant river in Estonia. Ships could easily sail from the sea as far as the fort; however, to sail upstream, ships had to be portaged around the Narva Falls, or the goods had to be loaded on vessels beyond the falls. Thus, the fort in Narva could have been founded to defend and/or to tax the portage and trans-shipment point at the falls. For instance, the Volhov and Daugava rivers too had forts at their major rapids in the Viking Age (Nossov 1997, 11; Messal 2001, 72). There was definitely a harbour site on the bank of the Emajõgi River not far from the fort of Tartu. It could well be that also the fort-and-settlement centres at Peedu and Alt-Laari in the Emajõgi River basin, the fort at Vooru on the bank of the Õhne River, and the fort at Hinniala on the bank of the Piusa River were accessible by water routes (Fig. 7).

Several Viking Age harbour sites have been studied in Gotland, which is not far from Saaremaa and has similar natural conditions. The best known of them is Paviken, which is located at a river mouth on the shore of a former lagoon on the western coast. The find material shows that this was a site where ships were built and repaired and where trading and handicrafts were practised (Lundström 1983). Another harbour and trading site that is similar to the harbour sites at Tornimäe and Viltina is located at Kyrksundet in Kemiönsaari, south-western Finland. Here the cultural layer on the Viking-era coast has revealed weights, silver coins and their fragments, keys, jewellery fragments, bronze ingots, and bronze-melting waste. The site was dated to the 9th–11th centuries. Similarly to Tornimäe and Viltina, Paviken, Kyrksundet, and other harbour sites in the neighbouring countries were used only during the navigational season (Edgren 1995; Asplund 1997, 262–266).

5.5.3. Roads and traffic on inland bodies of water

The earliest known corduroy road of tree trunks and poles is located in Heinassoo bog near Kata, Harjumaa. It is about 600 m in length and 2.8–3 m in width, and has been radiocarbon-dated to the 3rd–4th centuries AD (Lavi 2000). The next oldest Estonian corduroy road of logs, dated to the 12th–13th centuries, was found at Mustamäe in Tallinn under a former cliff (Lavi 1998, 68–77).

Researchers have come to the conclusion that roads were not built in Scandinavia before the Viking Age, and people moved along drier and

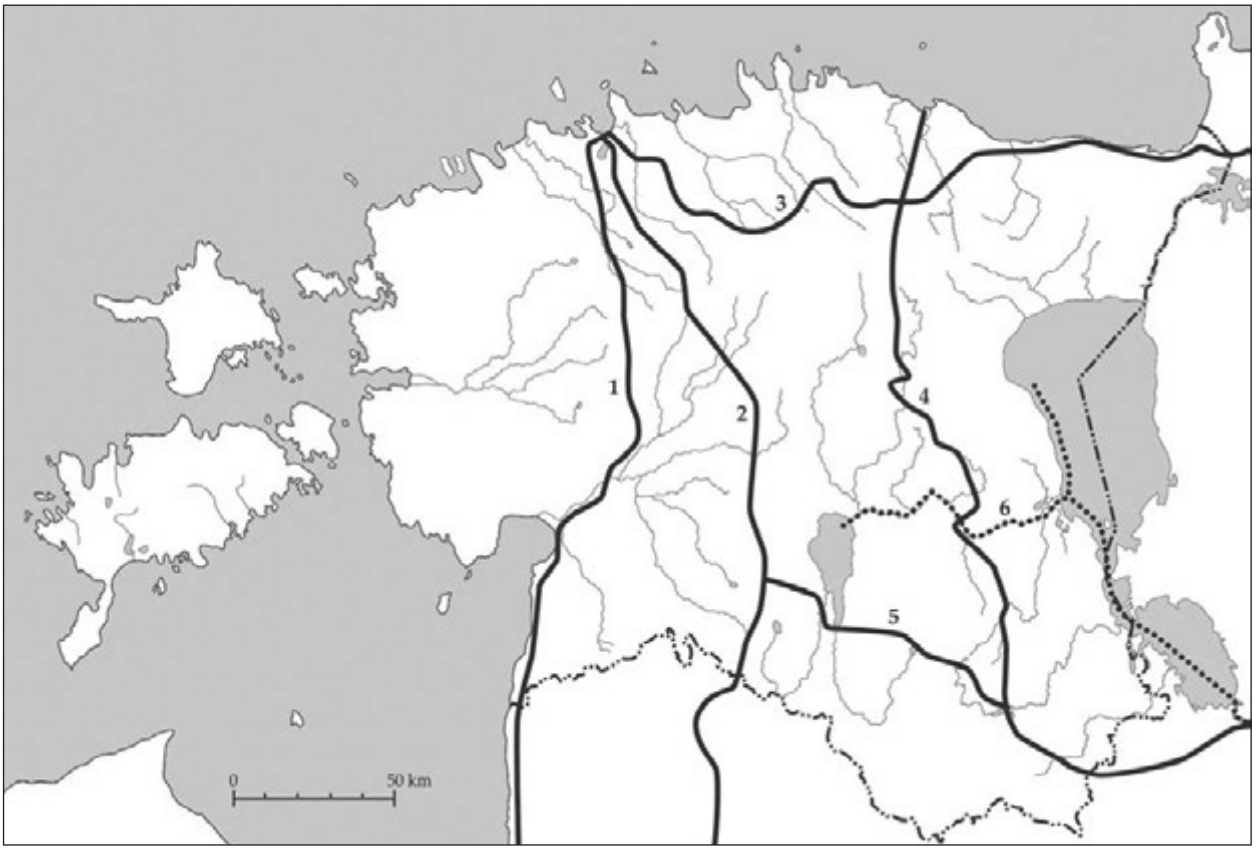


Fig. 186. *The main land routes (1–5) and the Emajõgi River waterway (6) in Estonia at the end of the Iron Age (land routes after Einer 1988).*

flatter areas, where paths emerged in the course of time. Rivers were crossed at fords. Roads connecting settlement units emerged as late as at the end of the Viking Age in connection with the development of centralized king's power (Roesdahl 1982, 48–50; Nielsen 2002, 188). Because there were no kings of this kind in Estonia, there is no reason to assume that any other but local roads were built or maintained here before the German-Danish conquest in the early 13th century.

Some assumptions about the spontaneously emerged roads of Viking-era Estonia can be made on the basis of the chronicle of Henry (HCL) and the Great List of Estonia of the *Danish Census Book* (Johansen 1933). There must have been some passable roads at that time in Estonia since 58% of the incursions into Estonia in 1210–1227 that are described in the chronicle of Henry were made by land-routes during snow-free periods, while 42% were made by winter roads. The largest number of forays occurred in August and in September, which among other things could be explained by the fact that during this period the water level in rivers is at its lowest point, and it is easier to cross the fords than at other times (Einer 1988, 53). At the beginning of the 13th century at least the following routes were passable in their entire length (Fig. 186):

(1) from Tallinn through southern Harjumaa to the mouth of the Pärnu River and then along the

eastern shore of the Gulf of Riga to the Livonian areas;

(2) from Tallinn to Viljandi and then southwards to the Latgalian and Livonian areas;

(3) from Tallinn eastwards through northern Järvamaa to Virumaa and from there along northern Virumaa across the Narva River eastwards;

(4) from western Virumaa through northern Tartumaa, crossing the Emajõgi River at Tartu and proceeding through southern Tartumaa and Võrumaa towards Pskov;

(5) from southern Viljandimaa eastwards, from the southern shore of Lake Võrtsjärv to southern Tartumaa and to Võrumaa, then joining the road to Pskov.

It is likely that these main traffic routes were passable by the Viking Age at the latest.

Sometimes the terrain would provide very strict constraints on the location of roads or movement in general. An example of this kind is the possible route that crosses the Emajõgi River and links south-eastern Estonia with central and northern Estonia. The Emajõgi, with its wide, branched, and swampy primeval valley between the lowlands covered with forests and flood plains around the lakes Peipsi and Võrtsjärv, has continuously been a major barrier for north–south traffic (Kant 1927, 358). Tartu used to be the only place where the northbound road from south-eastern Estonia could cross the Emajõgi in prehistoric times. This situation can be illustrated by the fact that until the 20th century the only bridges that crossed the Emajõgi were in Tartu (Tvauri 2001, 208–213). Also, the chronicle of Henry mentioned Tartu several times as a crossing place of the Emajõgi (HCL, XV: 7; XXIV: 1, 5).

The winter roads proceeded across frozen bodies of waters and bogs, and most long-distance traffic was probably done in this way. They have not left behind any archaeologically identifiable traces. One can only speculate that the above-described set of weights that was found on the bottom of Lake Võrtsjärv not far from Vaibla could have been lost by a merchant who travelled along a waterway or an ice road. One might assume that in prehistoric times winter-road traffic could have been much heavier than land traffic in the summer (Veldi 2009, 22f.). Until the 19th century all the major carriages of goods by land took place during winter (Viires 1980, 117). Martti Veldi (2009, 67–69), who studied the prehistoric road network in south-eastern Estonia, pointed out that most forts of the second half of the first millennium were located on the banks of watercourses, the majority of which were not navigable in prehistoric times either. On the other hand, they could be used as winter roads. It seems that in the vicinity of these forts water or winter ways crossed major land routes. Rather than connecting the Viking Age forts in south-eastern Estonia, waterways and winter roads connected them with the north-western centres of Rus.

Some idea about water traffic on inland bodies of water can be derived from slightly more recent written records. Medieval written records of Novgorod contain several accounts of traffic between Novgorod and Tartu, which allow drawing some reliable conclusions about Viking-era traffic conditions, as in the intervening time there had not been any qualitative changes in the construction of boats and ships. To reach Novgorod, people sailed from Tartu along the Emajõgi River, across Lake Peipsi, Lake Lämmijärv (Tëploe ozero), and Lake Pskov as far as Pskov on the banks of the Velikaja River (Fig. 186: 6; see Fig. 5 for a general idea of the whole journey). The journey time by water from Tartu to Pskov, covering the distance of about 150 km, was 2–3 days. From there the route continued upstream along the Velikaja and Čerëha rivers, where one had to cross a watershed; subsequently the route continued downstream along the Uza and Šelon' rivers, then crossed Lake Ilmen, and reached Novgorod on the banks of the Volhov River. The journey time from Pskov to Novgorod along this route was 4–5 days (Sorokin 1997, 18f.). Thus, without

any stopovers it took at least a week to travel from Tartu to Novgorod.

In addition to the above-mentioned Lake Peipsi and the Emajõgi River, the importance of which is demonstrated for instance by the distribution pattern of the earliest wheel-thrown pottery (see 2.2.2.4; Fig. 45), the major inland waterways of Estonia included Lake Võrtsjärv and the Narva River. Also, the other major rivers of the basin of lakes Peipsi and Pskov (e.g. the Väike-Emajõgi, Õhne, Tänassilma, Pedja, Põltsamaa, Ahja, Võhandu, and Piusa rivers) were navigable in their lower reaches. There is some evidence that in historical times the lower reaches of several aforementioned rivers were used for transporting goods by barges (Kruus 1933, 185).

The rivers in northern Estonia are characterized by a rather small volume of water, and they descend from the Baltic glint. Apart from the Narva River, these rivers cannot be regarded as navigable. Even the Narva River cannot be fully navigated because of the falls. In western Estonia, the Kasari River, with its tributaries, has a volume of water that is sufficient for navigation. However, this area lacks Pre-Viking and Viking Age forts that could be related to the use of this waterway network. The same is true of the Pärnu River and its basin — this area is very poor with regard to Iron Age sites and stray finds. The fort at Mädara on the bank of the Mädara River is the only candidate fort; however, the age of this fort is unknown.

The only known prehistoric bridge in Estonia is the one that linked the Valgjärv lake settlement with the shore (see 2.1.7; Fig. 25). The settlement had been built in the middle of the lake on a platform supported by stilts, and a bridge 70–80 m in length headed towards the western shore. Two parallel rows of piles rammed into the lake bottom have survived, 1.5 m apart from each other. The piles are 15–30 cm in diameter, placed with a spacing of 4–5 m. One spruce wood pile 21 cm in diameter and 3 m in length was recovered from the lake. The end that had been rammed into the lake bottom had been sharpened with an axe. The radiocarbon dating of the pile yielded the age 1150±40 BP, which after calibration (at a probability of 95.4%) shows the period AD 778–980 (Fig. 21). Split planks and puncheons have also been found between the rows of piles on the lake bottom (Selirand 1990). At present the depth of the lake at the bridge is up to 2.5 m.

5.5.4. Draught animals and implements

Oxen were used as draught and working animals all over northern Europe since the Bronze Age at the latest until the advent of motorized vehicles. Horses were mostly used for riding, or as pack animals. An ox is less demanding than a horse with regard to food; however, the main reason for the widespread use of oxen was the fact that, prior to the introduction of the horse collar, it was impossible to hitch a horse to a heavy load. A horse that is hitched to a wagon without a horse collar cannot pull a much heavier load than it is able to carry, let alone in a terrain without any roads (Einer 1988, 52). Horse collars became common in Europe as late as in the 10th century (see 3.2).

As for the vessels of land transport of the period under review, no archaeological data exist in Estonia. In Scandinavia and in Finland some vessels of transport, as well as their parts, have been preserved since the Stone Age, and images of vehicles were depicted in Scandinavian Bronze Age rock carvings and in more recent picture stones. The evidence from neighbouring areas and more recent local ethnographical data allow some general assumptions to be made with regard to the means of transport in the Estonian Middle Iron Age and Viking Age.

The principal vessels of land transport were definitely drags and various kinds of sledges which moved on runners. The advantage of a sledge over

wheeled vehicles is in its simple construction and, consequently, higher reliability. It could be used throughout the year and on terrain without roads; moreover, a sledge is lower than a wagon, which makes loading easier (Einer 1988, 52). Sledges were used to transport people in eastern Europe, including the Baltic countries, throughout the year until at least the end of the 18th century. For agricultural transport (e.g. hay transport), sledges were used until the 20th century, both in winter and summer periods (Viires 1980, 10f.).

By comparison with runner vehicles, the use of wheeled vehicles was rare in the expanses of the forest belt of northern Europe until the beginning of the 20th century (Viires 1980, 10f.). Their use in the Iron Age was undoubtedly hindered by the absence of roads. Nevertheless, there is a strong likelihood that wagons, carts, and man-powered wheelbarrows were employed, in addition to sledges. Archaeological and pictorial sources clearly show that ox- and horse-drawn wagons and carts were present all over Europe in the Bronze Age at the latest. Ants Viires, an ethnographer who studied the early means of transport among the peasantry in the Baltic countries, came to the conclusion that the spread of wheeled vehicles was related to the spread of the plough and permanent-field agriculture. Nevertheless, for a long time wheeled vehicles continued to be mostly means of local transport, and long-distance rides with them were rare (Viires 1980, 119).

5.6. Summary

During the Migration Period and the first half of the Pre-Viking Age the scope of trade in the Baltic Sea region was limited to the exchange of prestige goods among the nobility. Extensive long-distance trade with early urban trading and craft centres did not develop before the 8th–9th centuries. Accordingly, both the trade volume and the assortment of goods increased by comparison with the previous times. At the same time, trade relations were established between northern Europe and areas in the Middle East and Central Asia, i.e. with more distant regions than ever before. Via the trading system spanning from Scandinavia to the Black Sea and the Volga River, foreign goods reached also Estonia, and it is likely that Estonian local goods reached foreign markets.

Sword blades and apparently also more elegant weapons were brought to Estonia from western Europe and Scandinavia. Also, it is likely that most jewellery worn in Estonia had been made elsewhere. Imported goods included moulds from fine-grained Mesozoic limestone or their blanks, as well as bone combs. In addition, salt could have been imported from the west, although this has not left archaeologically identifiable traces.

Exported goods probably included iron, beaver furs, and castor. There are no reliable data about the export of other forest products or agricultural and livestock farming products. Despite this, the export of agricultural products to neighbouring northern and eastern areas is considered to be rather likely. Slave trade existed, although there is no evidence of its scale.

From the second half of 9th century onwards silver served as the principal currency, which was measured by weight and, accordingly, weighed with the help of balances and weights. However, the small number of proof marks on coins, a large amount of non-used silver in hoards, and the paucity of coins and hacksilver found at the local forts and settlement sites show that barter trade still prevailed in Viking Age Estonia.

It is likely it was first and foremost local noblemen that were engaged in trade. Traces of special trading centres have not been found in Estonia. Trading was probably a seasonal activity practised in fort-and-settlement centres or in villages and the estates of noblemen.

Throughout the period under study the main trading partners seem to have been Scandinavians. In the 10th century Novgorod and Pskov also became important centres of trade for Estonia. Different regions had different trade links — in northern Estonia one can observe contacts with eastern Sweden and Finland, in south-eastern Estonia with north-western Rus, and in Saaremaa and Läänemaa with Gotland, Courland, and Livonian areas.

Waterways, i.e. the Baltic Sea and inland bodies of water, constituted the main arteries of traffic. The boat and ship rivets discovered in the graves of coastal Estonia suggest that the local water vessels were similar to Scandinavian ships and boats. On the coast there were some harbour and landing sites, which seem to have been situated first and foremost in the sphere of influence of forts. In the winter, people travelled over frozen bodies of water and other winter roads. Prerequisites for the construction and maintenance of roads were absent as yet, limiting wheeled transport. Cargo was transported either by oxen-drawn sledges or on horseback.

Chapter 6

Burial Practices and Religion

Conclusions about the religion of the people of Estonia in the Middle Iron Age and the Viking Age must almost exclusively be based on archaeological sources. The earliest written sources that contain references to the religion of the Estonians come much later, from the beginning of the 13th century. Folkloric, ethnological, and linguistic data, which have until recently been widely used in the study of prehistoric religion, primarily dates from the 19th century and contains nothing definite about prehistoric religion (Jonuks 2009, 47–70).

Graves have been the most important archaeological source of data for the study of religion in Estonia. They provide researchers some insight into how death and the afterlife were conceived. It is believed that religious convictions dictated how graves were built, how the dead body was treated, and what and how much was placed in the grave as grave goods. There have also been efforts to find traces of rituals performed at the grave sites in connection with funerals or for some other reason.

Another major archaeological source for the study of religion is hoards that, on the basis of their find context or composition, can be associated with sacrifice or other religious practices. Individual items associated with religion constitute a third source. Any item may acquire a ritual meaning in religious practices. However, only those items for which there is some reason to assume that they were specifically made for conducting rituals, or whose find context indicates ritual use, or items that may have expressed the religious beliefs of their users or wearers will be regarded as religious in what follows.

Written records and more recent folk religious practices show that while sacred groves were the most important places of worship in Estonia, acts of worship could be conducted also at various sacred bodies of water (mostly springs), trees, and boulders. Unfortunately, there is no evidence that could identify any such place of worship belonging to the Middle Iron Age or the Viking Age. Only two sacrificial springs or their vicinity that were used in historical times (Koorküla and Kunda) are known to have yielded Viking-era objects. On the other hand, presumably several votive deposits that will be discussed below were once deposited in some body of water, which could have been regarded as sacred.

Because most of the source material associated with Iron Age religion in Estonia has been gathered from graves, the research tends to focus on the conceptions of afterlife, and one might be left with the impression that prehistoric religion focused entirely on life after death. This is far from being the case. Unfortunately, data about the other aspects of religion in this period are extremely scarce. Also, while reading the discussion below, it should be taken into account that

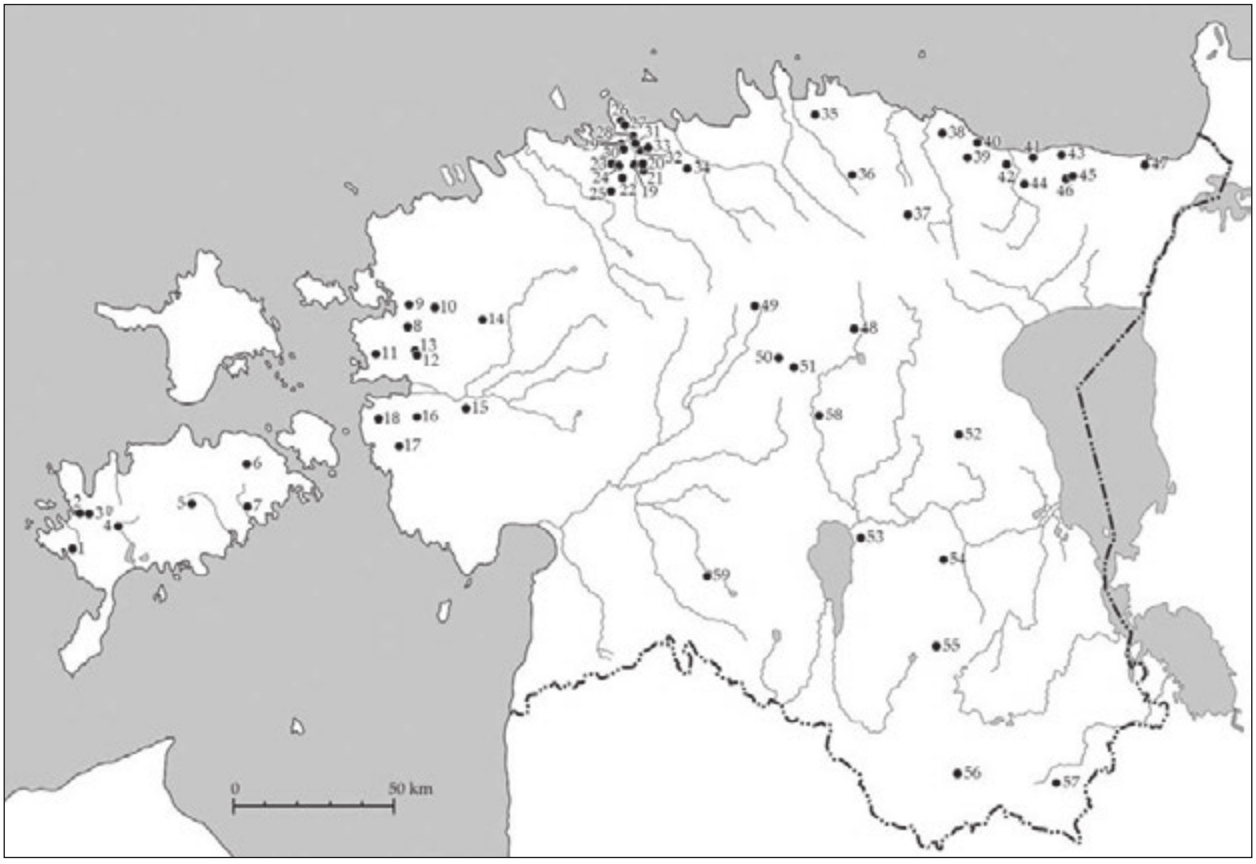


Fig. 187. *Distribution of Migration Period burial sites in Estonia. 1 Leedri; 2 Paju; 3 Pajumõisa; 4 Paiküla; 5 Liiva-Putla; 6 Kuninguste; 7 Lepna; 8 Kirimäe; 9 Koela; 10 Kõnnu; 11 Käbla; 12 Madise at Ehmja; 13 Varetemägi at Ehmja; 14 Maidla I; 15 Võhma; 16 Lihula; 17 Pajumaa; 18 Mäense; 19 Lagedi I; 20 Lagedi XIV; 21 Lagedi XV; 22 Lehmja-Loo IV; 23 Peetri at Mõigu; 24 Rae I; 25 Kurna I; 26 Viimsi I; 27 Viimsi II; 28 the stone grave near the "Crone of Iru"; 29 Jaani at Väo; 30 Kangru IV at Väo; 31 Proosa; 32 Saha D; 33 Mardimägi at Saha; 34 Linnakse; 35 Ilumäe II; 36 Ojaveski; 37 Reinapi at Tõrma; 38 Malla; 39 Pada (*tarand *grave); 40 Kalvi; 41 Jäbara E; 42 Purtse-Matka III; 43 Saka; 44 Püssi; 45 Järve; 46 Kohtla-Järve I; 47 Türsamäe; 48 Preedi; 49 Purdi; 50 Nurmsi; 51 Tamsi; 52 Kõrenduse I; 53 Läätsa at Verevi; 54 Unipiha; 55 Pikkjärve I; 56 Virunuka IV; 57 Tsiistre; 58 Luige; 59 Kirikumägi at Sammaste.*

the treatment of religion and religious practices as a topic in its own right is artificial and proceeds mostly from concepts that are used in the study of modern religion. For Iron Age people in northern Europe, it was probably impossible to distinguish between faith and knowledge — rather, the religion of this period was a world view, an understanding of how the world and human society was organized, and what had to be done in order to be successful both in earthly life as well as in the afterlife. Because in this period in Estonia there was no centralized religious power or organization which could establish the content of beliefs and rites beyond a single power region, the religious beliefs and practices of different people, communities, and regions could vary to a much larger extent than, for instance, after the spread of Christianity.

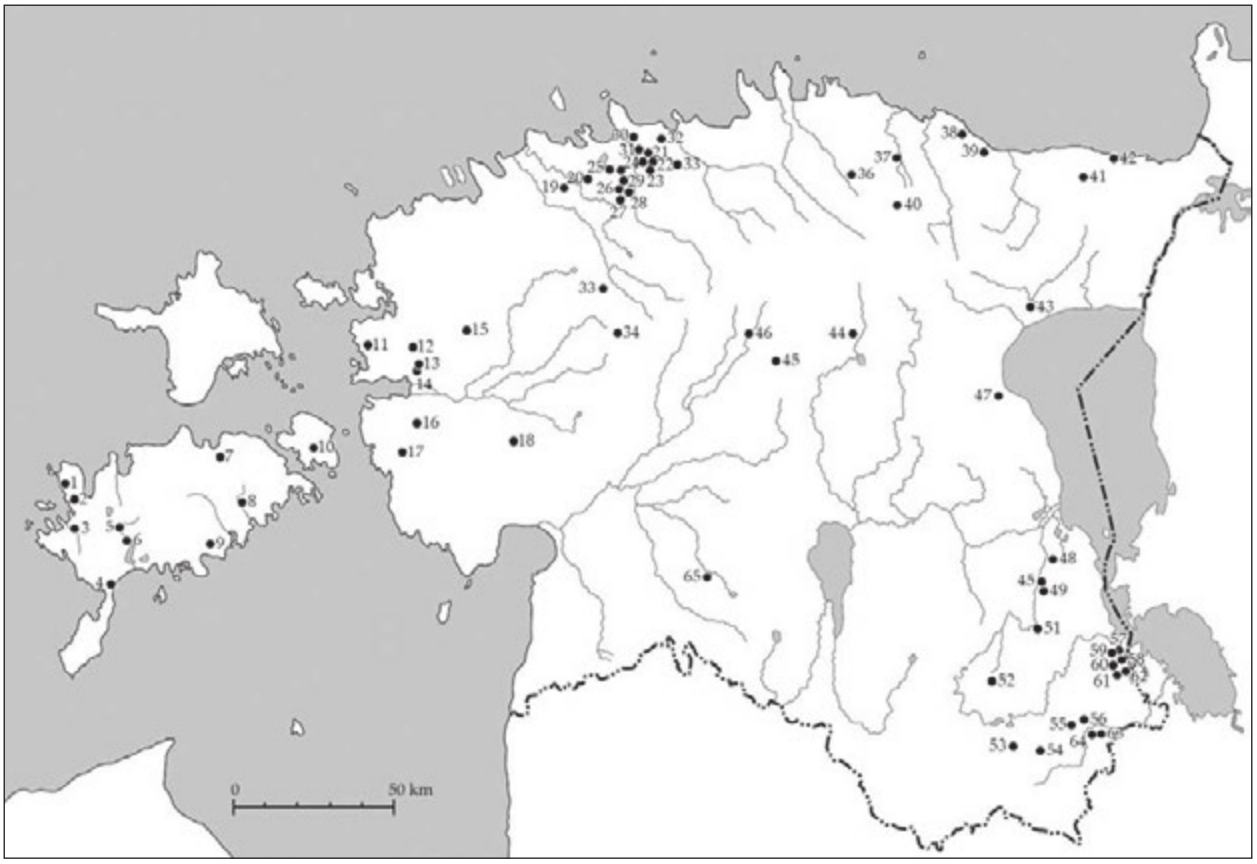


Fig. 188. *Distribution of Pre-Viking Age burial sites in Estonia. 1 Kõruse; 2 Kurevere; 3 Loona; 4 Salme; 5 Paiküla; 6 Paevere; 7 Roobaka; 8 Tuulingumägi at Tõnija; 9 Leina; 10 Mäla; 11 Kolu; 12 Varetemägi at Ehmja; 13 Keskvere II; 14 Keskvere III; 15 Väike-Kalju; 16 Lihula; 17 Pajumaa; 18 Linnamäe; 19 Sõrve; 20 Kanama; 21 Lagedi V; 22 Lagedi IX; 23 Lagedi XIII; 24 Lagedi XV; 25 Rae I; 26 Kurna I; 27 Kurna III; 28 Lehmja-Loo I; 29 Lehmja-Loo III; 30 Matsu at Iru; 31 Proosa; 32 Presti at Rebala; 33 Haljava; 34 Äherdi; 35 Käbiküla; 36 Ojaveski; 37 Essu; 38 Koila; 39 Aseri; 40 Inju; 41 Üksnurme; 42 Toila I; 43 Lemmaku; 44 Preedi; 45 Nurmsi; 46 Miku at Tarbja; 47 Koseveski; 48 Kõnnu; 49 Arniko I; 50 Arniko III; 51 Tagametsa; 52 Põlgaste; 53 Hannuste; 54 Hindoala; 55 Lindora; 56 Loosi; 57 Laossina I; 58 Laossina II; 59 Laossina V; 60 Rõsna-Saare I; 61 Rõsna-Saare II; 62 Suure-Rõsna; 63 Obinitsa; 64 Talka; 65 Kirikumägi at Sammaste.*

6.1. Graves

Graves — places where the remains of the dead were deposited permanently or temporarily — constitute the most numerous site type of the Middle Iron Age and the Viking Age. The graves of this period are rather varied with regard to structure and burial customs. They are often stone structures that can be identified in the landscape as a low stone pile or a stony patch covered with turf. However, many stone graves are presently so inconspicuous that they can be recognized only by the prehistoric artefacts or human bones found therein. Underground cremations are even more difficult to discover, and underground inhumation burials, which appeared at the end

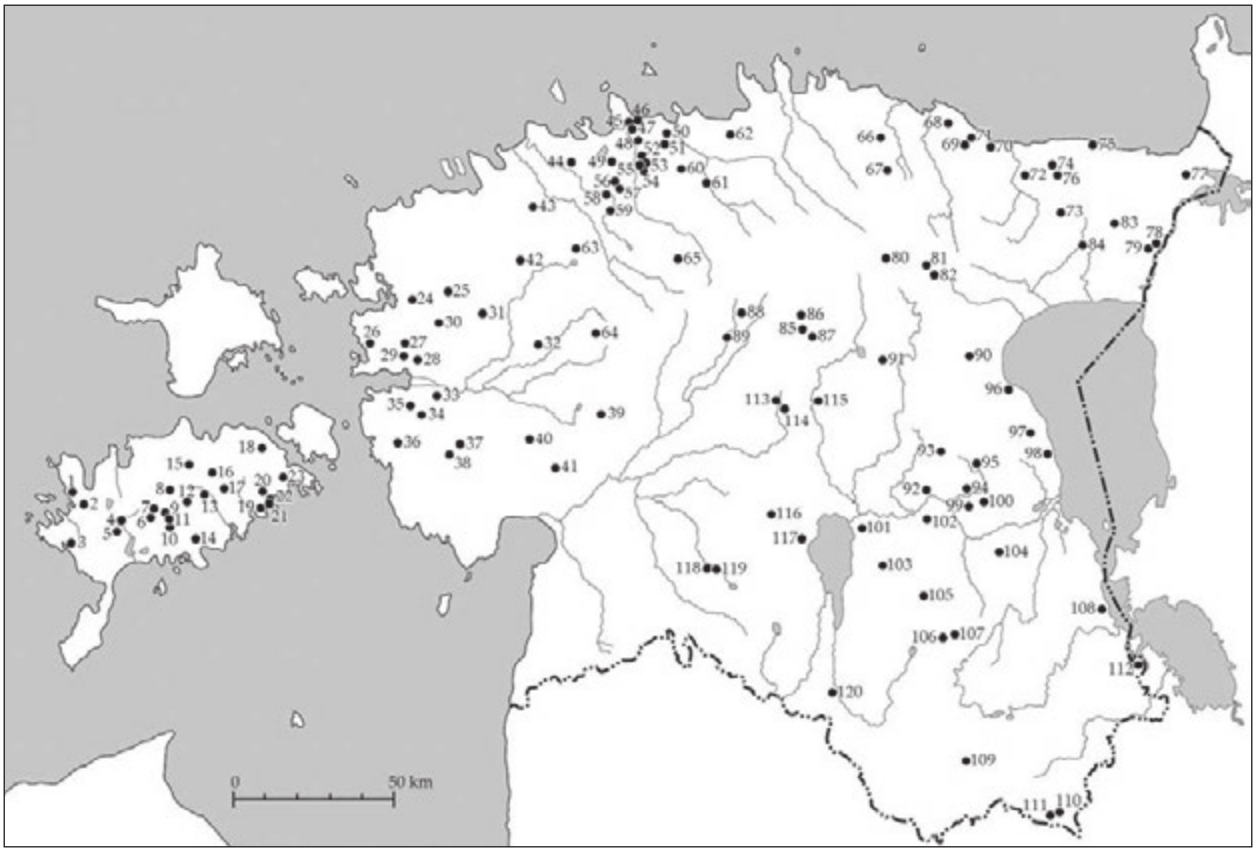


Fig. 189. *Distribution of Viking Age burial sites in Estonia. 1 Kurevere; 2 Pajumõisa; 3 Leedri; 4 Paiküla; 5 Kogula; 6 Loona; 7 Käku; 8 Piila; 9 Jõe; 10 Laadjala; 11 Uduvere; 12 Liiva-Putla; 13 Takka-Aesku; 14 Ilpla; 15 Pamma; 16 Räägi; 17 Rahu; 18 Suur-Rahula; 19 Randvere; 20 Ridala; 21 Rutiränk at Viltina; 22 Käo-Matsi at Viltina; 23 Tornimäe; 24 Uugla I; 25 Vidruka; 26 Kolu; 27 Varetemägi at Ehmja; 28 Keskvere III; 29 Oonga; 30 Väike-Lähtru; 31 Maidla II; 32 Haimre; 33 Kirbla; 34 Parivere; 35 Sipa; 36 Pajumaa; 37 a grave at Aru/Keblaste manor; 38 Rabavere; 39 Kõnnu; 40 Linnamäe; 41 Are; 42 Lehetu; 43 Tuula; 44 Kodasema; 45 Iru II; 46 Matsu at Iru; 47 Iru VI; 48 Proosa; 49 Peetri at Mõigu; 50 Jõelähtme; 51 Kostivere; 52 Lagedi V; 53 Lagedi IX; 54 Lagedi XIII; 55 Lagedi XIV; 56 Kurna II; 57 Kurna III; 58 Paikna; 59 Mõisaküla; 60 Raasiku; 61 Kehra; 62 Kuusalu; 63 Adila-Oru; 64 Keo; 65 Harmi; 66 Essu; 67 Lepna-Taaravainu; 68 Iila; 69 Koila; 70 Aseri; 71 Viru-Nigula; 72 Püssi; 73 Mäetaguse; 74 Kuusiku; 75 Toila I; 76 Tammiku; 77 Auvere; 78 Stroga at Kuningaküla; 79 Kuningaküla (barrow cemetery); 80 Väike-Maarja; 81 Rohu II; 82 Laekvere; 83 Raudi; 84 Jõuga; 85 Suure-Kareda; 86 Kahala; 87 Tamsi; 88 Kalamehe at Tarbja; 89 Kärevere; 90 Koimula; 91 Kõola; 92 Õvi; 93 Raigastvere; 94 Kobratu; 95 Igavere; 96 Raatvere; 97 Alasoo; 98 Lahepera; 99 Kõrveküla; 100 Vesneri; 101 Sandimärdi at Verevi; 102 Ilmatsalu; 103 Konguta; 104 Mäletjärve I; 105 Kodijärve; 106 Tordi I at Mügra; 107 Tigase; 108 Tooste; 109 Virunuka; 110 Kalmetemägi at Siksälä; 111 Kirikumägi at Siksälä; 112 Laossina I; 113 Kõõre at Taadikvere; 114 Kivimäe I at Taadikvere; 115 Luige; 116 Kuude; 117 Riuma; 118 Kirikumägi at Sammaste; 119 Taru at Sammaste; 120 Hummuli.*

of the period in question, have no external signs either. In the Pre-Viking Age in south-eastern and eastern Estonia, the dead were also buried in barrows heaped from sand. Also, all over Estonia

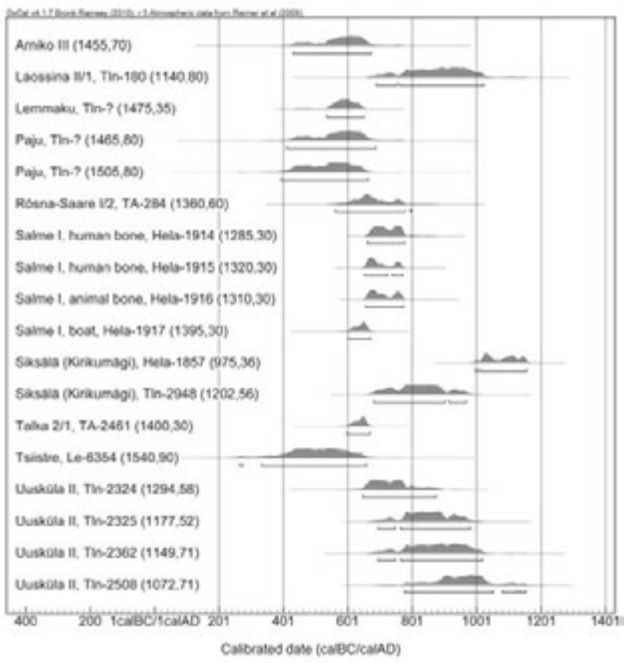


Fig. 190. *Radiocarbon dates from the burial sites of the second half of the first millennium AD.*

and throughout the period under review, stone graves of the earlier periods were sporadically re-used. Usually it is very difficult to distinguish any single burials in the graves because cremation was the predominant mode of disposal, and many graves were in use over very long periods of time. The possibility that one part of the sites that are regarded as graves are actually cremation sites cannot be ruled out, as many human bones could have been left behind in that case as well.

Without excavations, on the basis of only external observation, it is impossible to assign a date or even type to the majority of the Iron Age graves in Estonia. For this reason the present study focuses only on those graves that have revealed artefact finds or radiocarbon dates from the Migration Period, the Pre-Viking Age, or the Viking Age. Artefacts of the Migration Period or later periods in the graves of the Bronze Age and the Early Iron Age are also regarded as burials, although in those cases of a single item find, the possibility that the item may have been sacrificed or lost to the grave cannot be excluded. The find sets that consist of artefacts that were typically used as grave goods but without authoritative context, especially when the items had been in a fire or intentionally damaged, have also been regarded as graves herein. Those stray finds that have been obtained in places with a name that refers to a burial ground (e.g. the 'grave of the Swedish king' at Pöide in Saaremaa) are also considered as indicators of graves herein.

Following these principles one can claim that Migration Period cemeteries or singly found burials of Estonia that can be dated on the basis of artefact finds or radiocarbon dating total approximately 60; for the Pre-Viking Age and the Viking Age, the figure is, respectively, around 65 and 120 (Figs. 187–189).[10] Because some of the graves were used during two or even three of the abovementioned periods, the total number of the burial sites known from these periods amounts to about 200. In addition, there is a strong likelihood that the approximately 950 cremation barrows in roughly 140 barrow cemeteries in south-eastern and eastern Estonia, which have not undergone archaeological excavations, mostly date from the Pre-Viking Age.

Only 80 of the burial sites that can be dated to the Migration Period, the Pre-Viking Age, or the Viking Age have been completely or partly excavated for research; the others have revealed some finds in the course of agricultural work, while extracting sand, gravel, or stones, or as a result of treasure hunting. However, this figure is a rough approximation because in the case of 19th-century

[10] These figures represent approximations and depend on whether adjacent or close stone graves are regarded as single or multiple burial sites. It is a matter of interpretation, and it is not possible to establish consistency here. In most cases stone graves have been regarded as separate units, but a group of barrows has been regarded as a single unit in this study.

excavations, the borderline between scholarly and non-scholarly excavations is fuzzy. The source value of almost all the graves excavated in the 19th century and in the early 20th century suffers from primitive methods of excavation and recording or from the absence of any recording, as well as from the fact that bones were collected selectively or not at all. As of today the human bones of as few as seven graves or grave groups of the Middle Iron Age and the Viking Age have been examined (e.g. Mägi *et al.* 1997; Allmäe 2003; Allmäe & Maldre 2005). Radiocarbon dates for grave material are also very few in number (Fig. 190). At some graves or sites of destroyed graves, finds have been collected in the course of surface survey or test pitting, or by means of a metal detector. In such cases the structure of the grave and the character of burial practices usually remain unknown. Consequently, the classification of graves is difficult, and the understanding of the burial practices of the Middle Iron Age and the Viking Age remains rather patchy.

6.1.1. Re-use of *tarand* and stone-cist graves

In Estonia (with the exception of western Estonia) in the Roman Iron Age the principal and numerous grave type was the typical *tarand* grave — quadrangular stone closures attached to each other in an east–west row, which are mostly filled with stones; the cremated remains of the dead and the grave goods are located between and beneath the stones (see Lang 2007c, 191–206). Most graves of the Roman Iron Age were abandoned in the mid-5th century — of the approximately 150 graves dated to the Late Roman Iron Age, only about 30 continued in use into the Migration Period. The majority of the graves that continued beyond the Roman Iron Age are located in northern Estonia, for example, graves I and II in Viimsi, on the eastern side of Tallinn, which were established in the second half of the 4th century and used for burial at least until the end of the 5th century (Lang 1993). Similarly, the grave at Tõrma (Reinapi), western Virumaa, produced finds from the 2nd century to the beginning of the 6th century (Schmiedehelm 1955, 146). The *tarand* grave at Ojaveski, western Virumaa, was built in the 2nd–3rd centuries, and the *tarands* were used for burial until the end of the Roman Iron Age. During the Migration Period and the Pre-Viking Age the dead were buried in an irregular heap of stones next to the *tarands*, although occasional artefact finds of the second half of the first millennium were made also in the *tarands* (*ibid.*, 142–146). The *tarand* grave at Nurmsi, Järvamaa, also contained finds from the 3rd century to the beginning of the Pre-Viking Age (Vassar 1943).

Interment of occasional burials in the stone graves of earlier periods is characteristic of the entire period discussed in this book. The amount of artefacts dated to the Migration Period, the Pre-Viking Age, or the Viking Age is rather small in such graves, and they are mixed with earlier grave inclusions, whereby distinguishing the burials of the second half of the first millennium from earlier ones is usually impossible. Nor can it be done according to the burial mode because in Estonia both cremation and inhumation were practised throughout the Metal Age. The bones have not been properly studied or radiocarbon-dated, and therefore it is impossible to number the burials by period. In some cases one cannot rule out the possibility that artefacts of the Middle Iron Age or Viking Age could have found their way into earlier graves not as grave goods but, for example, in connection with sacrifice or some other religious practice. There are some exceptions, however; for instance, a Viking-period inhumation burial found in an early *tarand* grave of the Pre-Roman Iron Age at Iila in Virumaa (see below) and a 7th–8th-century burial layer in the early *tarand* grave of Toila I in Virumaa. The

grave at Toila had been built at the end of the Pre-Roman Iron Age when the non-cremated dead were buried there, and the Pre-Viking Age burial layer of burnt bones, abundant charcoal, and rich grave goods is clearly distinguishable on top of the earlier inhumations (Schmiedehelm 1973). In the case of this grave it is a matter of interpretation whether one regards the Pre-Viking Age layer as a layer of a later burial or a separate grave built on top of an earlier grave.

Probable burials of the Migration Period are known both from stone-cist graves and early *tarand* graves, which were normally built and used for burials in the first millennium BC. Relatively many such burials are known from the grave group at Lagedi near Tallinn (Lang 1996a, 211–232). The stone fill outside the cist of Kangru IV stone-cist grave at Väo, which was built in the Late Bronze Age, revealed a buckle and a knife from the 5th–6th centuries, as well as a few sherds of a clay vessel from the second half of the first millennium AD (Lang 1996a, 140). The stone fill of Jaani stone-cist graves at Väo revealed some artefacts of the Roman Iron Age and a small decorative mount probably dating from the Migration Period (*ibid.*, 137). The *tarand* grave at Liiva-Putla, Saaremaa, erected in the Pre-Roman Iron Age, was re-used after an interval in the Late Roman Iron Age and possibly also during the Migration Period, which is proved by the bridle bit found in the grave (Lang 2007a, 139). Also, a field next to the grave revealed a small spearhead with a lozenge-shaped blade (SM 9984: 3), which resembles spearheads of the Migration Period. Burials of the Migration Period in the stone grave of the Pre-Roman Iron Age at Kirikumägi at Sammaste, southern Viljandimaa, are evidenced by fragments of triangular-headed pins and crossbow fibulae; a few buckles and an iron socketed axe found in the grave could belong to the same period. The dead were buried in this grave also during the Pre-Viking, Viking, and Final Iron Ages (see below).

In addition to the above-mentioned Kirikumägi at Sammaste, the stone graves of the Bronze and the Pre-Roman Iron Age that contain Pre-Viking Age burials include the following: Lagedi V and IX, as well as Presti at Rebala, all three in Harjumaa (Lang 1996a, 214–218, 403), Aseri in eastern Virumaa (Jaanits *et al.* 1982, 270), as well as the previously mentioned Toila I, which is somewhat exceptional. Among the graves built in the Roman Iron Age, late burials with grave goods of the Pre-Viking Age were revealed for instance in the single-*tarand* graves of IA and IB at Kurna in the vicinity of Tallinn (Friedenthal 1911, pls. I: 68, II: 171–173, III: 13; Lang 1987, 200) and in the *tarand* grave at Tõnija in Saaremaa (Mägi 2007b, 61). The *tarand* grave at Miku at Tarbja, central Estonia, which was used in the 3rd–4th centuries, yielded a socketed axe that could be dated to the 6th–7th centuries (Moora 1967b, 280). However, in the case of the latter graves one cannot rule out the possibility that in the meantime the dead could have been buried without any grave goods, and the temporal disruption in the use of the grave is deceptive. In the Pre-Viking Age a boat burial was brought to grave XIII at Lagedi, which had been used in the 3rd century (Lang 1996a, 223; 2007a, 192; see also 6.1.7); the same is true of the Pre-Roman Iron Age grave at Aseri (Jaanits *et al.* 1982, 270).

There are data about a few dozen Viking Age burials in earlier stone graves, both cremations and inhumations. Usually these are in the form of occasional Viking-period artefacts; more intensive use of an earlier grave during the Viking Age is rare. For example, some Viking Age cremations were found in the Roman Iron Age Taru stone grave at Sammaste, Viljandimaa (in addition to those found at Kirikumägi at Sammaste, mentioned above), which were evidenced by a fragment of the cross guard of a sword and fragments of deliberately destroyed spearheads, seaxes with notched blades, a bent axe, bracelets, and other objects (Valk 2000b, 57). In the stone

grave at Kõola, northern Tartumaa, which was built as an irregular stone setting of large boulders and used in the 4th–5th centuries, cremated bodies were buried from the beginning of the 11th century to the end of the Final Iron Age; along with burnt bones, archaeologists found broken bronze items, which had been in the fire, melted glass beads, and sherds of clay vessels (Selirand 1974, 40–43). The *tarand* grave of the Roman Iron Age at Lahepera on the western shore of Lake Peipsi was again used for cremated burials in the second half of the Viking Age, as bracelets and a belt end from the 10th–11th centuries show. From the very end of the Viking Age onwards inhumations were interred next to the stone grave (Lavi 1980, 364; see also 6.1.9).

Of inhumation burials, the burial of a man younger than thirty years, who was interred in the early *tarand* grave at Iila village, Virumaa, in the second half of the 10th century, was preserved exceptionally well (Fig. 206). The buried person was lying extended and supine, with the head to the east; found with the deceased were two spears, an axe, three or four arrowheads (Fig. 164: 8), a bridle bit (Fig. 168: 2), a knife, a fire-steel, a whetstone, a comb in a bone case (Fig. 53: 3), a penannular brooch, a bracelet, and a spiral finger ring. In stone-cist grave VI at Iru in the vicinity of Tallinn, which dates from the Bronze Age or the beginning of the Pre-Roman Age, an inhumation therein is dated to the Viking Age by sherds of a Viking Age clay vessel, a spacer of a breast chain, and a curve-backed knife; also, the burial had destroyed the cist of the original grave (Lõugas 1976, 50; Lang 1996a, 123f.). Viking-period potsherds have also been found, for instance, from the eastern side of Tallinn in the stone-cist graves of Lagedi II (Lang 1996a, 214) and Rebala III (Lang *et al.* 2001, 43); however, in these cases it is not clear whether they represent burials.

The continued use of a burial site in the course of centuries or burial in much earlier graves was common not only in Estonia but was much more widespread (e.g. Wickholm 2008). Grave II at Tõugu, western Virumaa, serves as a good example (Lang 2000a, 93–124). It was a stone-cist grave of the Late Bronze Age; in the Pre-Roman Iron Age, *tarand* graves were established on top and next to it. Finds of the first millennium AD were absent, but the radiocarbon dating of the charcoal gathered beneath the collapsed wall of a *tarand* shows that the *tarand*-walls were kept intact until the 11th century — i.e. over the course of about 1000 years. The grave-field at Proosa to the east of Tallinn is another example of long-time use of a burial site. Here at the end of the Roman Iron Age, a *tarand* grave was established next to stone-cist graves of the Late Bronze Age, followed by a stone grave-field during the Migration Period, which was to a certain extent used for burials even in the Pre-Viking Age (Deemant 1993; Lang 1996a, 175–208). While Proosa did not reveal any finds for the most of the Viking Age, burials appear again in the archaeological record of the early 11th century, and the stone grave-field was extensively enlarged in the Final Iron Age. Continued or recurrent use of graves could be explained by the wish to emphasize the link between the living family and the earlier and mythological generations (Wickholm 2008, 94; Jonuks 2009, 273f.).

6.1.2. Cairn graves and stone grave-fields

During the period under review stone graves without inner structures were established in several places in Estonia; depending on the character of the stone setting they are called either cairn graves or stone grave-fields. Cairn graves are distinct and rather small stone piles which clearly rise higher from the surrounding ground, resembling stone-cist or shorter *tarand* graves before excavation. The first graves of this type were

Fig. 191. *Cairn grave at Lihula, pictured from the south (photo: Mati Mandel).*

established in the Estonian coastal zone as early as in the Early Metal Age (Lang 2000c; 2007c, 166–168). Cairn graves of the Early Roman Iron Age are unknown until now, but they appeared again at the end of the Roman Iron Age at the latest. The earliest graves of this kind are known from central Estonia. Kuningamägi ['King's Hill'] grave at Preedi, eastern Järvamaa, which was established in the 4th century and used for burial until the 8th century, was a rectangular stone setting laid from dolomite pieces; against all expectations, it did not reveal any surrounding *tarand*-walls (Moora 1967a), and, thus, it could be classified as a quadrangular cairn grave. Another cairn grave was at Kõola, northern Tartumaa, which was an irregular collection of large boulders established in the 4th–5th centuries (Selirand 1974, 40–43); this grave was re-used for burials in the 11th–13th centuries (see 6.1.1). The graves of Lihula and Maidla I in western Estonia and Läätsa at Verevi in south-eastern Estonia date from the Migration Period (Lang 2000c; 2007a, 192f.). As of today there is no information about any cairn graves of the Pre-Viking Age and the Viking Age.

The cairn grave at Lihula (Fig. 191) was situated in the south-western part of the town on a limestone elevation with uneven ground. Before the excavations the grave was an almost circular

mound, 16 m in diameter and covered with turf. Three sides of the grave joined the slopes of the natural elevation, and there the height of the grave reached up to 1.5 m from the ground; otherwise its height did not exceed 40–50 cm. Generally the stone layer of the grave was 20–25 cm in thickness, consisting of densely placed limestone slabs and occasional smaller granites. In some places the underlying limestone was revealed already after the removal of the top layer; only in the central, western, and north-western parts of the grave the stone layer was up to 40 cm in thickness. These areas yielded the majority of the bones and potsherds, jewellery (Figs. 113; 128: 7), belt fittings (Fig. 138: 2), horse gear, and weapons (Fig. 159), so that the burial area covered only about a quarter of the grave. The bronze and silver items did not reveal any burn marks, but one of the spearheads had been deliberately bent. Human bones were scattered among the stones and were poorly preserved. At least 21 individuals were determined, ten of them cremated. It was possible to determine the age of nine and the sex of six individuals. There were two infants, one person was 7–14 years old, one was 15–25 years old, two were 20–35, and three 35–55 years old. The deceased included two females and four males. The sex and the age of the dead could be matched only once — in the case of a male who was at least 40 years old (Mandel 1976; 2003a, 27–30).

Cairn grave I at Maidla was an oblong dense setting of granite stones and smaller slabs of limestone, which stretched across an area of 11 × 9 m, and was of uneven height. Human bones, a spearhead, a horse bit, a knife and a knife fragment, three pins, fragments of two bracelets, a crossbow fibula, and an iron and a bronze buckle, all from the 5th–6th centuries, were revealed under and between the stones. A little northwards of the midsection of the grave, in a place where the topmost layers revealed strongly burnt bones, a patch of about 2 m in diameter with sooty soil and cremated bones was found beneath the grave stones, which could have resulted from the cremation of the dead (Mandel 2003a, 39–41). At least 20 individuals had been buried in this cairn grave. Sex determination was possible in the case of half of them — five were males and five were females. The proportion of children amounted to 40% (Allmäe 2003, 245; Mandel 2003a, 42). Most of the individuals had been cremated, but beneath the grave stones the archaeologists discovered a hollow sunk in the ground, which contained the non-cremated remains of three people (for a detailed discussion see 6.1.9 below).

Läätsa grave at Verevi in the region of the north-eastern shore of Lake Võrtsjärv had a circular shape, was 13–14 m in diameter, and rose 15–35 cm higher from the surrounding ground. The grave consisted of irregularly placed large boulders in a single layer; only the middle part of the grave was reported to have revealed a north–south row of stones. Most of the buried had been cremated; the cremated bones were concentrated in the middle and the southern part of the cairn, while the north-western section contained a small amount of non-cremated bones. The majority of the artefactual record consisted of potsherds (for a detailed discussion see 2.2.2.2); however some jewellery items and knives were found, too. The finds suggest that the grave was used in the earlier part of the 6th century (Aun 1970).

Stone grave-fields are similar to cairn graves, as they consist of an above-ground stone cover that reveals no inner structuration. The difference lies in the fact that stone grave-fields are almost inconspicuous on the ground — their boundaries are not as distinct as in the case of cairn graves; they are diffuse, sometimes patchy, and generally cover larger areas. The remains of the cremated bodies along with grave inclusions are located beneath and between the stones, both scattered and as clusters. Sometimes the cremation remains were buried into a hollow that had been dug through the stone layer. Some stone grave-fields contain also non-cremated bones.

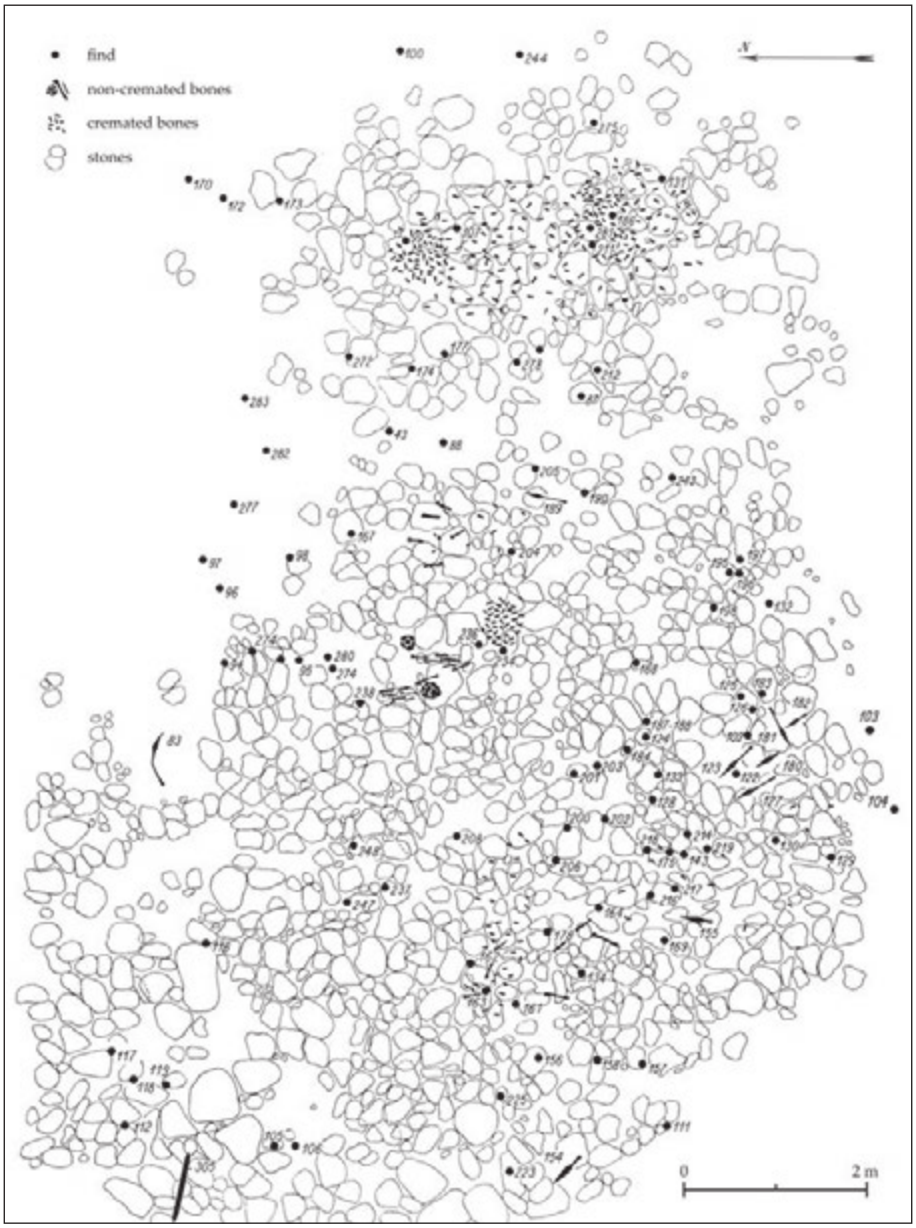


Fig. 192. *Stone grave-field III at Lehmja-Loo (Lõugas 1973, fig. 3).*

The goods include items that had been in fire or were intentionally broken as well as intact items. Stone grave-fields were established and used in the 5th–13th centuries. Their main distribution area is Finland, where stone grave-fields represented the most common grave type in the second half of the first millennium (Edgren & Törnblom 1992, 196; Wickholm & Raninen 2006).

The Migration Period is represented by at least one stone grave-field in Estonia — Proosa not

far from Tallinn, which was used for burials also in the early Pre-Viking Age. There is only one definitive stone grave-field that was built in the Pre-Viking Age — Lehmja-Loo III in the vicinity of Tallinn, which was used in the 7th century (Fig. 192). Mati Mandel has assumed that in the 6th–7th centuries a sparse stone setting was established also at Varetemägi ['Stone Pile/Ruin Hill'] at Ehmja, Läänemaa, on top of the earlier underground cremation burials (Mandel 2003a, 36). Some assumed stone grave-fields are known from the end of the Viking Age, from the second half of the 10th century onwards: three in Saaremaa (Rahu, Randvere, and Rutiränk at Viltina) and three in continental western Estonia (Maidla II, Uugla I, and Varetemägi at Ehmja). As for the latter, i.e. Varetemägi at Ehmja, it is actually not clear whether the stone setting characteristic of the stone grave-field developed in the 6th–7th centuries or only at the end of the 10th century; at any rate, there is no find material that could represent the 8th–9th centuries. As a rule, the stone grave-fields that were established in the 10th century continued in use until the end of the Final Iron Age. In fact, in the case of these cemeteries it is impossible to assure when the grave became a stone grave-field — one cannot rule out the possibility that originally there may have been a burial site with above-ground dispersed cremations or underground cremations in which a stone setting developed only later.

The stone grave-field at Proosa was located about 15–20 m to the south of earlier stone-cist and *tarand* graves. It could have measured about 35 × 40 m. The grave consisted of irregularly piled limestone slabs and granites, the stone layer being about 40–50 cm in thickness. Most of the deceased had been cremated, but occasional human bones without any burn marks were also present. The bones and the artefacts were mostly scattered beneath and between the stones; compact bone clusters were few. Although the entire grave-field displayed a uniform structure and burial mode, the artefact finds allow distinguishing between two sections — graves representing the Migration Period and the Final Iron Age. No finds of the 7th–10th centuries were obtained from the grave. The boundary between the different sections of the grave was indistinct; moreover, this part of the grave had been badly damaged by a bulldozer. Nevertheless, it could be determined that the Migration Period section was nearer to the stone-cist and *tarand* graves and covered an area of about 450 m² (Deemant 1975, 78; 1993, 36–39; Selirand & Deemant 1985, 244). The find assemblage of the Migration Period is remarkably rich, including 846 index numbers of non-ceramic objects (Deemant 1993, 39) and 2300 potsherds (Lang 1996a, 194). The find assemblage includes jewellery (Figs. 98: 4; 102: 2; 127: 1–2), metal fittings of clothing (Figs. 135: 2, 7; 136; 138: 1; 139: 7–8; 140; 142: 1–2; 146), as well as components of weaponry (Figs. 153: 1; 157: 1; 165: 1; 166: 1) and tools (Figs. 61: 1; 78: 1, 3). A large part of the items had been deliberately bent or broken. Determining the number of burials from the distribution of the bones and the artefact finds in the grave was not possible (Deemant 1993, 38); nor have the bones undergone any specialist anthropological analysis. One could assume, however, that several dozen people could have been buried in the grave in the Migration Period.

Grave III at Lehmja-Loo, 11 km to the southeast of Tallinn, is the only purely Pre-Viking-era stone grave found in Estonia thus far. The grave was a low pile of granite stones with uneven density, measuring 14 × 10 m in its widest part (Fig. 192; Lõugas 1973). It revealed both cremated and non-cremated bones; no complete skeletons were found. The finds comprised a large number of weapons (Figs. 155: 3; 158: 8), including a double-edged sword and 14 spearheads, but also some pins, belt fittings, etc. It seems that the majority of the metal items had been intact when they were placed in the grave — the damage to some spearheads, pins, and bracelets could have been

caused by subsequent land cultivation. The artefactual record suggests that the grave dates from the 7th century.

Next to the Migration Period grave I at Maidla, a new stone grave (Maidla II) was established in the second half of the 10th century, which continued in use into the 13th century (Mandel 2003a, 37–59). The burials resulted in a collection of limestone slabs and occasional boulders spread with uneven density and thickness over an area of 2060 m². In this area 24 patches of sooty soil mostly 2–4 m across were distinguished, the largest of them measuring 8 × 5 m. Mandel claimed that they were places where the deceased had been cremated (*ibid.*, 42–47). The cremation patches rarely revealed larger bone assemblages; rather, bones were found in the vicinity of the patches, leaving one with the impression that in the course of the funerary ritual the bones were scattered from the cremation site (Allmäe 2003, 248). The grave yielded the remains of at least 51 people, 32 of them were cremated and 19 were inhumed; however, the actual number of burials could have been higher by up to twenty individuals (*ibid.*, 248f.). Because the bones were scattered, and it was impossible to match them up with artefact finds, it is not known how many cremation burials originated from the Viking Age and how many from the Final Iron Age. All five inhumation burials that could be dated by means of artefacts date from the Final Iron Age, which probably indicates that the other inhumation burials also date from the same period (Mandel 2003a, 58).

In the case of stone grave-fields, the question of why people brought stones to graves arises. In the stone-cist and *tarand* graves, common in Estonia in the earlier periods, the stone structures marked the boundaries of the grave as a monument or burial ground. However, it seems that the low discontinuous stone assemblages with indistinct boundaries characteristic of stone grave-fields were not amassed for the purpose of emphasizing the visibility of the grave monument in the landscape. The fact that at least three graves in Läänemaa (Maidla II, Varetemägi at Ehmja, and Uugla I) reveal traces of cremating the dead on the site suggests that the funeral pyre may have had a stone base (Mandel 2003a, 153). Indeed, archaeological experiments have shown that a stone deposit under a funeral pyre grants a better draught and more uniform cremation (Nylén 1958; Kaliff 1994). Such stones may have remained in place after the cremation, and that is how stone assemblages that are now called stone grave-fields may have evolved over time (see also 6.1.6). In other words, the stone grave-fields were not designed knowingly by prehistoric people, but developed in the course of decades or centuries as a result of burials and rituals conducted on the grave.

6.1.3. Cremation burials surrounded with a stone circle

There are cremation burials in Saaremaa that are surrounded by a stone circle 2–4 m in diameter. Sometimes such burials form grave-fields with numerous stone piles, which also include indistinct stone heaps or paving of limestone slabs between the stone circles (Mägi 2007b, 62). Unfortunately, these grave-fields have been studied too little to claim something definite about the original appearance and use of the entire cemetery area. For this reason, it is difficult to judge whether it would be more justified to regard them as stone-circle graves, a separate grave type, or large-scale cemeteries or grave-fields that among other features include burials surrounded by stone circles.

The earliest burial with a stone circle known is from the grave-field at Audemägi ['Grave Hill'] at the village of Mäla on the island of Muhu; judging by the grave goods it dates from the 7th–9th

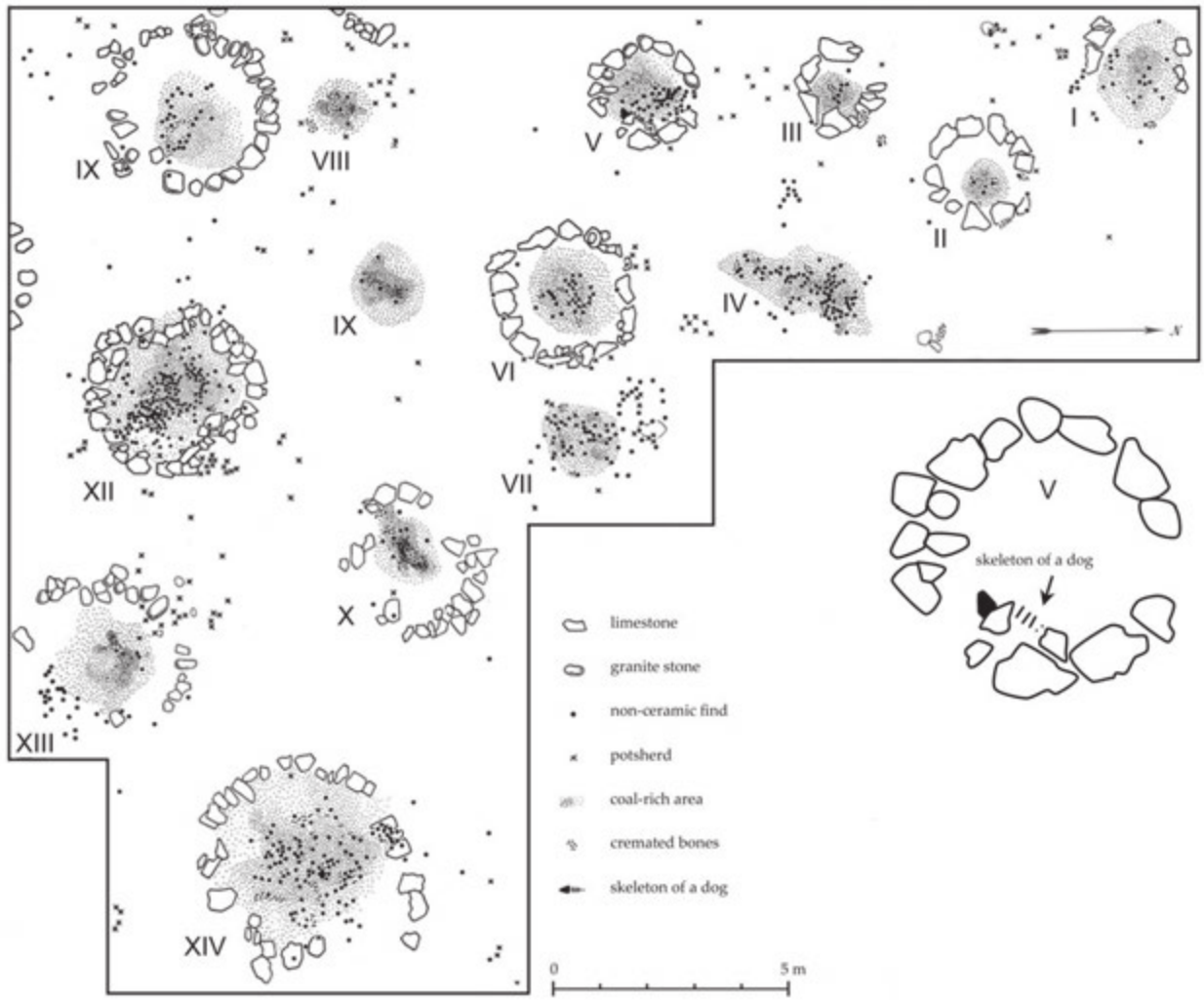


Fig. 193. *Grave-field with stone circles at Käku (after Jaanits* et al. *1982, pl. XXI).*

centuries (Holzmayer 1880, 25–31; Mägi 2007c, 10). The custom to surround cremation burials with stone circles persisted in the stone graves of Saaremaa until the end of prehistory (Mägi 2002, 38–58). Burials with surrounding stone circles that date from the 10th century and the early 11th century are known in the grave-fields at Käku and Piila (Figs. 193–194). Piila is reportedly the largest cemetery with stone circles — it once covered an area of about 79,000 m², but because of multiple treasure hunts and 19th-century amateur excavations only a small part survives. Seven burials of the 10th–11th centuries within an area of 152 m² have been excavated at Piila (Mägi *et al.* 1997, 99, fig. 1; Mägi & Rudi 1999; Mägi 2002, 43f.). At Käku, which is the most thoroughly studied site of this kind, 15 burials have been excavated, of which 10 were surrounded with stone circles; some of them belong to the 12th century (Mägi 2002, 39–42).

The above-mentioned cemeteries reveal two kinds of stone circles. Some burials are surrounded

by a limestone circular wall, which originally could have been at least 65 cm in height. The stone circles are filled with head-sized boulders but not to the very edge of the stone wall. Other stone circles are made of large boulders and are filled with smaller stones, which form a pile on top of the funerary structure. In some cases a stone pile was heaped on top of the cremated bones without a stone circle. The latter have sometimes been called stone-heap graves (Mägi 2007c, 10f.). Both stone circles and heaps may coexist in the same cemetery. Between the stone circles cremation burials that have been scattered on the ground may also be found (e.g. Käku IV and VII; see Fig. 193); however, in such cases one cannot rule out the possibility that the stone circle or heap may have been destroyed in the course of subsequent burials, treasure hunts, etc.

Usually the cremated remains of the dead were brought to stone circles from elsewhere, or in other words, cremation did not take place at the burial site. However, there was a burial at Piila where the amassed remains of the pyre had been covered with large stones (Mägi 2007b, 63). At this cemetery the weight of human bones per burial ranged between 3.2–185.5 g. It is likely that the bones of only one adult were buried in each of the stone circles, with only part of the remains making it to the burial site. Osteologists managed to determine that the buried individuals at Piila included at least two men and one woman (Mägi *et al.* 1997, 108–114, table 1).

The grave stones were put in place after the cremated bones and the grave goods (Fig. 195; see also Fig. 144) had been scattered on the ground, as the occurrence of bones and artefacts beneath the stones making up the circle demonstrates. Larger objects in particular, such as weapons and tools, were often deliberately placed beneath the stones (Kustin 1966, 89). The grave goods had often melted in the fire, or had been deliberately broken. When excavating a burial with a stone circle from the end of the 11th or from the 12th century in the grave-field at Kurevere, Saaremaa, the archaeologists noticed that the potsherds did not reveal any burn marks. Also their location in the grave was different from the metal objects. For this reason, Aita Kustin, the leader of the excavations, assumed that the clay vessels could originate from funerary or commemorative meals (Kustin 1966, 89). Marika Mägi, who directed excavations at Piila, suggested that the remains of the deceased and the fragments of grave goods could have been brought to the cemetery in a clay vessel, which was then smashed in the grave area (Mägi 1997 *et al.*, 102).

Fig. 194. *Grave-field with stone circles at Piila (photo: Marika Mägi).*

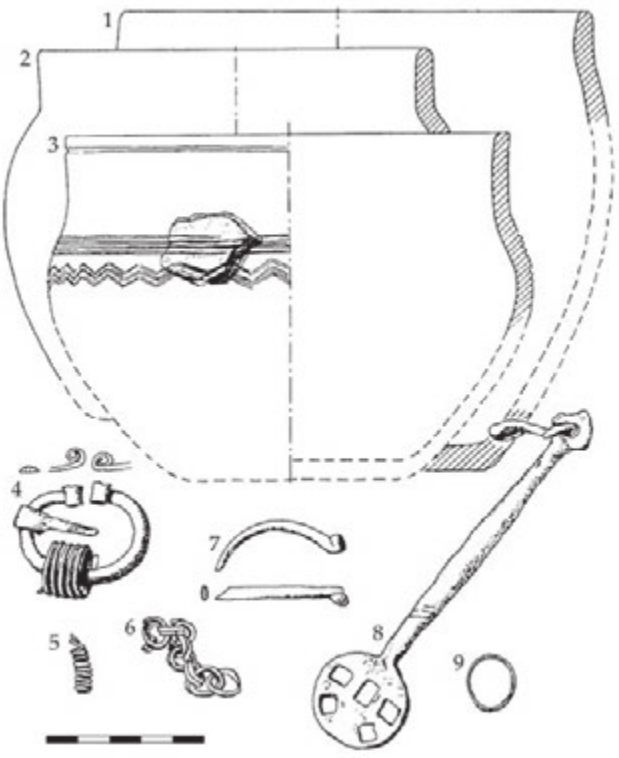


Fig. 195. *Grave goods from stone circle IV at Piila (after Mägi* et al. *1997, fig. 7).*

The burials surrounded by stone circles in Saaremaa have counterparts in northern Courland (Mägi 2005c, 191). It has also been assumed that the stone circles in Saaremaa could have appeared under the influence of Gotland, although the Gotland examples are somewhat different (Kustin 1966, 93). Also in Scania, Bornholm, and Öland, it was customary to surround a cremation burial, or more rarely an inhumation burial, with a circular, quadrangular, triangular, or pointed-oval stone barrier (Svanberg 2003). Perhaps it was not important what kind of stone structure was erected on top of the burial, but it was important that a stone structure started to mark a specific burial — the previously common collective burial was replaced by personal graves. A similar development can be observed, for example, in the area of Gauja Livonians, where sand barrows started to be piled on top of single burials. The latter could be regarded as counterparts of stone-circle graves in those areas where stones are in short supply but sand is common (Mägi 2005c, 193).

6.1.4. Underground cremation burials

The underground cremation burial is a burial practice in which the remains of a cremated body were placed in a pit or depression dug in the ground and covered with soil or stones. A few underground cremation burials are known in Estonia, as well as in Latvia and Lithuania, from the Bronze Age and the Pre-Roman Iron Age (Laul 2001, 187f.; Lillak 2006; Lang 2007c, 217f.; Laul & Valk 2007, 30). As for the Roman Iron Age, a few underground cremations probably of this date are known from Läänemaa — in the cemetery at Käbla, which mostly contains Final Iron Age finds, and beneath stone grave-field II at Maidla (Mandel 2003a, 145). Also, some radiocarbon dates suggesting underground cremation burials of the Roman Iron Age were found beneath the cremation barrows in south-eastern Estonia (see below, 6.1.5). The cremation burials of the second half of the first millennium include both single burials as well as cemeteries with several cremation graves.

An underground cremation burial of the Migration Period is known at Kirimäe in Läänemaa. In 1923 altogether 174 index numbers of artefacts were found in a gravel pit at a depth of about 50 cm beneath a larger flat rock (65 × 60 × 20 cm) and its immediate vicinity: fragments of five two-edged swords, twenty spearheads (Fig. 158: 1–2), three shield bosses (Fig. 165: 3), knives (Fig. 155: 2), socketed axes (Fig. 79), fibulae (Fig. 92: 1), bracelets (Fig. 127: 3), neck rings, pins (Fig. 98: 5), chain-holders (Fig. 110: 1), etc. Some of the

items show markings of burning or of deliberate destruction. Along with artefacts some charcoal and intensively burnt human bones were found beneath the stone (Leinbock 1923a; 1923b; Moora 1923; Schmiedehelm 1924). According to Harri Moora (1923, 1f.), '… a pit had been dug in the ground, the things and the bones had been put inside, and the whole had been covered with a stone and soil.' The finding has been regarded as a cremation burial with rich grave goods, dating from the 6th century (Schmiedehelm 1924). Because the greater part of the find site has been destroyed in the course of gravel extraction, it is not known whether there was only one underground cremation burial, or there were more of them. It is reported, however, that the same gravel pit had often revealed human bones (Jung 1910, 225); on the other hand, at a distance of about 100 m from the cremation burial was the hillock Kabelimägi ['Chapel Hill'], which contained a historical rural cemetery (Moora 1923, 1). Gravel extraction at Kirimäe has also uncovered jewellery of the Final Iron Age (Mandel 2003a, 95).

It has been assumed that Migration Period underground cremation burials may also have been present in the following graves in Läänemaa: Madise at Ehmja, Kõnnu, Käbla, Pajumaa, Koela, and Võhma (see Mandel 2003a, 94–101, 107). Also, the cremation burials found beneath Pre-Viking Age barrows in south-eastern Estonia may considerably pre-date the barrows themselves, i.e. they may date from the Migration Period (see 6.1.5). No underground cremation burials of the Migration Period have been found elsewhere in Estonia.

What was probably a Pre-Viking Age cremation burial was found near the manor in Inju, Virumaa, where ditch-digging in 1865 unearthed burnt bones together with three triangular-headed pins, a bronze chain, and four bracelets (Fig. 128: 1; Schmiedehelm 1930, 320f.). Also, the cemetery of the Viking and Final Iron Ages at Linnamäe in western Estonia (see below) yielded a 7th–8th-century dress pin from a hollow with cremation burials, where the remaining finds were from the 11th–12th centuries (Mandel 2003a, 74). It has been assumed that underground cremation burials of a Pre-Viking Age date could have been present in the graves of Pajumaa, Keskvere III, and Väike-Kalju in Läänemaa (*ibid.*, 95, 97, 106).

Underground cremation burials became more widespread in the 10th century. In continental western Estonia there are at least six burials or cemeteries of this type from the second half of the Viking Age (Keskvere III, Linnamäe, Oonga, Parivere, Sipa, and Väike-Lähtru). At least two sites with underground cremation burials (Kehra and Harmi) have been reported in Harjumaa; in Virumaa there could be four (near the Chapel of St. Mary at Viru-Nigula, at Püssi, Stroga at Kuningaküla, and Raudi), and in south-eastern Estonia there are at least three (Ilmatsalu, Kodijärve, and Siksälä). Also, at Raatvere in northern Tartumaa there was a cremation cemetery in the 10th century. The majority of these sites had been severely damaged already before the archaeological investigations, or they represent accidentally found single burials or sites that have been insufficiently excavated or recorded; therefore it is difficult to make any valid generalizations based on them.

The grave at Linnamäe on the northern boundary of historical Pärnumaa is the largest and one of the best preserved underground cremation cemeteries of the Viking Age excavated so far. It contained cremated human bones and grave goods beneath a plough layer in irregularly shaped hollows sunk in sandy subsoil, a few metres across and 10–30 cm in depth, and filled with charcoal and sooty soil (Fig. 196). Because the ground shows evidence of burning at these hollows, Mati Mandel, who supervised the excavations, concluded that these were the places where the dead had been cremated together with grave goods, and subsequently the cremation remains were covered with soil. Fifteen such

Fig. 196. *Cremation cemetery at Linnamäe (after Mandel 2003a, fig. 10).*

cremation patches were found in the excavated area of 870 m², although originally there may have been more, as the excavated area bordered on recent sand pits. The larger cremation sites were complemented by smaller patches of sooty soil, which also contained cremated human bones and occasional artefacts. The grave goods included rather numerous items of jewellery, most of which had been deliberately broken, belt fittings, and knives; there were also many potsherds. The earliest find was a triangular-headed dress pin from the Pre-Viking Age, but all the other finds could be dated to the period from the 10th century to the mid-13th century (Mandel 2003a, 74f., 146).

Burial site III at Keskvere was severely destroyed by ploughing. What remains is a plot about 120 × 60 m in size in the ploughed field that has yielded occasional burnt bone pieces and fragments of ornaments and weapons from the period from the mid-6th century to the end of the 12th century. Among other things, a pit a dozen centimetres in depth sunk in limestone scree was found at a depth of 25 cm from the field surface, which revealed a cluster of altogether more than 40 items, including scissors, a spearhead, fragments of three neck rings, bracelets, a penannular brooch, finger rings, and more (Fig. 197). All the items were burnt; the majority of them had been broken up or bent. No bones were found among the assemblage of objects; however, a strongly burnt bone fragment stuck to a bronze pendant proves that it is a burial. It has been dated to the 10th century (Mandel 2003a, 104f.), and among Viking Age underground cremation burials in Estonia this burial is the richest in terms of grave goods.

The cremation burial at Püssi, which was dated to the 10th century, contained three spearheads, two deliberately broken bracelets, a sword, fragments of a seaxe, a hollowing chisel (Fig. 84: 2), a part of a bridle bit, and an axe. The objects were found together with burnt bones in a pit about 90 cm in depth (Mandel 2003a, 142f.). The fact that the burial was located rather deep in the ground is noteworthy, for it could at least partly account for why the number of the underground cremation burials discovered so far is so small. On the other hand, researchers have emphasized in the case of the Migration Period underground cremation burials in western Estonia that the burial pits in the limestone ground with a thin soil layer had to be shallow, and for this reason, it is likely that many of them were destroyed in the course of field cultivation (*ibid.*, 145).

At Raatvere the cremation burials of the second half of the 10th century and the beginning of the 11th century were destroyed by the inhumation

Fig. 197. *A richly furnished cremation burial in grave III at Keskvere (photo: Mati Mandel).*

burials interred in the same place from the mid-11th century onwards (see 6.1.9; Fig. 207), and by more recent ploughing. The cemetery is located on the former beach ridge of Lake Peipsi in a place that had been used for iron processing before it was adopted as a burial ground (see 4.1.1). Altogether nine hollows with a bowl-shaped bottom recessed in sandy soil and an average diameter of 50 cm were found at a depth of 10–30 cm from the plough layer. The hollows contained charred soil, burnt pieces of bone, and very few finds: a horse bit, a bracelet, a belt mount, and potsherds. However, one has to take into account that these were only the preserved bottoms of the burial pits. The numerous ornaments and weapons of the late 10th and the early 11th century and the burnt bones scattered in the plough layer suggested that a large part of the underground cremation burials at Raatvere had been ploughed away in the course of farming (Lavi 1986b; 1988).

The cemetery at Kalmetemägi ['Graves Hill'] at Siksälä in the south-eastern corner of Estonia revealed some cremation burials, of which at least nine can be dated to ca 1025–1150. They pre-date the inhumation burials of the Final Iron Age and the Middle Ages in the same cemetery. Although most of the cremations probably date from the Final Iron Age, some clay vessels and ornament fragments (e.g. Laul & Valk 2007, figs. 22: 1; 24–25) suggest that the earliest cremation burials date from the closing decades of the Viking Age. The strongly burnt bones and the grave goods, which had also been in fire, had been buried in pits 0.7–1.2 m in depth and up to 1.5 m across, or they had been scattered on the ground, with a low sand barrow a few metres in diameter piled above the scattered remains (Laul & Valk 2007, 30–32).

The neighbouring hillock Kirikumägi ['Church Hill'], which is situated at a distance of ca 100 m from Kalmetemägi, revealed three more assemblages of burnt human bones. The largest of them was located in an area of about 2.8 m² with indistinct boundaries. Here the researchers were able to gather almost 1.2 kg of burnt bones at a depth of 35–70 cm, from which it was possible to single out the bones of a woman aged 50–65 years and the bones of a man older than 35 years. The radiocarbon dating of a charcoal sample from the vicinity of the bone cluster yielded a calibrated date range of AD 997–1156 (Fig. 190). The other two clusters of burnt bones were uncovered at a depth of 50–55 and 58–63 cm, respectively. They did not have any distinct boundaries either; however, they were smaller, containing about 71 g and 75 g of human bones, respectively. The former contained the remains of at least three individuals, including the remains of a 20–30-year-old male. The cremation burials were related to a charcoal patch discovered at a depth of 30 cm near the bone clusters; the calibrated age of the charcoal was AD 681–969 (Fig. 190). Artefact finds that could be related to the cremations were not found. Heiki Valk, who supervised the excavations, claimed that at Kirikumägi the burnt bones were not buried in pits but were dispersed over larger patches,

which were sunk in the ground and subsequently covered with sand (Valk & Allmäe 2010).

The geographically closest counterparts of the Migration Period cremation burials in western Estonia can be found on the northern shore of the Gulf of Finland. For instance, the cremation burial of Kirimäe has a very similar counterpart at Hönsåkerskullen in Karjaa, western Uusimaa. A hollow 70 cm in length, 45 cm in width, and 20 cm in depth yielded 6.5 kg of burnt human bones and over 80 artefacts of the Migration Period: shield bosses, spearheads, knives, belt mounts, tweezers, fragments of bone combs, fibulae, dress pins, neck rings, bracelets, and finger rings (af Hällström 1946). South-western Finland also has revealed some underground cremation burials from the Roman Iron Age and the Pre-Viking Age, where the burnt bones and rich grave goods of a wealthy warrior had been buried in a container or had been covered with a sandstone slab (Lehtosalo-Hilander 1984b, 283f.). However, in Finland, too, the underground cremation burial was uncommon by comparison with the other burial forms, and such cremations are regarded as an influence from central Sweden or the Vistula estuary (Huurre 1979, 126). No underground cremation burials from the Roman Iron Age or the Middle Iron Age have been found in Latvia (Lang 2007a, 209). In the Viking Age, cremation burials prevailed in Sweden, Finland, Courland in Latvia, and in areas to the east of Virumaa which were later inhabited by Votians, but the cremation remains were mostly buried in above-ground stone graves. The available literature did not provide any data about Viking-era underground cremation burials in the neighbouring areas.

Fig. 198. *Barrow 8 at Rõsna-Saare I during excavations (photo: Mare Aun).*

6.1.5. Cremation barrows

In the second half of the 6th century at the latest, cremation-burial sand barrows began to be erected in south-eastern and eastern Estonia.[11] These are usually located in groups of as many as several dozen barrows. The majority of barrows are circular or oval, but also long ridge-like barrows can be encountered in the barrow groups (Fig. 198). Such barrows were built in the second half of the first millennium in a wide area stretching from south-eastern Estonia to the upper reaches of the Volga River in the east and from the upper reaches of the Luga River and the basin of Lake Ilmen in the north to the upper reaches of the Daugava and Dnieper in the south. Russian archaeologists regard this area as a location of a distinctive archaeological culture — the 'Long-Barrow Culture' (see Sedov 1974). On the basis of size, structure, and burial customs, this area has been divided into a number of regions, which are separated from one another by areas without any barrows, or where they occur only occasionally (see Šhmit 1968, 224f.; Sedov 1974, 12). The Estonian barrows belong to the Pskov group of the so-called long barrows, the distribution area of which stretches roughly from the basin of Lake Pskov to the middle reaches of the Velikaja River in the south.

The barrow cemeteries of the Pskov group can be found in south-eastern Estonia as far as the Ahja River; some barrows are known also on the western and northern shores of Lake Peipsi (Fig. 199). The density of barrows is the highest in the villages of Laossina and Rõsna on the western shore of Lake Pskov, for which there is no counterpart in the entire distribution area of cremation barrows (Allmäe *et al.* 2008; Sedov 1974, 42–61). To the east of Lake Peipsi and Lake Pskov, barrows of this group can be found in the basins of the rivers Želča, Čërnaja, and Tolba, as well as in the upper reaches of the Pljussa River, which flows into the Narva River (see Sedov 1974, pl. 1).

The area of the present-day Estonia has revealed 141 cremation-barrow cemeteries with slightly over 1000 barrows (Smirnova 2008, appendix 3).

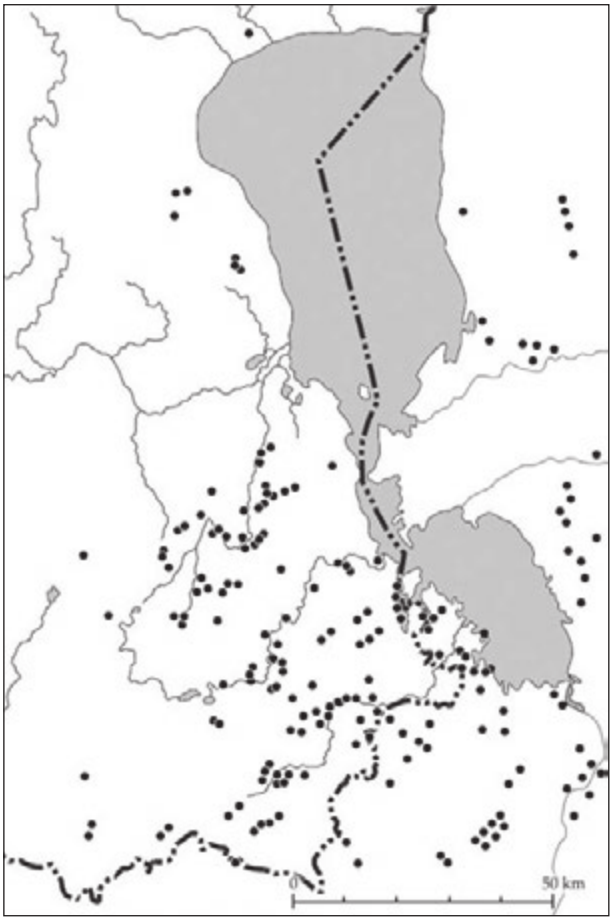


Fig. 199. *Distribution of cremation-barrow cemeteries in Estonia and the western part of the Pskov region (after Aun 1992, fig. 55; updated after Smirnova 2008).*

[11] This grave type has commonly been referred to as 'long barrows' (e.g. Tvauri 2006, 118ff.), in order to distinguish them from barrows erected in the Final Iron Age and the Medieval period, which contain inhumations and which do not include long ridge-like barrows. Since also the barrows of the second half of the first millennium are predominately round, not long, I will preferentially use the term 'cremation barrows' here.

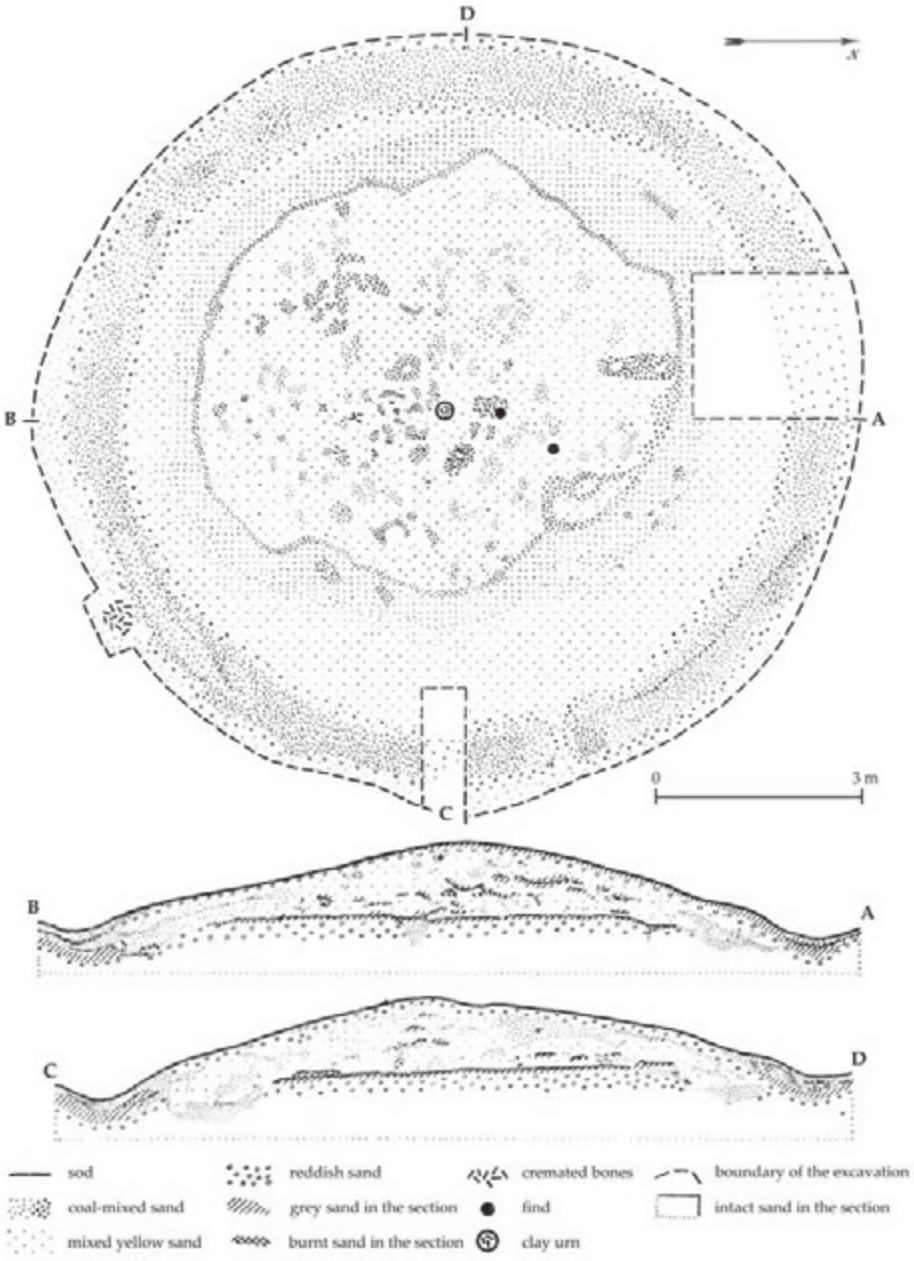


Fig. 200. *Barrow 9 at barrow cemetery I at Laossina (Aun 1976a, fig. 4).*

Usually a barrow cemetery includes 4–10 barrows (Aun 2003b, table). The largest barrow cemetery in Estonia is at Obinitsa, Setumaa. Originally it may have included as many as 50 barrows, of which 36 survive (Aun 2000, 63). Usually the barrows are located in cemeteries in two parallel rows or in a single row along with the banks of bodies of water or along former roads. Most

barrow cemeteries are located at a distance of 50–500 m from the major rivers of south-eastern Estonia (Ahja, Võhandu, and Piusa) in sandy soil, which nowadays is usually covered by pine forests. About a quarter of the barrow cemeteries are located in the vicinity of Lake Pskov or some small lake (Smirnova 2008, 35).

Of about 1000 cremation barrows in south-eastern and eastern Estonia, 59 have been archaeologically excavated. However, only three barrow cemeteries have been excavated completely. Barrow cemetery I at Põlgaste consisted of only three rounded barrows, and it had been partly destroyed before the excavation (Laul 1987). Barrow cemeteries I and II at Rõsna-Saare, which are situated at a distance of about 1 km from each other, consisted of 10 and 11 barrows, respectively; they included both long and rounded heaps (Aun 1992, 111; 2003a, table 1). The more thoroughly studied barrow groups include Arniko III, Laossina II and V, Suure-Rõsna, Lindora, and Obinitsa (Aun 1992; 2000; Krejton 1914). There are more cremation-barrow cemeteries that have been excavated, but those excavations have been at a smaller scale.

Usually the height of the barrows ranges between 0.5–1 m. Rounded barrows (Fig. 200) measure 6–15 m in diameter, which is also the approximate width of the long barrows. The latter are mostly less than 20 m in length. Of the 166 barrows that have been measured in south-eastern Estonia, only 45 were 20–30 m in length; there were only 17 barrows that were 30–50 m in length, and four barrows were over 50 m in length (see Aun 1980a, appendix I). The long barrows are usually few in number by comparison with rounded barrows; it is especially true for larger barrow cemeteries of over 30 barrows (Aun 2006, 117f.). Long barrows constitute about 18% of all barrows (Ligi 1989, 319).

The barrows under review contain only cremation burials wherein the cremation took place outside the grave area and perhaps only a part of the bones were deposited in the barrow during the funerary ritual (Aun 2009a, 87; Allmäe & Maldre 2005, 122, 131). The cremation of bodies outside the grave area is characteristic of the burial customs of such barrows in their entire distribution area (Aun 2006, 117; Popov 2009a, 120). In fact, cremation burial is the most important characteristic feature of the barrow burials; in other respects the findings of the previous investigations are difficult to interpret.

A barrow usually contains the remains of several individuals. About half of the burials revealed during excavations have been found in a hollow that had been dug before building the barrow. The burnt bones were placed there either loosely, in a container of clay or organic matter, or were covered by an upturned clay vessel; more rarely the cremated bones and grave goods were placed on the ground surface beneath the barrow, either with or without a container (Aun 2005, 106; 2006, 115). The other half of the burials are located inside the barrow heap or on the surface of the barrow, usually scattered or as bone clusters, more rarely in clay vessels. There are barrows that contain burials only inside the heap or on the surface of the barrow (Aun *et al.* 2008, 277) and barrows that are entirely empty of bones and artefacts (Aun 1992, 96). Usually longer barrows contain more burials than the rounded ones. The bone clusters may contain the bones of several people; also, the remains of one person may be located in several places, and some bone assemblages contain only animal bones (see 6.1.11). It is a possibility that only part of the cremation remains were brought to the grave. This has been observed at Rõsna-Saare, where barrow cemeteries I and II revealed some burials where only part of the skeleton was represented, whereas some parts that were expected to survive the cremation were clearly absent (Allmäe *et al.* 2007, 302).

To provide an example, ten barrows of barrow cemetery I at Rõsna-Saare from the 6th–8th centuries revealed 63–64 assemblages of cremated

bones; 36 were located beneath the barrow either in a hollow sunk in the ground or partly in the hollow and partly in the vicinity of the hollow on the original ground, 15 were in the barrow heap, 11–12 in the upper part of the heap or on its surface, and one was in the ditch surrounding the barrow (Aun 1985c, table I; Allmäe *et al.* 2009, 88). The remains of 74 individuals were distinguishable, including 46 adults, of which 18 were probably women and 15 probably men; it was impossible to distinguish the sex of the other people. Among the buried, 28 (or 37.8%) were younger than 14 years old, including six infants (Allmäe *et al.* 2009, 88). Barrow cemetery II at Rõsna-Saare (11 barrows) of the same period revealed 53 assemblages of cremated bones with altogether 60 buried individuals; 26 bone assemblages were located in or on the ground beneath the barrow heap, 18 were inside the barrow heap, eight in the upper part of the barrow, and one in the ditch surrounding the barrow (Aun 1985c, table I). The number of the buried people per barrow ranged between 1 and 23, mostly between 4 and 9 (Aun *et al.* 2008, 276, table V; Allmäe *et al.* 2009, 88).

The cremation burials that were sunk into the ground or scattered on the ground beneath the barrow need not be directly related to the barrows, but could be earlier than barrows. At least the burials discovered beneath barrow 2 at Laossina V and beneath barrows 1 and 2 at Rõsna-Saare I had the sod layer above them, which must have developed before the barrow was heaped there (Aun 1992, 115f.; Laul 2001, 188). This demonstrates that these burials were at least dozens of years older than the barrow. Radiocarbon dates provide even firmer proof of the existence of much earlier cremation burials beneath the barrows. The sample from the cremation burial beneath barrow 6 at Suure-Rõsna yielded a date that after calibration with a probability of 95.4% falls into the period AD 1–221 (Tln-735; 1920±35 BP), and the cremation burial beneath barrow 1 at Rõsna-Saare I was dated after calibration to AD 25–391 (Tln-285; 1825±80 BP). The artefactual material inside the barrow heaps shows that barrows started to be erected no sooner than the end of the Migration Period or the beginning of the Pre-Viking Age. During the building of the barrow, pre-barrow burials could end up inside or on top of the heap, which makes the study of the development of barrow cemeteries difficult.

Opinions vary regarding whether the long barrows were heaped all at once, or developed by lengthening them in the course of new burials (see Aun 2005, 97–99 and citations therein). Mare Aun, a long-time researcher of cremation barrows in south-eastern Estonia, claims that the barrows of the Pskov group were usually built all at once (Aun 1992, 151f.; 2005, 111; 2009a, 87). However, it is likely that some barrows were heaped gradually (see Mihajlova 2009). The development of a barrow can often be elucidated by studying the pre-barrow ground, which is indicated by the buried sod layer or the greyish quartz sand, the eluvial horizon of podzol soil (Rõuk 1979). Beneath barrow 11 at Laossina II, which is over 53 m in length and one of the four longest barrows in Estonia, the eluvial horizon had been preserved evenly throughout the entire barrow (Aun 2005, 105), which suggests that the barrow had been heaped all at once. However, usually there are several different patches of the eluvial soil beneath the oblong barrows in south-eastern Estonia; the patches are separated from one other by shallow ditches, which can be observed in the cross-section of a barrow. They indicate that while heaping a barrow, the sand for heaping was obtained by digging next to the barrow which resulted in a shallow ditch around the barrow, destroying the sod or the eluvial soil horizon. When the barrow was elongated by means of a new sand heap, the eluvial zone or the sod became fragmentary in the site of surrounding ditch. For instance, the barrows in the cemeteries at Suure-Rõsna and Rõsna-Saare I and II had up to four patches of the sod layer beneath them (Aun 1992, fig. 43; 2005, figs. 1–2),

which probably shows that these barrows were erected in at least four stages.

Some barrows contain wooden structures. For example, the southern part of rounded barrow 3 at Lemmaku on the northern shore of Lake Peipsi in eastern Virumaa contained the remains of a log structure measuring 2 × 2 m. The remains were located on a sand layer heaped on the pre-barrow ground and seemed to be charred (Aun & Ligi 1986, 356). In barrow 11 in cemetery II at Laossina, the ground beneath the barrow revealed a rectangular structure 4 m in length and 2.5 m in width. In each corner of the structure there were two thicker vertical logs; the walls were made from thinner horizontal logs, and originally there had been a flat roof of logs over the structure. The interior of the log structure on the original ground surface revealed cremated human bones; no grave goods were found. According to Mare Aun, the structure had burned before heaping the barrow. In her view, it was a ritual structure, a kind of burial chamber, which was burned down in the course of the burial ceremony and was then covered with sand (Aun 1978b; 1992, 19, 118f.).

Barrows rarely contain stones or stone structures. The sandy filling of a rounded barrow at Kõnnu revealed large numbers of randomly located stones of various sizes (Schmiedehelm & Laul 1970, 160f.). An oblong barrow at Loosi revealed a stone row that proceeded crosswise through one end of the barrow (*ibid.*, 162). Stone structures have also been found in some barrows in the Pskov region; for instance, at the barrow cemetery at Severiki not far from Pskov, three barrows contained rectangular structures of limestone slabs which resembled *tarands* (Plotkin 2009).

The barrows contain very few finds. For example, of the 63–64 assemblages of cremated bones from cemetery I at Rõsna-Saare, only 19 contained artefact finds; the respective figures for Rõsna-Saare II were 53 and 18 (Aun 1985b, 216). Usually the find material consists of occasional burnt and fragmentary ornaments and belt fittings (e.g. Figs. 112; 135: 1; 138: 5; 139: 1). Other objects rarely occur as grave goods; such finds include tweezers (Fig. 54: 2), fire-stones (Fig. 49), knife fragments, clay spindle whorls (Fig. 85: 2), moulds (Fig. 73), a clay casting ladle (Fig. 76), a fish hook, a small sickle, an iron hoe (Fig. 59: 1), and a small antler box (see 2.2.5). Weapons are represented only by a broken throwing spear from a barrow at Suure-Rõsna.

Almost every sixth barrow burial appears to contain a clay vessel, either as a funerary urn or as grave goods (see also 6.1.12 and 2.2.2.3). Approximately two thirds of the potsherds found during the excavations are related to specific burials; the rest were found in the ground beneath the barrow, inside the barrow mound, or on its surface, and could be related to sacrifice or burial rites (Aun 2002).

A model for the burial practices of the south-eastern Estonian cremation barrows probably lies in the local typical *tarand* graves of the Roman Iron Age (e.g. Schmiedehelm & Laul 1970; Jaanits *et al.* 1982, 303; Selirand 1983, 162; Aun 2005, 111). In the case of *tarand* graves, too, the prevailing burial mode is cremation, they were built gradually, and they may include *tarands* without burials, which is similar to the empty barrows found at barrow cemeteries (Aun 2005, 106, 109). There are even some cemeteries where a *tarand* grave and cremation barrows occur together (e.g. Loosi and Kõnnu; see Schmiedehelm & Laul 1970). It is also noteworthy that the cremation barrows of south-eastern Estonia include the earliest examples of this grave type (see Sedov 1974, 12f.; 1982, 49, map 1: e; Lebedev 2001, 34), which indicates that such barrows had originally developed in south-eastern Estonia and the Pskov area. From this one can conclude that the cremation barrows were established by the local population and not by Slavic immigrants, as several Russian archaeologists claim (see Tvauri 2007).

Because of the paucity of finds, it is difficult to ascertain when the building of cremation barrows ended, or when the burials were discontinued. It seems that the building of cremation barrows came to an end in the 9th–10th centuries, or at least this is the point at which grave goods disappeared from the burials (Aun 1992, 133, 164f.). No other grave forms from the 6th–9th centuries are known from the distribution area of barrow cemeteries in south-eastern Estonia.

6.1.6. Cremation sites

During the second half of the first millennium the predominant disposal mode in Estonia was cremation. However, there is very little evidence that the dead bodies were cremated at burial sites, and this evidence is mostly limited to the Late Viking Age western Estonia (stone gravefields with cremation patches, occasional burials with stone circles). Usually a dead body had been cremated outside a grave, and in many cases only part of the cremated bones of the deceased reached the grave. For example, the weight of the human bones obtained in the stone circles at Piila never exceeded 200 g (Mägi *et al.* 1997, 108–114, table 1). However, experiments that imitate cremation burials of the Iron Age show that an adult human leaves behind 2–2.5 kg of cremated bones (Sigvallius 1994, 28–32). Thus, the question arises where the cremation sites, where perhaps most of the remains of the cremated individuals were left, might be located.

In Estonia only two cremation sites are known where the dead were cremated away from a contemporaneous grave. One of them was found at Rakke, southern Virumaa. There a ploughed field revealed a coal-black patch about 12 m across, in which the soil contained burnt human bones, an abundance of charcoal and soot, and granite scraps that had crumbled in intense heat. The local people claimed that earlier there had once been a round stone pile about 8 m in diameter. During the trial excavations about two fifths of the patch was excavated. The centre of the charcoal patch revealed a rectangular stone fireplace 150 × 65 cm in size. This hearth pit about 20 cm in depth was lined with granite pieces placed edgeways, and its interior was filled with cobblestones of up to several dozen centimetres in diameter with a mass of mineralized ash between them. Unfortunately, researchers were not able to date this site with certainty because the charcoal was too decomposed for the radiocarbon dating techniques of the time, and the fragment of the bronze item that was found there could also not be dated. The potsherds of the cremation patch represent Late Corded Ware and Textile Ceramics and come from the Early Metal Age (Moora 1970).

Another cremation site may have been on top of the Pre-Roman Iron Age *tarand* grave II at Uusküla in the north-western corner of Virumaa. The stone grave contained a mound of red-burnt gravel and scree, up to 1.2 m in width and about 30 cm in thickness; its inside and surroundings contained a great quantity of charcoal and cremated human bones. The charcoal gathered from the mound was dated to the second half of the 7th century or the 8th century, and the four charcoal samples from its vicinity indicated the Viking Age or the beginning of the Final Iron Age (Fig. 190). No artefact or pottery finds from these periods were found in the grave. Valter Lang has suggested that it could be a Viking-era cremation site (Lang 1999, 31f.; 2000a, 153).

Part of the sites with traces of cremation, which until now have been regarded as graves, may not actually be graves but cremation sites from where part of the cremation remains were taken to the final burial sites. The artefact finds and bones in these sites are leftovers from the pyres. It is impossible to determine which of them were, in the eyes of the prehistoric people, only cremation sites and which were burial places.

6.1.7. Boat burials

In 2008 a boat with human remains and abundant equipment, known as the Salme I boat burial,[12] was unearthed in the coastal sediments at Salme village at the narrowest section of the Sõrve Peninsula in Saaremaa (Fig. 201; see also 5.5.1 and Fig. 184). In the light of hitherto published data (Konsa *et al.* 2009a; 2009b; Mäss 2008; 2009; Peets & Maldre 2010) it could be regarded as an extraordinary find. The AMS dates and the artefacts found in the boat date the burial to AD 650–720; the vessel could have been built in the first half of the 7th century (Konsa *et al.* 2009a, 61f.).

The stern of the boat revealed the skeletons of seven males. The skeletons were in different positions; it seemed that the men had been placed next to the oars and the rudder. Unfortunately, the stern of the boat had been destroyed in the course of cable installation before the arrival of archaeologists, which makes the reconstruction of the original situation difficult (Konsa *et al.* 2009a). Among the bones in the bow of the boat, cattle, sheep, goat, and pig were represented. No complete animal skeleton was found, which suggests that the animal bones had found their way to the boat together with meat. Surprisingly enough, there were no horse or dog bones, which are very common in Swedish boat burials. The bones of two falcons, which had been decapitated, could be regarded as an extraordinary find. One of the birds was a northern goshawk (*Accipiter gentilis*) and the other was a Eurasian sparrowhawk (*Accipiter nisus*) (Konsa *et al.* 2009a; Allmäe *et al.* in print).

Fig. 201. *Remains of burial boat I at Salme, pictured from the north-east (photo: Maili Roio).*

The boat revealed blade fragments of one double-edged and two single-edged swords, a sword hilt (Fig. 154: 1), a U-shaped scabbard chape, two spearheads, six arrowheads, and 18 knives. There were also eight whetstones (Fig. 52: 3), fragments of an antler comb (Fig. 53: 2), a decorative bronze mount, four pieces of flint used for striking up a fire, and an iron woodworking tool with a socket (Fig. 84: 1), which resembles the hollowing tool primarily used in historical Estonia to hollow bee trees and hives (Konsa *et al.* 2009a, 57–59). The finds also included 71 gaming pieces, which are the first finds of this kind in Estonia, and at least three dice (Figs. 202–203; see also 7.4). Fifty of the hemispherical gaming pieces had been made from whalebone, the rest from the cattle

[12] In 2010 another boat burial (Salme II) with an even larger number of inhumed individuals and more abundant grave goods was uncovered about 50 m south of boat I, which is similar and contemporaneous with the 2008 find. Because the excavation of boat burial II has not been completed by the time of completing the manuscript of this study, let alone the publishing of the excavation results, the present book will discuss only the burial discovered in 2008.

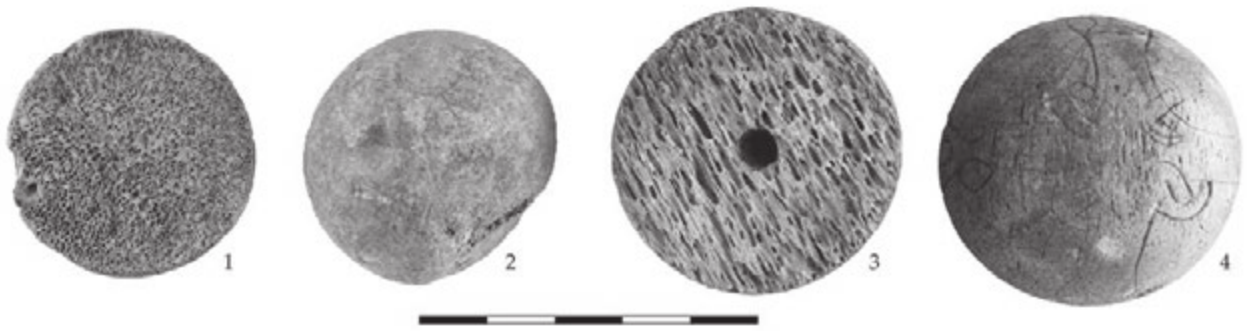


Fig. 202. *Cattle-bone (1–2) and whalebone (3–4) gaming pieces from boat burial I at Salme (SM 10601: 222, 54, 23, 28; photo: Kristel Külljastinen).*

femur ends. The shape of the gaming pieces varies slightly; they measured between 3.6–4.6 cm in diameter and 1.7–3.5 cm in height. Five gaming pieces display engraved images. One of the gaming pieces made from whalebone bears decoration resembling Germanic animal ornamentation and an image of a human (Fig. 202: 4). The images on four other gaming pieces are rather indistinct, but three of them show a similar composition of a Viking ship, a whale, and a serpent. Presumably, the gaming pieces depict an episode from an Eddic poem in which the god Thor goes fishing with the giant Hymir (Peets & Maldre 2010, 56–82).

Ship or boat burials were widespread in Scandinavia from the 6th century onwards and persisted until the 11th century, at which point Christian burial customs became predominant. In the course of Viking colonization the custom was introduced to the British Isles. Unlike the Saaremaa find, in Scandinavia not more than two or three individuals were interred in a ship or a boat at a time. Usually these are richly furnished burials of males, probably noblemen (Konsa *et al.* 2009a).

In Scandinavian stone graves, boat rivets and nails are rather common, which probably indicates that some of the dead were cremated in a boat or a ship (Sigvallius 1997). The written records and myths suggest that the third way to send the deceased to the next world in a watercraft was to place the body with the grave goods in a vessel (which could be set on fire) and leave it in the care of the sea (Schönbäck 1980, 108). The idea to send the departed to the next world in a watercraft came into being in Scandinavia rather early — burials of the Stone Age in dugout boats are known, and in the Bronze Age ship- or boat-shaped stone structures were built around burials (*ibid.*).

In Finland there is evidence of about 30 stone grave-fields with cremation burials that contained ship rivets; the earliest of them date from

Fig. 203. *Bone die from boat burial I at Salme (SM 10601: 211; photo: Marge Konsa).*

the mid-6th century and the most recent ones are from the early 11th century (Anderson 1963; Raike 1992). These graves contain large numbers of rivets — for instance, the grave at Yliskylä, Perniö, yielded altogether about 900 and grave I at Ristimäki, Kaarina, almost 770 rivets (Andreson 1963, 125). It is difficult to determine whether in the 6th century the custom of boat burials was born, or if it was when boat rivets were adopted, making boat burials archaeologically visible (Salo 2008, 178).

Also, the Estonian coastal zone has revealed some Pre-Viking Age burials where the deceased had presumably been cremated in a boat or a ship or left on a stone grave. Interestingly enough, these burials turn up in stone graves that are considerably earlier in date than the boat burials. For instance, grave XIII at Lagedi, which had been used for burial mainly in the 3rd century, contained a boat burial of the 7th century, which was evidenced by 146 rivets scattered all over the grave. The fact that it was a Pre-Viking Age burial is proved by a Finnish-style crayfish fibula (Fig. 93: 3) and a bracelet with a concavo-convex cross-section and flaring terminals (Lang 1996a, 223; 2007a, 192). Also, around the 7th century a boat burial was brought to the stone grave at Aseri, which had been built in the Pre-Roman Iron Age (Jaanits *et al.* 1982, 270). Large numbers of boat rivets were found in a grave of the Early Iron Age at Rae (Fig. 185; Lang 2007a, 192) and in the *tarand* grave and stone grave-field at Proosa (Deemant 1993; Lang 1996a, 194). In Saaremaa the stone grave at Viltina (Rutiränk), which was used from the late 10th century into the 13th century, yielded over a thousand boat rivets, almost half of them gathered from an area about 15 m in length and 2 m in width (Vassar 1940). The boat rivets found in Estonian graves have hitherto escaped the attention of researchers, and therefore it is impossible to claim whether the ships or the boats had been cremated, or had been left decomposing on the grave.

The presence of boat rivets in a grave need not always be proof of a boat burial. In order to be certain, there should be hundreds of rivets; in the case of a smaller amount there is always a possibility that they come, for instance, from a coffin, wagon, etc. On the other hand, if the deceased was cremated elsewhere, only part of the rivets may have reached the grave. What makes interpretation even more difficult is the fact that the dry wood of old boats or ships soaked with tar could be used for building cremation pyres (Schönbäck 1980, 111f.). In addition, until the mid-20th century, the coastal people had a custom to leave old boats decomposing on stone heaps (graves), whereby some boat rivets could be of rather recent origin (Mägi 2007b, 63). It could well be that the above-mentioned boat rivets in the stone grave at Viltina did not originate from a burial but from a boat that had been left decomposing on a grave — namely, the grave was located at the time of its use in the immediate vicinity of the seashore and a harbour site (see 5.5.2).

6.1.8. Mortuary houses

In Saaremaa two sites of the Migration Period have been excavated which could have been mortuary houses, i.e. special buildings where the bones of the dead were stored. One of the sites, traditionally called the grave of Paju, is located at Pajumõisa village, western Saaremaa, and the other at Lepna in the south-eastern part of the island.

The grave of Paju was a rectangular deposit of granite stones along the north-west–south-east axis measuring 5.5–6 × 2.3 m (Tamla 1975). One of its sides had been destroyed, which means that the structure could once have been even larger. The base of the grave had been sunk into the original ground at a depth of about 50 cm. Non-cremated human bones and grave goods were scattered between the stones. The bones were highly fragmented and thoroughly mixed. Only

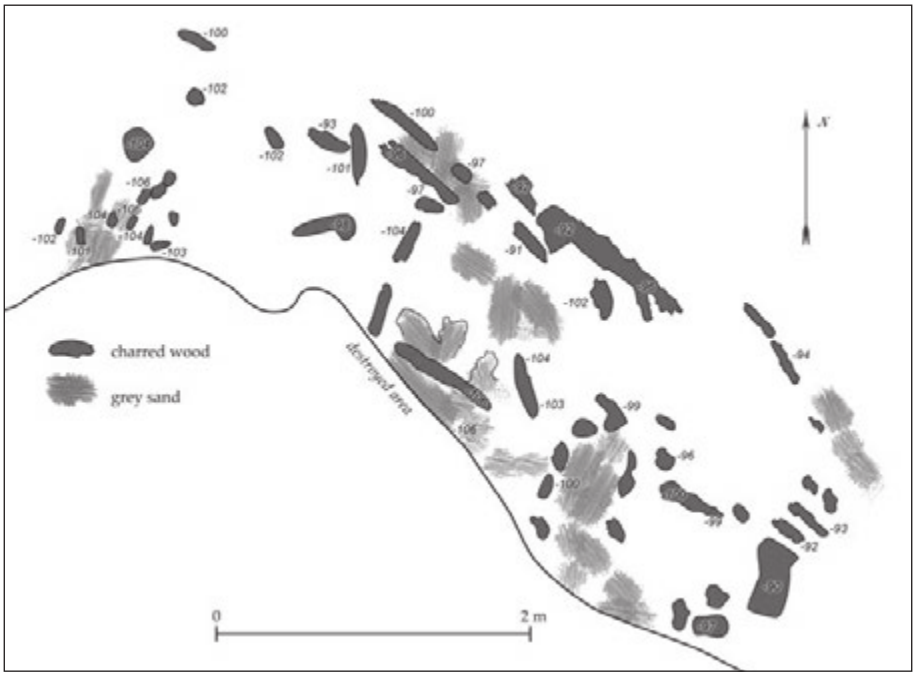


Fig. 204. *Remains of the burnt wooden structure at the mortuary site of Paju (after excavation plan stored in AI). Altitudes on the figure are relative.*

one site where a larger group of bones was found warranted the supposition of Toomas Tamla, the excavations supervisor, of a more complete skeleton; also, in some places the remains of fragmented skulls were located. Immediately beneath the granite stones, limestone paving was found. Some decayed wood was preserved in the corners of the paving, and the sand beneath the paving revealed a burnt layer containing charred remains of logs and burnt cobblestones (Fig. 204). Tamla suggested that they may have represented either the remains of a large pyre which had been burnt down before building the grave in order to symbolically purify the ground, or the remains of a wooden burial chamber (Tamla & Jaanits 1977, 65). Marika Mägi argued that the charred logs may have come from a log cabin with wooden walls resting directly on the ground (Mägi 2005a, 108). The charcoal samples collected from the site were dated to the Migration Period and the beginning of the Pre-Viking Age (Fig. 190). The grave goods, remarkably rich in the Estonian context, confirm this dating; they included a sword pommel (Fig. 153: 2), a scabbard chape, fragments of shield bosses and knives, a spearhead, an agraffe button, decorative mounts, buckles, and various ornaments (Fig. 98: 3), including a large number of beads. All the iron objects were preserved as fragments, probably due to corrosion and not intentional destruction; the majority of bronze and silver ornaments, as well as belt fittings were intact. The bone record of the grave has not been studied.

The grave at Lepna, originating from the 5th–6th centuries, is similar to the previously discussed site in terms of both structure and date. Here a pit with a limestone-paved floor was unearthed, which had a depth of 80 cm and measured 8.8 × 5.3 m (Fig. 205). The pit was surrounded by a low ridge about 20 cm in height and 1 m in width, probably made up of the soil that had been thrown

Fig. 205. *Remains of a probable mortuary house at Lepna, pictured from the north-west (photo: Marika Mägi).*

out in the course of digging the pit. The ridge had been topped with a dry wall of limestone slabs, of which only one or two bottom layers were preserved. One corner of the pit, right next to what possibly was an entrance, revealed the remains of a fireplace — a charcoal patch 60–70 cm in diameter and 10–15 cm in thickness. The majority of the human bones and finds were unearthed from the pit, mostly near the walls but partly also at the edges of the pit. Only small pieces of non-cremated human bones were found; there were no complete skeletons. It is likely that the soft tissues may have been removed from the bones before they were brought to the site. The finds and the human bones often occurred in groups, which suggests that originally they may have been placed in a wooden or bark container or wrapped in cloth. This site, too, contained rich grave goods: among other things neck rings, bracelets, crossbow fibulae, dress pins, rings, decorative mounts, glass beads, fragments of chains, belt buckles (Fig. 135: 3), tweezers, spearheads, knives, and bridle bits (Fig. 168: 1); some severely corroded artefacts may have been shield bosses and a sword or seaxe (Mägi 2004b). The majority of the metal objects had been deliberately destroyed. The amount of silver jewellery was remarkable in this grave; also the tweezers were made from silver. Marika Mägi, the excavations supervisor, assumed that the pit may have been covered by a roof and that it may have been a mortuary house (Mägi 2005a, 103–107, fig. 9; Mägi 2006a, 53).

The interpretation of the sites of Lepna and Paju as mortuary houses seems to be justified. The use of wooden mortuary houses would partly account for the small number of the known graves

in Estonia, for instance those of the Migration Period and those of western Estonia of the Roman Iron Age — such above-ground wooden mortuary houses would have disintegrated fully in the course of time, making it impossible to recognize their locations.

According to Marika Mägi, the closest counterparts of what are believed to be the mortuary houses in Saaremaa can be found among the eastern Finno-Ugrians in the area between the Volga and Oka rivers. In this area of the Djakovo Culture it was customary from the Pre-Roman Iron Age to at least until the 5th–6th centuries AD to place the remains of cremated bodies in small log cabins (Mägi 2005a, 118–121 and citations therein).

6.1.9. Underground inhumation burials

There are some finds of the Migration Period in western Estonia that have been assumed to represent underground inhumation burials. Nevertheless, it is possible in these cases (as in the case of non-cremated bones in stone graves) that what was buried was not an intact corpse but only the bones, placed after the flesh decayed or after the soft tissues were intentionally removed (i.e. secondary burials).

As the first example one could mention Kuninguste in Saaremaa, where non-cremated human bones along with some ornaments of the Migration Period were unearthed at a distance of 10 m from an early *tarand* grave of the Pre-Roman Iron Age (Lõugas 1974, 80–82, pl. I: 15–17). At Maidla, Läänemaa, a hollow recessed in the ground beneath the stones of grave I contained the remains of three people: a 25–35-year-old man, an adolescent aged 15 years, and an 8–9-year-old child. The bones were mixed; only the position of the skull fragments and femurs and tibiae of a skeleton suggested that an individual had been buried with the head directed southwards. The fragment of a bronze bracelet and a bronze buckle, which were found nearby, may have belonged with the bones, and they served as the evidence for dating the burials to the 5th–6th centuries (Mandel 2003a, 40f.). The cremation burials

Fig. 206. *Viking Age inhumation burial in the early* tarand *grave at Iila (drawing: AI).*

of the stone grave date from the same period (see 6.1.2). It has been assumed that there may have been 5th–7th-century inhumation burials also beneath and next to Varetemägi stone grave-field at Ehmja, which were, however, plundered during the later use of the grave site (*ibid.*, 30–37).

Inhumation burials in which the body was buried once and for all (i.e. primary burials) emerged in Harjumaa in the 8th century. By the 10th century at the latest this burial practice had reached Virumaa and Saaremaa. As the Iila male burial shows (see 6.1.1; Fig. 206), similar burials can be found also in stone graves of earlier periods. The early inhumations of this type are located singly, apart from the other contemporaneous graves, but the beginning of the 11th century also saw the emergence of the first inhumation cemeteries.

The two earliest complete inhumation burials were unearthed in north-western Estonia. Unfortunately, both of them were found long ago and are poorly recorded. In the early 19th century a human skeleton was unearthed in the ground on a smoothly sloping elevation at Kanama near Saue; by its left side was a knife and a sword dated to the end of the 8th century (Fig. 150: 1; Mandel 1991a, 102). It has been reported that on the land of the former Matsu farm in Iru at the east side of Tallinn, the stone grave or clearance cairn which was destroyed in 1934 revealed a skeleton lying between limestone slabs with a small tanged throwing-spear of the 8th–9th centuries by its side (Lang 1996a, 129, pl. XXXIV: 4). In this case it is not clear whether it was a stone grave or a clearance cairn that had been later amassed on top of the inhumation burial.

Two inhumation burials are known in Virumaa from the second half of the 10th century. In addition to the above-mentioned Iila burial, this period is represented also by a male skeleton from Mäetaguse together with a spearhead, a seaxe, a bridle bit, two buckles, and a penannular brooch. The burial was found by accident in the course of construction work at the edge of farmland in the mound called Kabelimägi or Kellamägi ['Chapel Hill' or 'Bell Hill'], which had earlier revealed a sword and a spearhead (Selirand 1974, 70; Mägi-Lõugas 1995b, pl. VII). Both the name of the site as well as the earlier finds suggest that there might have been more inhumation burials there.

The edge of the gravel pit at Laadjala manor in Saaremaa revealed in 1866 a male burial with a narrow-bladed seaxe with a bone handle from the 10th century (Holzmayer 1868, 12, pl. I; Fig. 156). At the beginning of the 20th century non-cremated human bones with a sword and other weapons were found in the Russian Orthodox cemetery at Tornimäe in eastern Saaremaa in the vicinity of a prehistoric harbour (SMM, 102). In 1958 a 9th–10th-century sword was found in the same cemetery (Mandel 1991a, table), which could indicate the date of the burial site.

The earliest inhumation cemeteries emerged as late as in the first half of the 11th century. There is more reliable evidence of two of them: Raatvere and Lahepera on the western shore of Lake Peipsi. In addition, there may have been Viking-era inhumation cemeteries at Õvi on the northern bank of the Emajõgi River, at Kobratu north of Tartu, and at Rabavere in southern Läänemaa. In terms of burial customs and artefactual record, the closest counterpart of the cemeteries of the early 11th century in northern Tartumaa is the cemetery at Zalahtov'e on the eastern shore of Lake Peipsi (see Hvoščinskaja 2004).

Raatvere is the most noteworthy inhumation cemetery of the later part of the Estonian Viking Age. The archaeological excavations yielded (in addition to cremation burials — see 6.1.4) 27 inhumation graves (Fig. 207). They were positioned irregularly and were clustered rather close to one another. The dead had been buried at a depth of 60–70 cm on their backs with the head to the west or the south-west and with the hands on their chests or abdomens. Ten of them, all adults, had been buried with grave goods, which date the burials to the first half or the mid-11th century.

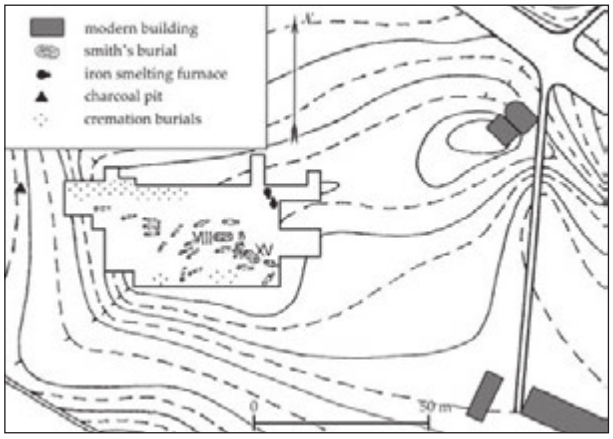


Fig. 207. *Plan of the cemetery at Raatvere (after Lavi 1999b, fig. 4).*

The other dead, including both adults and children, had been buried without grave goods, or the grave goods could not be dated (e.g. knives). The burials without grave goods could also come from the Final Iron Age or even a historical period. The anthropological study of the bones has not been done, but on the basis of the grave goods one could determine five males and five females. Almost each grave that had grave goods contained a clay vessel (Figs. 44; 46: 4). The female graves contained a sheathed knife (Fig. 145) and abundant jewellery (Figs. 104; 148), and the male graves yielded weapons, tools, as well as jewellery (see below). Some graves contained the remains of wooden coffins.

What make the cemetery at Raatvere special are two so-called blacksmith burials (Lavi 1986a; 1986b; 1988; 1999b, 49–51). The deceased were rather young men, not older than 35 years. Burial VIII (Fig. 208) had very abundant grave inclusions: a scythe, a wheel-thrown clay vessel, a belt with bronze mounts, and a set of jewellery (e.g. there were four bracelets on the right arm); a sword and two spears had been placed by the left side of the deceased; next to them was a sledge hammer (Fig. 72: 2), and near the feet was an upturned iron cauldron with the remains of small birch bark box and wooden bowl. The burial was dated by a coin struck in the town of Worms during 1002–1024. Grave XV yielded, in addition to the ornaments (Fig. 96: 3), a scythe, an intact clay vessel, an axe, a spear, a leather belt with bronze mounts, a sledge hammer (Fig. 72: 1), and blacksmith's tongs (Fig. 72: 3).

In the lands of the former Kabeli ['Chapel'] farm in the village of Lahepera, next to a *tarand* grave of the Roman Iron Age, at least 38 skeletons from the 11th–14th centuries were excavated at the end of the 19th century and in 1978–1979 (Selirand 1974, 65–67; Lavi 1980). The artefactual record suggests that six or seven of the skeletons can be dated to the first half of the 11th century. The osteological record has not been examined, but the grave inclusions suggest that the individuals buried in the 11th century included one man, three women, and one child (judging by the ornaments a girl). While the female graves yielded only ornaments, cloth fittings, and clay vessels, the male grave revealed also an axe and three arrowheads in addition to ornaments and clay vessels.

The inhumation graves of Lahepera could be exemplified by what was probably a double burial of a woman and child, which was unearthed at the end of the 19th century at a depth of about half a metre. The skeleton of the woman was supine, with the hands on her chest; there are no data about the position of the skeleton with regard to the cardinal points. The woman had two bronze finger rings, five bracelets around both wrists, and a bronze chain with pendants (Fig. 109) on the chest; a bronze belt buckle and a knife sheath with sheet bronze decoration were also present. There were clay vessels both at the head and the feet of the woman (Fig. 46: 1); the vessel at the feet had been half-filled with charcoal. The child buried next to the woman wore a bracelet (Fig. 129: 2) and had a string of bronze rumbler bells and glass beads around her neck; similarly to the woman, there were clay vessels next to the child's head and feet. The finders also reported the presence

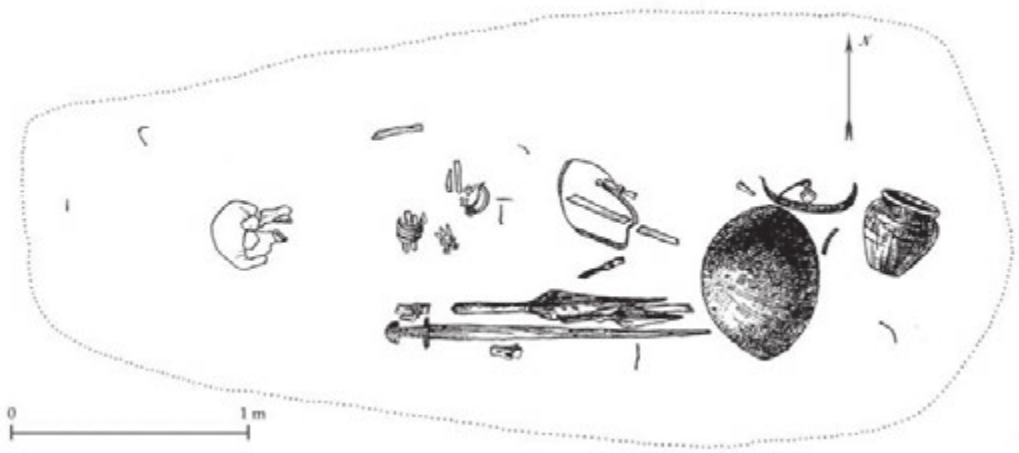


Fig. 208. *Inhumation burial VIII at Raatvere (after Lavi 1999b, fig. 13).*

of a stone circle above the grave on the ground (Selirand 1974, 66f.). The abundance of ornaments and the positioning of clay vessels at the head and feet are characteristic of also other burials of the first half of the 11th century at Lahepera.

Another peculiar example from Lahepera is an inhumation burial found in 1897 in which the sex of the buried person (or persons) remained unclear. Reportedly, the grave contained a skeleton with two clay vessels (Fig. 43: 2), an axe, a scythe, a knife, a fire-steel (Fig. 50: 2), a spearhead, bridle remains (Fig. 170), a belt with bronze mounts and a bronze belt end (Figs. 133; 138: 6), a large silver-plated penannular brooch, a neck ring wrought from three bronze wires, and three finger rings. There were five bracelets around the arms of the buried person, three on one arm and two on the other. The grave contained also fragments of a sheet bronze knife sheath, and a breast chain. Jüri Selirand (1974, 67) assumed that it was a double burial, but the discoverers failed to distinguish between the two individuals. However, it could well be that a woman was buried with weapons, or it might have been an abundantly decorated man (it is true that the breast chain and the knife sheath with a sheet metal cover were definitely female ornaments, but they could have found their way into the grave pit also from some earlier destroyed burial). Unfortunately, because the recording is insufficient, and no bones have been preserved, this issue will remain unsolved.

At Õvi village in the 1920s–1930s, the local people repeatedly found human bones and prehistoric artefacts from the gravel pit, but it was possible to study archaeologically only one burial. It was a supine male burial with the head to the east. On the left side of the deceased was a sword (Fig. 154: 5) and a spear; also found were belt fittings, a spiral finger ring, and a scythe. The grave contained two clay vessels: a carinated hand-moulded bowl was between the legs, and a wheel-thrown pot (Fig. 43: 1) in the upturned position was next to the head. There was a quadrangular flat stone setting measuring 2.5 × 1 m in the grave pit directly on top of the burial. Originally the grave could have been at a depth of 65–75 cm in the ground. The find material suggests that the burial dates from the first half of the 11th century. It has been reported that a female burial with jewellery had been found close to the male, but the finds that could date it did not find their way to the archaeological collections (Kaart 1939).

At Kobratu a partly preserved inhumation grave of the last quarter of the 10th century was found next to a stone grave of the Roman Iron

Age; associated with it were at least an axe and a fine-grained ceramic vessel (Mägi-Lõugas 1995b, 524). The stone grave also yielded a neck ring and other jewellery of the 11th century, as well as a male burial of the Final Iron Age (see Hausmann 1901). Because the site had been excavated only partly, one cannot rule out the possibility that by the early 11th century an inhumation cemetery with several burials had emerged here. An early inhumation cemetery may have been also at Rabavere in southern Läänemaa, where the extraction of gravel from the hillock called Kabelimägi ['Chapel Hill'] revealed skeletons with jewellery and weapons (Fig. 163: 7), the earliest of which date from the first half of the 11th century (Moora 1942, 25; Lõugas & Selirand 1989, 276).

6.1.10. Number and distribution of graves

It seems that by comparison with the Late Roman Iron Age, the Migration Period witnessed a significant decrease in the number of graves. While about 150 graves or single burials have been reported from the Late Roman Iron Age, slightly less than 60 represent the Migration Period (Fig. 187). In reality, however, the decrease is not as significant as it looks at first glance. One has to take into account that while the Late Roman Iron Age lasted for about 250 years (AD 200–450) according to the Estonian archaeological chronology, in the present study the Migration Period is only a 100-year period (AD 450–550).

The changes in the number of burial sites varied considerably in different parts of Estonia. In northwestern Estonia the number of graves decreased nearly by half in the Migration Period by comparison with the Late Roman Iron Age (Lang 1996a, 270). A similar phenomenon is observable in Virumaa as well as in central and southern Estonia. In Läänemaa, however, no burial sites of the Late Roman Iron Age have been reported, but more than ten graves from the Migration Period are known. In Saaremaa, too, seven graves of the Migration Period have been identified while only two graves — Tuulingumägi at Tõnija and Liiva-Putla — represent the second half of the Roman Iron Age.

The number of Pre-Viking Age burial sites is almost equal to that of the Migration Period — slightly over 60 locations all over Estonia (Fig. 188). In most regions, however, the number of Pre-Viking Age burial sites is smaller than that of the Migration Period. The decrease in found burial sites looks even more drastic if one takes into account that usually a Pre-Viking-era burial site implies occasional objects of this period in some earlier or later grave. An increase in the number of burial sites can be observed only in the eastern part of south-eastern Estonia — while none have been reported from the Migration Period, in the second half of the 6th century barrows with cremation burials emerged (Fig. 199). About a dozen barrow cemeteries with Pre-Viking Age burials have been excavated, but because the majority of them yielded finds from the Pre-Viking Age, it is likely that the barrows that have not been excavated may also belong to the Pre-Viking Age.

In terms of the number of burial sites and burial practices, the beginning of the Viking Age is similar to the Pre-Viking Age — artefact finds of the 9th century can be distinguished only in a dozen burial sites. The small number of burial sites of this century is probably deceptive and could be explained by the fact that no current methods can distinguish objects of the Early Viking Age from those of the Pre-Viking Age. On the other hand, the second half of the Viking Age is represented by an explosive growth in the number of the reported graves — about 70 graves or single burials of the 10th century are known in Estonia. At the very end of the Viking Age the number of the burial sites increased even further — a relatively short period, the first half of the 11th century, is

represented by about 60 burial sites (Fig. 189). This increase could be explained by population growth (see 7.1), as well as by burials with more grave goods than previously.

In several regions of Estonia the number of graves of the Middle Iron Age and the Viking Age is much smaller than suggested by the number of forts, settlement sites, and hoards, as well as palynological evidence. Researchers have repeatedly emphasized that only some people were buried in graves, probably members of the elite (e.g. Ligi 1995; Mägi 2002, 74). However, this is probably not the only reason. For instance, the entire extensive area of south-eastern Estonia south of the Emajõgi River and east and south-east of Lake Võrtsjärv has revealed only twelve burial sites of the Viking Age (Fig. 189). The situation is similar in Viljandimaa, where only seven Viking Age graves have been reported. What is more, these sites are primarily graves of an earlier period that contain occasional artefacts from the later part of the Viking Age. At the same time the density of Viking-era forts and settlement sites is higher in south-eastern Estonia and in southern Viljandimaa than in northern and western Estonia, where graves of this period are more numerous (Fig. 4). Because south-eastern Estonia is archaeologically rather well surveyed, the gap in the archaeological record cannot be explained by inadequate research. Nor is it plausible that the stone graves of this region were destroyed in the Middle Ages and in modern times. Limestone, which is a suitable construction material, cannot be found in southern Estonia, and one might think that erratic boulders of metamorphic rock in stone graves served as a good and easily available construction material for the numerous forts and stone churches built in the Middle Ages. However, this view is opposed by the fact that many stone graves of the Roman Iron Age have nevertheless survived in this region; the case would have been quite the opposite if the grave stones had been taken for use in medieval stone buildings.

Thus, the most plausible explanation is that the dead (including those of the members of the elite) were often disposed in a way that did not leave behind any remains that would be recognizable today. It was probably customary to leave the dead simply on the ground or in special mortuary houses. This possibility is proved by the discovery of such a mortuary house at Lepna in Saaremaa; also, eastern Finno-Ugric peoples have made use of mortuary houses (Mägi 2004b; 2005a). Even in the case of those graves that are recognizable today, the non-cremated corpses may have been left on the surface of the grave. In that case the corpses decomposed rather quickly, and the occasional bone fragments that were preserved ended up in the ground or between the stones. Also, the dead could be taken to bodies of water, although it is highly improbable that such burials could be found. The fact that such burials did exist is proved by two burial sites in southern Pohjanmaa in Finland — Levänluhta and Käldamäki, where in the Middle Iron Age the dead were left behind in a bog pool or a small lake (see Wessman 2009).

6.1.11. Animal bones in graves

The burial sites that have had their archaeozoological material completely examined and published so far include only the stone graves of Lihula, Maidla I–II, Keskvere II, Uugla I, Kirbla, Varetemägi at Ehmja, and Piila and the barrow cemeteries of Rõsna-Saare I–II and Suure-Rõsna, as well as barrow 16 at Lindora and barrow 3 at Laossina V (Maldre 2003; Mägi *et al.* 1997; Mägi & Rudi 1999; Allmäe *et al.* 2007; Aun *et al.* 2008; Aun 1992, 119). As one can see, only the evidence of western and south-eastern Estonia can be discussed below, and one should refrain from making generalizations.

In the graves of western Estonia of the period under review the bones of cattle, sheep or goats,

and pigs are most common; they can be found in all the archaeozoologically studied graves (for a more detailed account see 3.2). The bones are usually non-cremated and come from meat-rich regions (Maldre 2003, 275). Thus, it is likely that most animal bones in graves are related to post-burial meals or represent 'travel food' provided to the dead. The find context of several graves (e.g. Lihula) in which the human and animal bones were positioned separately, or their degree of preservation was different, refers to the former possibility (Mandel 2003a, 30). In the cremation burials of barrows in south-eastern Estonia (cremated) goat or sheep bones are rare (Aun *et al.* 2008, table IV; Allmäe *et al.* 2009, 91); horse bones are predominant there.

In Läänemaa, horse bones can be encountered in graves dating from the Migration Period and later. Since no graves of the Roman Iron Age have been reported from this region, no claims about the previous period can be made. In Läänemaa horse bones are always non-cremated in graves. The earliest horse bones have been reported from the cairn grave at Lihula (Maldre 2003, table 1), but some were found also in the Pre-Viking Age grave II at Keskvere, Varetemägi at Ehmja, which was used in the 5th–11th centuries, and grave II at Maidla, which was built at the end of the Viking Age (*ibid.*, 270, table 2). However, in these graves horse bones are so few in number that it is unlikely that entire animals might have been placed in graves or sacrificed. It is more probable that the horse bones found their way into the graves together with meat, i.e. as grave goods, or in the course of commemorative meals.

Unlike the stone graves in western Estonia, the barrows in south-eastern Estonia have revealed bones of only cremated horses. Of the 40 cremation burials at the barrow cemetery at Suure-Rõsna, 22 contained horse bones in addition to human bones (Allmäe *et al.* 2009, 91). Among the 115 burials at barrow cemeteries I and II at Rõsna-Saare, 21 (18%) contained horse bones (Allmäe & Maldre 2005, 128; Allmäe *et al.* 2007, 304). There were more such burials at Rõsna-Saare I — 13 in all. At Rõsna-Saare the cremation burials that contained horse bones were most frequently located in the ground under the barrow mound (Allmäe *et al.* 2008, 275). In one bone assemblage found under a barrow at Rõsna-Saare I the horse bones had preserved in larger than usual pieces, which enabled the researchers to notice that the human bones were positioned on top, and the horse bones were directly beneath them (Allmäe *et al.* 2007, 304; Aun *et al.* 2008, 275). Also, at least one bone assemblage in an excavated barrow at Lindora contained cremated horse bones together with cremated human bones (Schmiedehelm 1965, 26).

Previous studies have shown that the cremated horse remains found in barrows have in most cases been of whole horses. The animal and human bones usually reveal the same degree of burning, which suggests that the horses had been burned on pyres together with humans. Horses could be cremated and buried in barrows also separately from the humans, as the bone cluster unearthed from barrow 4 at Suure-Rõsna shows — it contained the bones of two horses, but human bones were absent (Aun 2009a, 91). The cremated horses in the barrows, as well as the horse gear in the graves of the Middle Iron Age and the Viking Age in western and northern Estonia (see 4.4.2), could be related to the myth about the dead riding a horse to the next world, which spread to northern Europe in the second half of the first millennium (Lang 2009). It has been assumed that the previously mentioned cremation burial at Rõsna-Saare I, where the horse bones were positioned beneath the human bones, could symbolize a rider and horse (Allmäe *et al.* 2009, 91).

The graves in Saaremaa and Läänemaa offer examples of dogs that were cremated together with humans in pyres, as well as dogs that had been buried in graves without cremation. For example, a burial of the Late Viking Age surrounded

with a stone circle at Piila revealed the bones of several dogs which had burned similarly to the man buried in the stone circle (Mägi *et al.* 1997, 110, table 2). Another stone circle of the same period at Piila revealed only occasional cremated dog bones in addition to the bones of a cremated man (*ibid.*, 111, table 2). Still another burial in a stone circle in this cemetery contained even more cremated dog bones than human bones (Mägi & Rudi 1999, 41–43). The only identifiable cremated animal bone in grave I at Maidla belonged to a dog (Maldre 2003, 265; Mandel 2003a, 42). Cremated dog bones have been found also in other graves in Läänemaa (Maidla II, Ehmja, Kirbla, and Uugla I — see Maldre 2003), but these dog burials could also originate from the Final Iron Age. It is probable that in the above-mentioned cases a dog was cremated together with a human. One should point out that no dog bones have been found in the cremation barrows in Estonia; however, they were present in a cremation burial along with human and horse bones in the cremation-barrow cemetery at Leeska (Lezgi) in the part of Setumaa that is now in the territory of the Russian Federation (Lopatin 2009, 84).

A cairn with stone circle at Käku yielded in addition to the cremated human bones a whole dog skeleton; the dog had been buried with its back against the internal edge of the stone circle (Fig. 193). Non-cremated dog bones have been found along with other non-cremated animal bones in the single-*tarand* grave of Kurna IB not far from Tallinn, which was used in the 4th century but contains also burials of the 7th–8th centuries (Friedenthal 1911, 6; Lang 1987, 200), as well as in the typical *tarand* grave at Nurmsi, which was used during the Roman Iron Age and the Migration Period, as well as at the beginning of the Pre-Viking Age (Vassar 1943, 35). Also, occasional dog burials have been reported from the Late Bronze Age and the Pre-Roman Iron Age (see Kraut 1985, 349; Maldre 2000, figs. 1–2).

In Scandinavia dog burials emerged in the Roman Iron Age, became more widespread in the Vendel Period, and reached their peak by the Viking Age. Dog burials could be found mostly in the vicinity of Lake Mälaren in eastern Sweden, but they occur also in Scania and Denmark, and even in south-western Finland (Jonuks 2006, 34). Differently from the other animal bones in the grave the dog bones had been cremated in the pyre. It could well be that the dog remains buried in graves represented hunting dogs meant to express the status of the buried person (*ibid.*). The same can be assumed with regard to the falcons found in boat burial I at Salme. In Viking Age Scandinavia hunting and hunting implements were symbols of high social status. It has also been claimed that similarly to the horse, the dog, too, could be regarded as a companion of the dead to the next world (Lang 2009, 88). At any rate in western Estonia the practice of burying dogs in graves could be regarded as a Scandinavian influence.

Bones of wild animals and fish have been found only in the cairn grave at Lihula and stone gravefield II at Maidla. The former revealed hare bones and a vertebra of northern pike (Maldre 2003, table 1), and the latter yielded a hare bone and a few claw bones of a bear (*ibid.*, 271–273). It is likely that the bear claws may have found their way into the grave together with a hide or as amulets.

The description of the ship burial of a Rus chieftain in 922 by Ibn Fadlan gives some idea of the practice of using animals as grave provisions or sacrifices (Ibn Fadlan, 48):

> Then they brought a dog, which they cut in two and threw into the ship, and they brought all of his weapons, and placed them beside him. Next they brought two horses, made them gallop until they sweated, and cut them into pieces and threw the meat into the ship. After that they brought two cows, which they also cut into pieces and threw in the ship. Finally they brought a cock and a hen, which they slaughtered and threw into the ship.

6.1.12. Grave goods and other objects in graves

The presence of grave goods or their amount in burials shows remarkable variation regionally and by grave types. The graves in western and northern Estonia have the largest amount of grave inclusions, while the cremation barrows in south-eastern Estonia have much less or none at all. It is very difficult to bring out any general trends in the amount of grave goods over time. One can only claim with more or less certainty that the number of inclusions in graves increased over time and the assortment of objects became more diverse — this is much more the case in graves of the Viking Age than in graves of the Migration Period or the Pre-Viking Age.

While the graves of the Roman Iron Age contain mostly jewellery and occasional tools, then in the Migration Period in addition to jewellery weapons appeared in graves. This can be seen also from the presence of belt buckles, as it is likely that a belt placed in a grave was a sword belt — buckles were few in *tarand* graves but common in the Migration Period. Weapons were placed in graves until the end of the Iron Age.

Concurrently with weapons in Läänemaa and Saaremaa horse gear appeared in graves. Here horse bits and bridle fittings have been found together with objects of Scandinavian manufacture, which indicates the western origin of this custom. Such grave finds are absent from the Pre-Viking Age, but in the second half of the Viking Age horse gear re-emerged in graves, then not only in western but also in northern Estonia. However, the graves in western Estonia are still better provisioned in this respect. According to Valter Lang, this custom could be explained by the belief that the deceased ride to the afterlife on horseback, which might have originated in the steppes by the Black Sea but reached western Estonia from Scandinavia at the end of the Migration Period (Lang 2009). Also, horse gear is usually found in graves together with weapons and other more valuable grave goods. Thus, the dead who were buried with horse gear had enjoyed a higher social status in society, and their power, wealth, and aristocratic manners were emphasized in this way (Selirand 1974, 126; Taavitsainen 1976; Mägi 2002, 123).

From the Migration Period until the end of the Final Iron Age it was customary in Estonia to place in a grave only a part of a weapon or horse gear. This concerns first and foremost more precious weapons, for instance, swords, which are often represented in graves only by hilt parts. However, as swords are large and easily found metal objects, one cannot rule out the possibility that grave robbers may have removed them from graves, especially the above-ground stone graves. Nevertheless, intact weapons and jewellery can also be found in graves.

In graves of the Roman Iron Age jewellery often occurs as fragments. However, usually the damage was caused by the pyre, and there is little evidence that the grave goods have been damaged intentionally. Starting with the Migration Period the graves reveal more artefacts in which the deliberateness of damage is more evident (e.g. Fig. 114: 6). Nevertheless, in the Middle Iron Age the proportion of deliberately damaged objects in graves remained small; this custom gained its highest popularity only in the cremation graves of the Viking Age and the Final Iron Age (Jonuks 2009, 252). In the inhumation burials of the Viking Age the grave goods were intact.

Clay vessels found their way into graves in at least three ways: as a funerary urn; as grave goods, or as a container of grave goods (food, drink, etc.); or they may have been left behind at graves in the course of funerary or commemorative meals. The purpose of the vessels is clear in the case of the funerary urns in cremation barrows and the grave goods of Viking-era inhumation graves. In stone graves potsherds are usually

scattered between the stones, and one can draw only some very general conclusions with regard to the way how they ended up there. Moreover, few Estonian graves have been excavated completely and so accurately that the greater part of ceramics was collected and recorded.

Clay vessels were used as funerary urns only in cremation barrows. The proportion of the dead who were buried in urns amounts to only 3.4% among the studied cremation burials in barrows in eastern and south-eastern Estonia and the part of historical Setumaa that is now part of the Russian Federation (Aun 2002, 87). In the remaining distribution area of cremation barrows, urn burials were much more numerous — on average they constitute about a quarter of all the excavated burials in cremation barrows. The proportion of urn burials is the highest (36.4–43.8%) in the Smolensk region. Their small number in the cremation barrows in Estonia and Setumaa could be regarded as a local peculiarity (*ibid.*, 73f. and citations therein). Among the discovered urn burials in Estonia and Setumaa, on ten occasions the urn was positioned vertically, on nine occasions it was upturned on top of the cremation remains, and in the case of the remaining eleven burials there is no information about the position of the urn. In a few instances the burial urn was covered by another upturned clay vessel or its fragment (*ibid.*, 68f.). The urns were mostly coarse ware; fine ware urns are rare (see also 2.2.2.3; Fig. 38).

In the case of pottery found in stone graves it is seldom definitive that one is dealing with grave goods. One could define as grave goods the clay vessels that were placed together with the corpse and other grave goods on the pyre, but in Estonian stone graves with cremation burials potsherds with burn marks are rarely found (Selirand 1974, 103). In cremation barrows, occasional potsherds sometimes turn up in bone clusters or in their immediate vicinity. Intact clay vessels that may have been grave goods and not funerary urns have been found only in two barrows at Koseveski and Suure-Rõsna — in each barrow there were two clay vessels beside a cremation burial (Selirand 1965, 475, pl. II; Aun 2002, 77). At this point one should mention a barrow at Rõsna-Saare II where a clay vessel with a clay spindle whorl (Fig. 85: 2) inside had been placed next to a bone cluster in a separate hollow (Aun 2002, 77). In inhumation burials, clay vessels emerged in the first half of the 11th century, first and foremost in Virumaa and northern Tartumaa (see 6.1.9). In the case of both male and female graves usually a single pot had been placed at the feet or one at the feet and another at the head. It could well be that the clay vessel itself did not represent grave goods, but it served as the container for food, seed grain, hearth charcoal, etc. that was placed in the grave. For instance, in the double burial of a woman and child at Lahepera the pot at the feet of the woman had been half filled with charcoal (Selirand 1974, 66). One might think that it was smouldering charcoal intended for lighting the hearth fire in the next world.

It has been assumed that most potsherds in the stone graves of the Estonian Late Iron Age come from clay vessels smashed against the grave stones (Kustin 1962, 93; Selirand 1974, 103; Mägi 2002, 113). This assumption is based on the observation that the potsherds are usually scattered in the grave in an area several metres across, that more sherds can be found in the topmost layers of the graves, and that the greater part of clay vessels had not been in fire. Marika Mägi (2002, 113) assumed that clay vessel(s) served to transport the cremation remains gathered from the pyre to the grave. It is, however, equally likely that potsherds found their way into stone graves with the food consumed or sacrificed during commemorative rituals, as Aita Kustin (1962, 93; 1966, 89) suggested with regard to the stone grave at Randvere and stone-circle I of the Final Iron Age at Kurevere. After a post-burial meal or some other customary meal at the grave, the empty vessels may have been

smashed or left behind at the grave where they broke into pieces.

About a third of the clay vessels found in the cremation barrows in south-eastern Estonia are not related to any specific burials. Sherds of such vessels turn up on the surface of the barrows, in ditches surrounding the barrows, as well as inside and beneath the barrow mounds (Aun 2002, 66, 78). Probably they were not drinking vessels because usually they are handmade coarse-grained pots, which in many cases show a burnt layer. Aun (2002, 78, 86) claimed that these were pots to bring offerings to the grave; the food together with the clay vessel was left behind on the barrow, where the vessel broke into pieces with time. It is impossible to claim with certainty whether the sacrifices were brought at the time of the burial or during some later ritual. However, wheel-thrown pottery of the 11th–13th centuries and even of the Middle Ages in the ditches surrounding the barrows at Rõsna-Saare (see Aun 2002, figs. 8–9) suggests that ancestors of the Setus may have visited the barrows with the purpose of commemorating the dead or bringing sacrifices to them several centuries after the burial into cremation barrows had stopped.

Drinking horns have been considered to be objects that were used during ritual festivities. Many have been found in Scandinavian graves and a smaller number in the graves of the Balts (Luik 2003, 158 and citations therein). In Estonia fittings of drinking horns are among rare finds. The bronze end of a drinking horn of the Migration Period was found in single-*tarand* grave E at Jäbara (Fig. 209: 1); even some its horn parts had been preserved. The stone grave-field at Proosa yielded an array of various decorative mounts of sheet bronze and silver, decorated with concentric circles, images of animals, or reversed S-designs (Fig. 139: 7–8). Such mounts have been found in several other graves in northern Estonia that were used for burial around the 5th–8th centuries: Presti at Rebala (Fig. 209: 2),

Fig. 209. *Metal fittings of drinking horns from graves (1 bronze, 2 silver): 1 Jäbara E; 2 Presti at Rebala (AI 2604: 232; 5490: 378, 392; photo: Kristel Külljastinen).*

Jäbara E, and Ojaveski (Fig. 139: 4–6). In Chapter 4 they were regarded as mounts from belts, but one cannot exclude that some of them originate from the band around the upper part of drinking horns (Lang 1996a, 183). Similar ornaments were used to decorate Lithuanian drinking horns of the Migration Period (see Simniškytė 1998, fig. 19), although there, too, horns are rather exceptional, and they have been related to the influence of Gotland (Kazakevičius 1987, 61; see also Almgren & Nerman 1923, nos. 455–456). Bronze rings with one edge turned inwards, which have been found in *tarand* grave E at Jäbara (Schmiedehelm 1955, fig. 24: 5–6), in the *tarand* grave and the stone grave-field at Proosa (Deemant 1993, 33, 58, pls. XV:1, XXX: 6), in grave I at Toila, and in the Piilsi hoard (Moora 1935, fig. 7: 5) have been considered to be bronze rims of drinking horns. However, these are in fact the end pieces of Roman Iron Age stacking armlets (Schmiedehelm 1955, 96; see Moora 1929, pl. XXIV: 6; Kivikoski 1973, no. 32).

Tõnno Jonuks emphasized that the ritual drinking feasts, during which drinking horns were used, were related to death rituals and funerals, as shown by Scandinavian picture stones of the Migration and Vendel Periods, rune stones

of the Viking Age, and written sources (Jonuks 2009, 251 and citations therein). In fact, one cannot assure that the drinking horns had been left on the grave during the drinking feast that had taken place there. It was believed that in Valhalla, the afterlife of Scandinavian warriors, the warriors would be mostly drinking mead, in addition to fighting. Thus, similarly to weapons, drinking horns might have been regarded as necessary objects in the afterlife, and consequently they could be grave goods. In Estonia, however, drinking horns in graves remained a rather exceptional phenomenon. Here, ornate fine-grained ceramic vessels placed in graves may have been meant to fulfil the same function (Lang 2009, 88).

In addition to the objects that found their way into graves as grave goods or in the course of funerals or commemorative rituals, the graves have unearthed jewellery sets that cannot be associated with any burial. Such grave hoards are associated with the topic of ritual depositing, and for this reason they will be discussed below together with other votive deposits.

6.2. Votive deposits

Collective finds (hoards) that come to light from aqueous environments and burial sites are usually regarded as votive deposits (see also 5.2.1). In other words, they represent property their hiders did not intend to put into use again, or intended it to be used after their death (Tõnisson 1962, 184; Jaanits *et al.* 1982, 289; Ligi 1995, 229; Kiudsoo 2005, 140; Tamla & Kiudsoo 2005, 2). The votive motive of depositing is also demonstrated by the recurrent object types in the find set, which do not seem to be everyday items of a single person or family (Tamla 1977, 166f.; Jaanits *et al.* 1982, 289; Tamla & Kiudsoo 2005, 2). The depositing of economic hoards, discussed in Chapter 5, may also have had a religious motivation — in order to grant the preservation of the hoard, it was placed into the care of gods, spirits, or ancestors (Jonuks 2009, 254).

The Middle Iron Age is represented by 19 hoards, two of which are probably economic (see 5.2.2) and 17 votive. Four votive hoards (Kardla, Paali I and II, and Villevere) could be associated with burial sites; all of them consist of jewellery and were stashed away in the late 5th century or in the early 6th century. The silver vessels of eastern Roman origin found at Varnja and Kriimani, which date from the late 5th century or the beginning of the 6th century (see 2.2.3), should perhaps also be interpreted as grave hoards. The remaining votive deposits were unearthed mostly in bogs, swamps, or wet meadows, which may once have been bodies of water or wetlands. Only two deposits (Hummuli and Viira) were found in fields, but even in these cases one cannot exclude the possibility that at the time of depositing there could have been a swamp or a smaller body of water. Of such deposits, two jewellery hoards (Uuri and Viira) originate from the late 5th century or the early 6th century. Another group of deposits of the same period includes assemblages of weapons and tools (Alulinn, Igavere, Kunda I, and Rikassaare). The Kunda II hoard, which consists of jewellery and a fire-stone, dates from the 7th–8th centuries. The Hummuli, Loosi, and Navesti hoards, which are dated mainly to the 8th century, consist of neck rings only. The weapon deposit found in a spring at Koorküla could be dated to the boundary between the Pre-Viking Age and the Viking Age, i.e. 8th–10th centuries.

The Viking Age is represented by only three votive deposits, all of them from Virumaa. The Järve hoard, dated to the first half of the 9th century, consists of weapons and their fragments. Five gold pendants and a gold coin pendant found in the Essu peat bog come from the end of the 9th century. A double crosshead pin from the 10th or the early 11th century was found at the sacrificial spring at the village of Kunda.

6.2.1. Votive deposits of weapons and tools

The find made in a hayfield at a distance of 30 m from the Prandi River near Rikassaare in central Estonia consists of weapons only. The humus layer at a depth of 10–15 cm revealed 54 spearheads (Fig. 210), of which one part was reportedly positioned in two rows with the points opposite each other. The sockets of spearheads showed preserved remains of wooden shafts. The find included also seven broken seaxes. The weapons of the Rikassaare find had been made in the 6th century (Mandel & Tamla 1977).

The iron objects unearthed while ploughing a swamp hayfield at Igavere in northern Tartumaa share a similar find context with the Rikassaare find and represent roughly the same period. Only four narrow-bladed axes with broad polls and a late socketed axe found their way into archaeological collections (Oras 2009, catalogue, no. 3). The axes date from the 6th–7th centuries (see 4.2.4). It was reported that many swords, a spearhead, a shield boss, and a scythe fragment had also been found (Tiitsmaa 1921, 43).

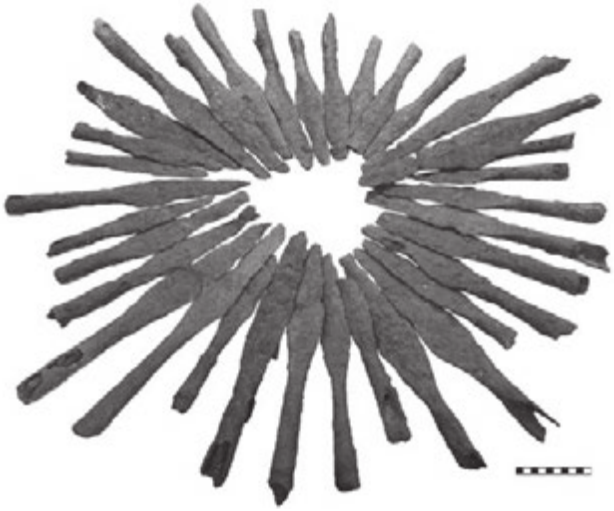


Fig. 210. *Spearheads of the Rikassaare hoard (AI 4484; photo: Ester Oras).*

Two separate find assemblages have been found at a depth of 20–40 cm in a swamp close to the prehistoric fort Alulinn, which has not been accurately dated as yet, on the northern coast of Virumaa. One was located at a distance of about 60 m and the other 300 m from the fort. Of them slightly over 100 objects have ended up in museum collections; however, unfortunately, the finds of the two find sites have become mixed. The finds include 61 spearheads, 24 sickles, 12 socketed axes, 2 shaft-hole axes, a double-edge sword and 10 sword fragments, a scythe, and a billhook. A few spearheads and socketed axes had wood remains inside, which suggests that shafted objects had found their way into the swamp. It was reported that also some silver items and bones had been found, which, however, are unaccounted for (Oras 2009, catalogue, no. 1). Unlike the other deposits of this kind, the objects of the discussed deposits represent a very long period. The sickles were dated to the Pre-Roman Iron Age, the billhook and the sword to the Early Roman Iron Age; while the majority of the other objects come from the 6th–7th centuries, one spearhead was dated to the end of the Iron Age and one axe was even dated to the Middle Ages (Laul & Tõnisson 1991, 81; Lõugas & Selirand 1989, 236).

The find assemblage that is known as the Kunda I hoard was unearthed while extracting marl in a bog in Virumaa (Oras 2009, catalogue, no. 7 and citations therein). It contains iron tools and weapons from at least two different periods — one of the narrow-bladed shaft-hole axes dates from the Late Pre-Roman Age or the Early Roman Iron Age (Lang 2007c, 141); all the other objects, however, could be dated to the 6th–7th centuries. These include seven narrow-bladed axes with broad polls (Fig. 80: 1), five spearheads, blade fragments of at least two swords, two small iron shovels (Fig. 72: 5), which had probably

been used in smithery, and two curved iron plates, which presumably came from a cauldron. Unfortunately, it is not certain whether the objects were found together or separately. Because the narrow-bladed shaft-hole axe has not preserved as well as the other objects, it is likely that it might have been thrown into the bog several centuries earlier than the other objects of this deposit.

It has been reported that a spring on the northern shore of Lake Valgjärv at Koorküla on the southern edge of Viljandimaa had revealed at least seven spearheads, an axe, shears, coins, and fragments of some other iron objects. The spearheads were reported to have been stuck vertically into the bottom of the spring (Oras 2009, catalogue, no. 5 and citations therein). Of these objects two spearheads with stepwise tapering tangs (Fig. 162: 3–4) and one narrow-bladed axe with a narrow poll (Fig. 80: 2) have found their way to museum collections. The spearheads could be dated to the 8th–13th centuries; the axe, however, represents the type that cannot be dated more precisely than to the 6th–10th centuries. It could well be that depositing of weapons and other objects in this spring spanned over different periods. In this context one should mention another find that is associated with a sacrificial spring, although it is an ornament and not a weapon — a crosshead pin with open branches found at the sacrificial spring at Kunda village, western Virumaa (Tamla 1985, 138f.). Despite the fact that it was not found in a spring but next to it while digging a ditch (as indicated by the Registry of the Find Collection at AI), it could still be regarded as a sacrifice.

A find assemblage found in a former swampy pasture at Järve village near Kohtla-Järve in Virumaa seems to consist of only weapons, mostly fragments. The find includes parts of sword hilts, pieces of spearheads, and numerous smaller iron fragments and pieces of sheet iron, altogether 79 index numbers of finds. More intact objects include a sword and two spearheads. The objects were located in peat soil in an area of up to 10 m across. One might assume that originally the weapons had been deposited into a spring or a bog pool (Lõugas & Selirand 1989, 239; Tamla 1996, 226). This find dates from the first half of the 9th century (Mandel 1991a, 114).

Deposits of contemporaneous weapons and tools have been found in neighbouring western and southern areas. The Latvian hoards of the Middle Iron Age are rather similar to the Estonian hoards of this period with regard to their number, find context, and composition. As of 1977, 26 hoards of the 5th–8th centuries had been reported in Latvia, consisting of weapons, tools, and bronze and silver jewellery (Urtāns 1977, 99). One of the largest Latvian hoards of this period is the Kokumuiža find from Courland, which was unearthed while digging a ditch in a wet low-lying area. The objects were located in an area of 1.5 m² at a depth of about 45 cm in a peat layer. Altogether over 1100 iron objects were found: over 600 spearheads, a few hundred socketed axes, 40 shaft-hole axes, hoes, sword fragments, etc. In addition, 40 items of bronze and silver jewellery and about 60 stone objects (fire-stones, whetstones) were present. The assemblage has been dated to the end of the 5th century (Moora 1929, 71f.; Urtāns 1977, 138–145).

In Denmark and southern Sweden former swamps and bodies of water have yielded many votive deposits. Unlike the countries on the eastern shore of the Baltic Sea, in southern Scandinavia weapons and jewellery from precious metals started to be sunk in bodies of water as early as in the Pre-Roman Iron Age. Such finds have been reported also from the Roman Iron Age; however, they were most numerous during the Migration Period, i.e. the 5th century and the beginning of the 6th century. After that the number of votive deposits in Scandinavia dropped considerably, but their number is nevertheless much higher than in Estonia. By comparison with the Estonian ritual deposits, the

Scandinavian ones contained many more objects and of greater value, including gold items. The latter are especially characteristic of the Migration Period (Stenberger 1977, 314–328; Fabech 1991; Hedeager 1992; 1999). Unlike Estonia, the votive deposits in southern Scandinavia did not contain any tools; instead, humans and animals were sacrificed into bodies of water, a practice known to have existed since the Pre-Roman Iron Age (Glob 1966).

6.2.2. Votive deposits of jewellery

Some jewellery hoards have been found in graves or their immediate vicinity, and could be classified as grave hoards. Unlike grave goods, the objects in the hoards have not been in fire.

Kardla near Tartu unearthed one of the most lavish hoards of the Migration Period in Estonia (Fig. 211). In this, silver jewellery is represented

Fig. 211. *The Kardla hoard (AI 2415; photo: Ester Oras).*

by two intact and one fragmentary crossbow fibulae (all adorned with sheet gold), eleven neck rings, five bracelets, and two ringlets strung on an iron wire; the assemblage also included a smaller gold neck ring and a bronze bracelet. It has been assumed that the hoard was found at the site of a destroyed stone grave; however, it seems that one is not dealing with grave goods. The objects have been dated to the mid-6th century (Hausmann 1914; Jaanits *et al.* 1982, 286).

Two hoards were found at the *tarand* grave at Paali, south-eastern Estonia, which had been erected in the 3rd century and was used for burials at least up to the end of the 5th century (Schmiedehelm 1934b, 223; Laul 2001, 34). Hoard I was found slightly outside the grave, at its southern side beneath a large rock, and it consisted of two silver neck rings (Fig. 121: 3) and a bronze crossbow fibula which had been decorated with sheet silver (Fig. 92: 3). The other hoard (Paali II) was unearthed from a pit about 1 m in depth dug in sandy ground next to the northern side of the grave. The objects had probably been wrapped in birch bark. This hoard contained three silver crossbow fibulae, one of them adorned with sheet gold, two silver neck rings (Fig. 121: 1), a silver bracelet, a bronze bracelet (Fig. 127: 4), a bronze finger ring, four spiral tubules, and a bronze buckle together with other belt fittings (Fig. 132). The objects of both hoards have been dated to the first half of the 6th century (Oras 2009, catalogue, nos. 11–12).

The silver objects of the hoard found in a field of the Kabeli ['Chapel'] farmstead at Villevere, Viljandimaa, weigh altogether 1145 g. They include a crossbow fibula with annual ornamentation, six neck rings, one fragment of what was possibly a neck ring, and a spiral finger ring. The only bronze item of the deposit is a massive bracelet 223 g in weight. Pieces of linen textile were found together with jewellery, which suggests that the objects may have been wrapped in a piece of cloth or were in a cloth bag. The Villevere find was dated to the second half of the 5th century (Moora 1925, 115). Legend has it that there had been a grave or a cemetery right in the place of the find, a supposition supported by the name of the farmstead (Allik & Markus 1923, 7f.).

The other collective finds under review are not associated with graves but were found in wetlands or fields. A silver hoard 3 kg in weight that was unearthed at a depth of 1.3 m in a field of Viira manor in south-eastern Estonia consisted of eleven neck rings. Only four rings found their way into the museum (Fig. 212), each between 260–300 g in weight. The rings date from the Migration Period, from the late 5th or the early 6th century (Aun 1992, 138f.; Oras 2009, catalogue, no. 19). The assemblage was unearthed from considerable

Fig. 212. *The Viira hoard (AI 1529; photo: Ester Oras).*

depth, which suggests that it could be a votive rather than an economic hoard. The hoard unearthed from the edge of a pond at a depth of about 30 cm in Uuri village, eastern Harjumaa, consisted of two silver neck rings (Fig. 121: 2), one bronze bracelet, and a fragment of a silver crossbow fibula, which date from the first half of the 6th century (Oras 2009, catalogue, no. 17). Hoards of only silver neck rings have been found from Hummuli in southern Viljandimaa, Loosi in south-eastern Estonia (both finds include three silver neck rings; Figs. 122, 124), and Navesti in northern Viljandimaa (one silver neck ring). The three hoards date from the 8th century. The same date applies to the two bronze ring-headed pins, a finger ring, and a fire-stone found in the peat bog of Kunda, western Virumaa, which are known as the Kunda II hoard (Oras 2009, catalogue, no. 8). These items were uncovered while extracting marl in the 19th century, and unfortunately it is unknown whether they were found as a cluster or from separate sites.

The Essu peat bog in western Virumaa yielded five gold pendants ornamented by granulation and filigree work and a pendant made from an Arab gold coin (dinar) minted in 864 or 865 (Fig. 116; see also 4.3.1.6). The find, weighing 28.4 g, was made at a depth of about 2.4 m. It is the only prehistoric hoard in Estonia that consists of only gold objects. It was left in the swamp probably at the end of the 9th century (Leimus 2006).

6.2.3. Motives of depositing and sacrifice

Both Scandinavian and Estonian researchers have proceeded from the premise that the aqueous environment as a find site of archaeological objects indicates the votive nature of the find. The objects that had been thrown into water or bogs were impossible to recover, which suggests that the people who sunk the objects had no intention to use them once again, at least not during their lifetime. Because no one would throw away objects of precious metal, weapons, or tools without a good reason, then it is likely that one is dealing with offerings to gods or other supernatural beings (e.g. Molvõgin & Selirand 1975, 3f.; Mandel & Tamla 1977; Stenberger 1977, 333; Jaanits *et al.* 1982, 289; Müller-Wille 1989, 40; Fabech 1991, 94; Hedeager 1992, 33–36; Tamla 1995; Hårdh 1996, 134; Oras 2009, 137). In Scandinavia this interpretation of bog finds is supported by written records starting with the works by Roman authors, which describe how Germanic peoples throw their offerings to gods into bodies of water and swamps (see e.g. Burenhult 1984, 150).

Offerings could have been left in other sacred places as well, such as sacred groves and sacred boulders or trees (Oras 2006, 13). The Hummuli and Viira hoards, which were found in fields, may have been offerings left behind in such places. Unfortunately, it is impossible to determine which natural sites were regarded as sacred in the Middle Iron Age and the Viking Age.

In addition to the find context, the composition of the deposits regarded as votive suggests that these were offerings. The Estonian weapon finds contain many objects of the same type that are almost identical; in other words, they do not provide a sample of objects used on a daily basis or a weapon set of a warrior. What is more, the assemblages of Kunda I and Alulinn contain objects of considerably different dates. Also, the bracelets and neck rings of precious metal in the hoards are often bulky, and their use as regular jewellery would have been inconvenient. On the other hand, objects intended for ritual use were deliberately large and impressive. Several valuables have been regarded as symbols of gods and possessed religious significance. Also, it has been assumed that the most suitable way of sacrificing precious metal was in the form of jewellery (Hedeager 1991, 211f.; Hårdh 1996, 41, 65, 152).

One can make only assumptions with regard to the kind of situations and reasons why offerings were made. People may have addressed supernatural beings for support of various undertakings, and the sacrifices were intended as gifts to make a deity deeply indebted to the donor. Another possible purpose of offering to gods could be payment for a successfully completed undertaking (Oras 2008, 137f.). Because the Iron Age people in Estonia subsisted mostly from field cultivation and animal husbandry, the intention of offering to the supernatural forces may have been to ensure good crops and healthy cattle, as well as favourable weather.

Offerings could be evoked also by some tragedy, such as crop failure, epidemic, or an enemy attack. It has been assumed that the numerous votive deposits of the 6th century in Scandinavian countries, especially the gold sacrifices, might be related to the event of the year 536 and the ensuing extensive crop failure and famine (see 7.1). Although gold objects had been sacrificed there already at the beginning of the Migration Period, especially many gold offerings are known, in fact, from the end of the Migration Period. Morten Axboe (1999; 2001a; 2001b) argues that the event of 536 and its aftermath unleashed extraordinary religious activity in Scandinavia, as a result of which most of the gold that had been imported from the disintegrating Roman Empire to Scandinavia ended up as offerings on the bottom of bodies of water and bogs. It brought about the end of the 'golden age' in Scandinavia so that by the period corresponding to the Pre-Viking Age (550–800), gold became an extremely rare commodity. In Estonia, too, it is noteworthy that out of 19 hoards of the 5th–8th centuries 13 could have been deposited in 536 or during the subsequent decade. Axboe (2001a, 131) wrote regarding the sacrifice makers of that period: 'They may have considered it a good investment, after all. For after a time they saw the desired result of their sacrifices: the sun recovered, and life continued.'

Also, gods or other supernatural beings could be regarded as guarantors or witnesses of interpersonal transactions or agreements. For example, the Rikassaare and Igavere finds have been assumed to be related to the confirmation of agreements (e.g. border agreements), which could require a weapon sacrifice (Mandel & Tamla 1977; Oras 2009, 62f., 73). The Rikassaare find is located in a border area later shared by the boundaries of three provinces (Järvamaa, Alempois, and Nurmekund) of the end of the Iron Age and three parishes (Türi, Pilistvere, and Paide) of the historical period (Mandel & Tamla 1977, 163; Tamla 1995, 105).

Grave hoards constitute a separate group among votive deposits. They may have been buried to ensure one's afterlife — the owner buried his or her property in a grave in order to use it in the afterlife. Relevant hints to this effect can be found in Scandinavian sagas. For instance, in the Ynglinga saga the following words were ascribed to Odin: 'Everyone will come to Valhalla with the riches he had with him upon the pyre, and he would also enjoy whatever he himself had buried in the earth' (Snorri Sturluson, Ynglinga saga, 32). Sagas indeed provide examples of how property was buried in the ground before death in order to keep using it in the next world (see Stenberger 1958, 309). Priit Ligi (1995b, 229) held that in southern Estonia the tradition of placing objects in graves disappeared in the Migration Period, and consequently a person who was concerned about his or her afterlife had to stash away some property during his or her lifetime, which is how grave hoards emerged. According to an alternative view, the ornament sets buried in graves were utilitarian hoards that were placed in the care of the ancestors (Jonuks 2009, 255). Their purpose could also be to pacify the soul of the dead — if one was afraid that the departed person might return to the living as a haunting ghost to claim his or her property, the property was subsequently buried in the burial site.

6.3. Religious objects

The Estonian archaeological record of the Iron Age includes very few objects of which the only or main purpose was ritual or which were truly religious symbols. In rituals ordinary weapons, everyday items, and ornaments were probably used, which acquired a religious or symbolic significance only in the course of the ritual. One has to take into account that for prehistoric people also everyday activities, such as making a fire or setting afire slash-and-burn land, could have had ritual and religious significance. One could also claim that each object that is placed in a grave or that is sacrificed acquires the significance of a religious object. Despite the fact that the great majority of the objects that served as the source material of the present study was found in graves and votive deposits, the reconstruction of religious beliefs has proved to be extremely complicated. Nevertheless, one could highlight some types of objects in which their appearance and find context suggest their systematic use as a ritual or a magical object.

Such objects probably included *oval fire-striking stones*, which were used in the Roman Iron Age and also beyond in the second half of the first millennium AD (see 2.2.7). As for Finnish fire-striking stones, it has been assumed that they were sacrificed during hunting and fishing expeditions in slash-and-burn fields established in wilderness (Hackman 1905, 241–252; Meinander 1950, 134–136; Salo 1990b; Taavitsainen 1990, 5of.). Because of their shape, fire-stones have been associated with vulva symbolism. For this reason, and also because they have been found mostly in lands that are suitable for farming, fire-stones are associated mainly with fertility magic (Salo 1990b; Pellinen 1999). It is also noteworthy that cup-marked stones, which mostly date from the Early Metal Age and are also associated with fertility magic, fell into disuse at about the same time of adopting oval fire-stones (Tvauri 1997a). It could well be that the role performed by cup-marked stones was transferred to fire-stones.

Also, jewellery might have had a religious significance. Massive silver neck rings and pendants are among the objects most frequently associated with religion (see Jonuks 2009, 284–299). Unfortunately, in the absence of oral and written data it is impossible to reveal the religious content of objects, and interpretation largely depends on the cultural background and imagination of the researcher. One could bring as an example the various *bird-shaped pendants* of the Viking Age, which have been found mostly in Latvia, Estonia, Finland, and in the areas of Russia settled by Finno-Ugrians (see 4.3.1.6). In different countries they have been interpreted differently (see Jonuks 2009, 288–290, 312 and citations therein). Finnish researchers have highlighted the link between the bird image and Christian symbolism; Russian researchers, however, have searched for explanation in the religion of Finno-Ugrians in the Middle and Modern Ages, and interpreted bird-pendants as depictions of soul birds. Tõnno Jonuks (2009, 312) associated bird-shaped pendants with the creation song known in the mythology of peoples who speak Estonian and other Baltic-Finnic languages. According to the song, the bird lays eggs that hatch all the important phenomena in the world, such as the sun, the moon, and stones. When in the 10th–11th centuries the new Scandinavian Christians started to wear Christian cruciform pendants, non-Christians invented symbols for showing their religious affiliation — for instance, during this period Scandinavians adopted pendants shaped like Thor's hammer. It is possible that in the lands east of the Baltic Sea, pendants depicting the main figure of the creation song emerged for similar reasons. This interpretation is supported by the fact that the distribution period of bird-shaped pendants coincides with that of cruciform pendants.

Of other pendants found in Estonia (see 4.3.1.6), for example, Viking-era *comb-shaped bone pendants*

have been associated with hair as the location of the vital force, and they have been regarded as objects of protective magic (Luik 1999, 151). Also, many researchers hold the view that Viking-era *pendants from animal fangs and claws* are associated with religion (Jaanits 1961, 39f., 51; Selirand 1961, 86f.). They were mostly made from the teeth of predators (bears, wolves, dogs, and foxes), although tooth pendants of the period also include specimens made from a wild boar or a domestic pig fang, a beaver tooth, a horse milk tooth, and a hawk claw. Many different religious interpretations have been suggested for such pendants. Usually they have been associated with magic — it has been thought that they were worn as amulets supposed to give energy and strength to the wearers and to protect them from accidents (Moora & Saadre 1939, 176; Selirand 1961, 86f.; Luik 2003, 166). Because pendants from predator teeth were worn mostly by women, it has been suggested that they might have been related to fertility magic (see Asplund 2005). Eagle claws have been associated with the god of thunder and lightning in heaven (Salo 1990a, 167f.). According to Jonuks, the majority of the animal species represented in the pendants are associated with the privileged practice of the elite — the hunting of those game species that were regarded as an elite preserve (Jonuks 2009, 292f.).

Pendants made from a beaver astragalus have also been regarded as objects with a magic function and associated with a presumed beaver cult (Kivikoski 1934; Golubeva 1997, 157). On the other hand, it is thought that a beaver cult was unlikely considering the general context of the Viking Age, and that these pendants need not be directly associated with religion and should be regarded first and foremost as status symbols (Jonuks 2009, 294; Luik 2010, 53).

Rumbler bells, which emerged in Estonia at the end of the 10th century (see 4.3.1.6), constitute an object group that could have been closely associated with religion (e.g. Jonuks 2009, 311). Magical power could have been ascribed to the sound of rumbler bells. Written sources and ethnographic and folkloristic record all over the world reveal abundant attributions of power to ward off evil spirits, souls of the dead, the evil eye, diseases, etc. to the sounds of various bells and rumblers. The Finnish rumbler bells of the Final Iron Age have been interpreted in a similar fashion on the basis of more recent Finnish and Karelian folk religion (Rainio 2010, 162–175 and citations therein).

It is also clear that various *designs, signs, and ornamental motifs* used to adorn jewellery, weapons, clay vessels, and other objects had a religious background. In the absence of direct written and folkloristic sources, in most cases the meaning of décor is beyond the reach of researchers. Only the scratched images on the whalebone gaming pieces found at Salme (Fig. 202: 4) can perhaps be connected to a known tradition — it has been assumed that they depict a well-known account in the Eddic poems how the god Thor went on a fishing trip with the giant Hymir (Peets & Maldre 2010, 56–82). Also, Germanic animal ornamentation, which adorned the jewellery, cloth fittings, and weapons also in Estonia during the entire period under study, had a religious background associated with Germanic mythology and more indirectly also with Roman religions and Christian symbolism. Both the gaming pieces found at Salme and Germanic animal ornamentation are of Scandinavian origin, and it is not clear whether the inhabitants of Estonia at the time understood them in the same way as the Scandinavians.

6.4. Religious beliefs

A study of Estonian prehistoric religion, which proceeds from archaeological evidence, meets modern standards of research, and encompasses the entire prehistory, was recently published by Tõnno Jonuks (2009). He emphasizes that the

Middle Iron Age brought about so significant changes in religion that one could speak about replacement of the world view, wherein the principal change occurred in the beliefs about the afterlife. This development was characteristic of not only Estonia; at the end of the Roman Iron Age and the beginning of the Middle Iron Age dramatic changes in religions can be observed almost everywhere in the Baltic Sea region (Jonuks 2009, 260 and citations therein).

During the earlier periods of the Metal Age people may have believed that the souls of the dead (or part of them) resided in stone graves and participated in the activities of the living community. Stone graves were therefore used as locations of ritual communication (Jonuks 2009, 313). The rituals consisted first and foremost in the remembrance of the dead and the ancestors, maintenance of ties with them, and the use of the (collective) spirit of the ancestors for the benefit of the living community (*ibid.*, 259ff.).

The Migration Period witnessed the beginning of a transition to a more personified concept of soul, and, thus, the world view that had been focused on ancestors started to be replaced with a new world view, which reached its apex in the Final Iron Age (Jonuks 2009, 242, 261–263). According to Jonuks, in the Estonian archaeological record the change is manifested by the emergence of new grave types, the end of rituals conducted with bones of the dead, the spread of inhumation burials, an increased frequency in placing cremated bones as clusters instead of scattering, and the emergence of grave hoards. He also argues that the emergence in the Migration Period of grave goods that cannot be regarded as cloth fittings or personal jewellery or toilet articles, i.e. mainly weapons and tools, are manifestations of individual and more personified concept of soul and the altered concepts of afterlife.

Jonuks argues that the new concept of afterlife existence that started to spread in the 5th–6th centuries focused on the souls of the nobility and their appropriate existence in the next world. The idea of the afterlife world may have been influenced by the conception of paradise in Christianity and the conception of Valhalla in the Germanic pre-Christian religion. One might believe that afterlife entailed revelry, fighting, and hunting, and for this reason, objects for those ends were needed there (Jonuks 2009, 262, 313). It is proved by the previously mentioned episode in the Ynglinga saga where the god Odin stated that in Valhalla one could use the property that had been in the pyre together with the dead body, or the property that had been buried in the ground in one's lifetime (Snorri Sturluson, Ynglinga saga, 32). One could add here the bridle parts placed in the graves of nobles in western Estonia since the Migration Period and in northern Estonia since the Viking Age, which probably symbolized the horse, and dogs. The nobles might need them during military campaigns and hunting trips in the next world. It is also possible that the dead were believed to have ridden on horseback to the next world (Jonuks 2006; Lang 2009).

People might have believed that the afterlife enjoyed by the nobility could be inaccessible to the poorer section of society. It is indicated by the fact that, as in previous periods, only a small part of the population was buried in graves together with grave goods. The souls of less well-off people may have been thought of as having less power after death, for which reason the afterlife intended for the elite might have been inaccessible for them (Jonuks 2009, 263). It could well be that each dead person was treated differently depending on his or her origin, social position, age, or circumstances of death. There are often huge differences even between the burials in a single cemetery with regard to the burial mode, the amount of grave inclusions, etc. Also, the Arab traveller Ibn Fadlan, who met the Scandinavian Rus on the Volga in 922, mentioned that a dead body was treated differently depending on his or her social status — while the Rus were reported

to have generally cremated their dead, the corpses of slaves were left lying about until dogs and birds consumed them (Ibn Fadlan, 42). One should add, however, that both in Scandinavia and in Estonia inhumation and cremation burials were used side by side, and that at least in the Pre-Viking Age and the Viking Age inhumation was applied first and foremost to the dead belonging to the elite. Inhumation and cremation burials may represent different views of soul and afterlife. It is indicated, for instance, by the fact that while cremation burials include many intentionally broken ('killed') objects, in inhumation graves, which started to spread at the end of the Pre-Viking Age, the grave goods are usually intact (Jonuks 2009, 280).

The Middle Iron Age witnessed a decrease in the significance of graves and sacred places marked by graves as locations of conducting rituals. One might assume that religious ceremonies started to be conducted increasingly in settlements or nearby sacred groves, and graves continued to be used only for burials and commemorative rituals. This brought about a shift in the essence of rituals — from then onwards they were intended for the living community. Jonuks (2009, 269) suggested that new rituals probably included calendar rituals, which were associated with the agrarian religion, and were conducted at equinoxes and solstices, first and foremost at spring and autumn equinoxes, or at other specific times. The main purpose of these rituals was to make sacrifices of gratitude to gods and beg for a good new year, i.e. for good crops. However, as farming had been widespread in Estonia long before the Middle Iron Age, there is no good reason to think that the calendar rituals became common as late as during this period, although it is possible that in the Middle Iron Age the places of conducting these rituals and perhaps also their content might have undergone some changes.

The shifts in the burial practices highlighted by Jonuks are rather difficult to observe in the rather scanty and random archaeological material of the Estonian Middle Iron Age and could be interpreted in several ways. Apart from the disappearance of the clear-cut and exhibited structures of stone graves and the appearance of weapons and tools among the grave goods, the burial practices of the Migration Period and the Pre-Viking Age were still similar to the previous period. In graves of the Migration Period burials are usually impossible to distinguish from each other, and it seems that the burial mode continued to be collective as in the typical *tarand* graves of the Late Roman Iron Age. Examples of somewhat more individualistic burials can be encountered only from the Pre-Viking Age onwards — cremations in the barrows of south-eastern Estonia were interred as distinct bone clusters, and in Saaremaa cremation burials came to be surrounded with stone circles. Also, the spread of underground inhumations since the end of the Pre-Viking Age and the spread of underground cremations since about the 10th century shows that burials became more individual. However, in the case of underground inhumations one cannot rule out indirect Christian influence. Also, the osteological record of the graves of the Estonian Middle Iron Age has been studied too little in order to draw any valid conclusions about rituals involving bones. Their possible continuation is proved, for instance, by the probable mortuary house at Lepna, where the fragmentary bones were far from complete skeletons (see 6.1.8), and by several other graves of the Middle Iron Age where cremated bones are mingled with non-cremated bone fragments. Also, very few grave hoards have been found, and they are limited only to the Migration Period and to a rather small area. It seems that the shift in afterlife beliefs spread gradually and rather slowly during the second half of the first millennium.

The earliest reliable data that Estonians worshipped gods date only from the beginning of the 13th century. Only one god is known by name —

the chronicle of Henry repeatedly mentions (*magnum deum Osiliensium*) *Tharapita*, the great god of the people of Saaremaa (see Sutrop 2002). Henry used two terms for the designation of Estonian gods — *deus* and *anima*. It is likely that the former may have denoted gods and the latter various lesser deities and fairies (Jonuks 2009, 315). However, this evidence is insufficient to claim anything certain about the gods that were worshipped in the Middle Iron Age and the Viking Age. The hoards sacrificed into bodies of water and their counterparts in Germanic religion nevertheless show that such supernatural beings were known well before the Final Iron Age. Because at that time the livelihood of humans depended first and foremost on agricultural production, the purpose of religious practices was probably to ensure mainly the fertility of fields and cattle. The latter in turn largely depended on weather, and therefore the recipients of offerings could be those beings or forces who were believed to be capable of ensuring favourable weather and crop growth. Because only occasional finds of votive character are known from the Viking Age, one might assume that offerings to such deities decreased over time.

It is probable that such religious practices as foretelling, determining the will of gods, sorcery, healing magic, name magic, interpretation of dreams, etc. existed as early as in the Middle Iron Age and the Viking Age. It is known that frequently such practices were conducted as public rituals. The earliest descriptions of how Estonians, Livonians, and Latgalians consult their gods about attacking a fort, time of a battle, adopting Christianity, etc. by drawing lots come from the chronicle of Henry, which was written at the beginning of the 13th century (see Jaanits *et al.* 1982, 412–414; Jonuks 2009, 306f.). The existing sources do not reveal whether, why, how, and by whom these practices were conducted in the second half of the first millennium.

6.5. Summary

There is no written or visual evidence that could testify about the world view and religious beliefs of the people who inhabited Estonia in the Middle Iron Age and the Viking Age. The entire understanding of the religious beliefs of that time has been derived from what is known about archaeological sites and artefacts, Germanic pre-Christian religion, and more recent folk religion of Estonians and other Baltic-Finnic peoples. Admittedly, our knowledge of prehistoric religion is extremely superficial and patchy. In fact, the existing source material does not permit any secure conclusions to be drawn about the religion of the ancestors of Estonians.

Approximately 200 burial sites from the second half of the first millennium and the first half of the 11th century have been found in Estonia. By comparison with the preceding and the following periods, the graves and the burial practices of this period were highly diverse. The dead were buried in various stone graves (including those of previous periods), sand barrows, and underground graves; evidence also suggests that the remains of the dead might have been kept in special mortuary houses and that sometimes the dead was sent to the next world in a boat or a ship. The distribution of grave varieties show clear regional peculiarities — none of the discussed grave forms is common all over Estonia. In terms of the diversity of graves, first and foremost northern and western Estonia stand out. However, none of the grave forms is unique to Estonia; they have counterparts in the neighbouring countries. The predominant mode of disposal was cremation, but, in addition, non-cremated human bones were brought to stone graves and dead bodies were buried underground. There was no uniform burial practice — each dead body was treated differently depending on the circumstances of death, the world view (of his or her successors), or social position.

The burial sites and practices seem to reflect such important changes in religion, first and foremost in conceptions of the afterlife, that some researchers have regarded these as representing a shift in the world view. During the Middle Iron Age, people gradually abandoned the previous belief of the united collective soul of the ancestors located in the burial site, and a more personified concept of soul was adopted. A belief may have gained ground that at least some of the dead, probably the nobility, would be admitted to the kingdom of the dead where existence would continue in accordance with the ideals of the nobility. The transformation of the world view probably brought about a change in rituals, which from then on were intended for the living community rather than ancestors. It is possible that the significance of calendar rituals associated with agrarian religion and conducted on equinoxes and solstices or at other specific times might have increased.

In the Migration Period and the Pre-Viking Age assemblages of weapons, tools, and jewellery were deposited on the bottom of bodies of water. These items were probably the property that people hoped to use in the next world, or that were offered to gods. Probably people venerated various gods, fairies, spirits, etc., although the character of such beings remains unknown. The most recent larger votive deposits come from the 9th century, which indicates that offerings into bodies of water decreased over the course of time. During the Viking Age, religious rituals probably started to be increasingly conducted in settlements and nearby sacred groves, instead of bodies of water and wetlands or graves. Apart from burial purposes, the graves were intended only for commemorative rituals. Structures erected specially for the purpose of conducting cult practices are not known. Nor does the Estonian archaeological record contain any artefact finds of the discussed period that could unambiguously be associated with religion. Various pendants, fire-striking stones, rumbler bells, etc. have been associated with religion; however, without the support of written materials, it is impossible to ascribe any specific religious significance to them.

The remarkable variation in burial practices and the absence of special ritual objects show that the world view and beliefs of the Estonian population in the Middle Iron Age and the Viking Age need not have constituted a complete religion — the understandings and ritual behaviour of different people, families, etc. could reveal remarkable differences. Unfortunately, the existing evidence does not enable us to determine their character in each individual case.

Chapter 7

Land and People

The society of the Middle Iron Age and the Viking Age in Estonia was a fully agrarian society — there were no urban centres, and hunting and fishing had only a minor role in subsistence. Farming was not an occupation but a lifestyle in which the household and the cultivation of land were closely intertwined. The rhythm of life followed the cycle of arable agriculture. The location of arable land and suitable pastures for grazing animals determined the distribution of settlement. The size of settlement units, the family model, as well as the heritage and power systems depended on land use and ownership relations.

Crops yielded from fields set limits to population size. This relationship manifested itself especially in times of famine and hunger. In cases of extensive hunger many people died of starvation and the concomitant diseases, and the hitherto sparse settlement became even sparser. This chapter therefore discusses also the impact of famines and hunger on the population and its manifestation in the archaeological record.

The study of social organization, power structures, and the administrative division of this period can be based only on archaeological evidence and, with extreme caution, also on Scandinavian sagas. There are no written records that would describe social relations in Estonia in the Middle Iron Age and the Viking Age. To date, the depiction of prehistoric Estonian society, as presented by historians and archaeologists, has largely been based on 13th-century written records, especially the chronicle of Henry of Livonia (HCL). The interpretation of the scanty and often indirect evidence has largely depended on expectations drawn from the society and world views of the researchers (see Ligi 1995; Mägi 2003; Mäesalu & Valk 2006). The present work does not draw on the written records of the 13th century, since those describe conditions several centuries later than the Middle Iron Age and the Viking Age.

7.1. Population size

Accurate census data about the Estonian population are available starting with the 19th century. Written records that enable some substantiated conclusions to be drawn about the population size date to the second half of the 16th century. The earliest written records that enable us to make highly preliminary assumptions include the Great Estonian List in the *Danish Census Book* (see Johansen 1933) and the chronicle of Henry (HCL), both compiled in the early 13th century. The *Danish Census Book* recorded the size of arable, and thus taxable, land in ploughlands (in Latin: *unci*) of the prehistoric counties in northern, central, and western Estonia. The precise

essence of this measurement unit at the beginning of the 13th century is unknown; however, it is assumed that a ploughland corresponded to an area that was cultivated by means of one plough (Tarvel 1972, 32). On this basis different historians have tried to calculate the population of Estonia at the beginning of the 13th century. The result is between 100,000–200,000 people (Palli 1996, 12f., 22). The best substantiated assessment was presented by Enn Tarvel (1966), who argued that, in case each farm housed 6–8 people, in the early 13th century the population of Estonia in its present-day borders amounted to 150,000–180,000.

The most recent calculations of the population size in the Iron Age come from Valter Lang and Priit Ligi (1991), who proceeded from the assumption that at the beginning of the 13th century the population of Estonia was 150,000 and that (similarly to Scandinavia) population growth was 3‰ in the Viking Age and the Final Iron Age but 2‰ in previous periods. Using the formula $150{,}000 \times (1 - x)^n$, where x stands for growth and n for a period when growth was x, they suggested that the population of Estonia in AD 500 could be about 23,000 and 95,000 in AD 900. At the beginning of the Middle Iron Age population density could amount to about 0.5 and in about AD 900 1.3 people per 1 km² (Lang & Ligi 1991, 217).

The calculations based on burials have provided a different result. Priit Ligi (1989) analysed the data of 49 cremation barrows in south-eastern Estonia, including 20 round-shaped and 29 oblong barrows. Proceeding from the number of bone clusters, he concluded that on average long barrows contained 6.38 individuals and round-shaped barrows 4.15 individuals. In south-eastern Estonia such barrows can be found in an area of about 2500 km², and the original number of barrows may have been 1200–1500, of which oblong barrows constituted about 18%. Thus, the overall number of burials may have been 5462–6827. Further calculations proceeded from the assumption that cremation barrows were used for burials during a period of 500 years (in the 6th–10th centuries) and that the total mortality rate was about 40‰ (for the formula see 7.2). These figures lead to the conclusion that in south-eastern Estonia a population of 273–344 people had buried their dead in barrows. In that case the mean population density would be only 0.11–0.14 persons per 1 km², which is ten times lower than the presumed respective figure for the whole of Estonia. In case all the dead were buried in barrows, the area must have been very sparsely settled, indeed. However, assuming that only a small proportion of people was accorded burial in a barrow, population density in south-eastern Estonia would have been higher.

In fact, it is rather likely that population density was higher than the calculations by Ligi suggest. First, the majority of cremation-barrow burials date from a period of only about 350 years in length (mid-6th century – end of the 9th century). Second, the number of individuals buried in a barrow is usually higher than the number of bone clusters (see 6.1.5). Third, more barrows could have been destroyed in the course of more recent land use than previously thought. Finally, it is highly likely that only a few people were accorded a barrow burial.

All these figures could be valid on the assumption that population growth has been constant — which is far from being the case. In a situation in which contraceptives were unknown, and the only method of 'family planning' was the killing of newborns or deprivation of care, population growth was not controlled by a lower birth rate but higher mortality through starvation, diseases, and violence, as well as emigration (slave trade). The size of the population largely depended on the amount of produced food, which, in turn, depended on the organization and technology of production and productivity of arable land.

More recent data (e.g. Palli 1996) suggest that a single incident of famine, starvation, and the accompanying epidemic may have destroyed the

results of population growth of several centuries. In Estonia examples of such events include starvation periods in 1601–1602 and 1695–1697, as well as a plague in 1710–1711. No doubt, unfavourable weather conditions for arable agriculture caused famines and death also in the second half of the first millennium, and crop failures were often accompanied by devastating epidemics.

A drastic event of this kind was a climate disaster in 536 (see 1.3.1). Its probable impact is evident in all the pollen diagrams of the first millennium AD in Estonia that have been studied at sufficiently high resolution and where indicators of human impact have been considered (Fig. 63). The sediments of Lake Maardu and bog peat at Saha-Loo not far from Tallinn revealed a clear decrease in human impact in the second half of the Migration Period after a strong expansion in the Late Roman Age (Veski & Lang 1995; Veski 1996; 1998, 42). In the pollen diagrams of Verevainu swamp next to the hill fort and the settlement site at Keava/Linnaaluste in southern Harjumaa, the indicators of sedentary farming settlement reached its peak in the Late Roman Iron Age and the Migration Period and dropped rapidly in the Pre-Viking Age (Heinsalu *et al.* 2003; Heinsalu & Veski 2010, fig. 4). In the vicinity of Lake Tõugjärv at Rõuge in south-eastern Estonia, the proportion of arable land increased considerably at the end of the Roman Iron Age and at the beginning of the Migration Period by comparison with the previous periods; however, in about the 6th century it dropped abruptly and then again recovered rapidly (Poska *et al.* 2008, 538, fig. 4). The pollen diagram of Lake Hino in the south-eastern corner of Estonia shows a decreased human impact on the environment in the 7th–9th centuries (Laul & Kihno 1999). The pollen diagram of Parika bog in northern Viljandimaa reveals that the general trend between the Pre-Roman Iron Age and the first part of the Viking Age was a slow increase in human impact; however, on two occasions, around the 5th and the 9th century, the human impact decreased considerably (Niinemets *et al.* 2002). The diagram of Surusoo bog in Saaremaa shows a temporary decrease in human impact in the mid-first millennium (see Veski 1996, fig. 2).

The dates of pollen diagrams are inevitably inaccurate. First, radiocarbon dating provides date ranges that are about one century in length; second, only some strata are dated by this method. However, peat growth or sediment processes need not have occurred at a constant rate. Therefore, it is possible that although pollen diagrams show a decreased human activity sometime between the 5th–7th centuries, it could be explained by a single disastrous event — probably a climate anomaly of 536, which was followed by a famine, hunger, and the accompanying high mortality rate.

Examination of the archaeological evidence against this background highlights at first a rather abrupt decrease in the number of sites and stray finds all over Estonia after the Roman Iron Age. First and foremost it is evident that the number of graves decreased — while about 150 graves are known from the Late Roman Iron Age (AD 200–450), only less than 60 represent the Migration Period (see also 6.1.10). However, this tendency coincides with the end of building *tarand* graves, which need not have been related to a decrease in the population but changes in burial practices (Lang 1996a, 270). At the same time, during the Migration Period, forts and settlement sites, almost unknown previously, make their appearance in the archaeological record, although at first only in modest numbers. In some regions, for example, in the vicinity of Vihasoo and Palmse on the northern coast of Estonia, mostly field remains are known from the period following the Roman Iron Age (Lang 2000a, 221). On the other hand, in Saaremaa, for instance, where only two graves are known to represent the Roman Iron Age (see Lang 2007c, fig. 116), the number of graves increased in the Migration Period. The situation is similar in Läänemaa, where graves of the Late Roman Iron

Age are absent but graves of the Migration Period are relatively numerous. The assumption about a decrease in the population during the transition from the Roman Iron Age to the Migration Period is not supported by palynology either. In fact, the pollen diagrams of north-western Estonia show a strong human impact during the Migration Period (Veski & Lang 1996; Koot 2004), and in Saaremaa, too, the human impact was stronger during the Migration Period than during the previous period (Veski 1996).

The number of the discovered burials of the Pre-Viking Age is roughly equal to that of the Migration Period, represented by 65 sites. In most cases, however, these burials comprise no more than occasional artefacts of this period in some earlier or later burial site. An increase in the number of burial sites can be observed only in the eastern part of south-eastern Estonia: while none are known from the Migration Period, cremation barrows started to be built sometime in the second half of the 6th century. About a dozen hill forts reveal traces of human presence in the Pre-Viking Age; however, in most cases these are only radiocarbon dates and/or occasional artefact finds, which by comparison with the abundance of finds of the Viking Age are very few in number. Until now four settlement sites are known to date from the Pre-Viking Age, while three settlement sites of the Migration Period have been discovered.

The previously presented figures demonstrate that the number of Migration Period sites and the number of Pre-Viking Age sites are more or less equal. However, in accordance with the chronology used in this study the length of the Migration Period was a hundred years (AD 450–550), and the Pre-Viking Age lasted for 250 years (AD 550–800). This means that the Pre-Viking Age has in fact revealed relatively fewer sites than the Migration Period. It is especially difficult to find any sites or even objects that could be dated to the second half of the 6th century and the first half of the 7th century, as the majority of sites and portable finds of the Pre-Viking Age date only to the late 7th century or the 8th century. Thus, one could conclude that a decrease in the human impact as manifested in the pollen diagrams roughly coincides with a decrease in the number of sites at the end of the Migration Period and the beginning of the Pre-Viking Age. This is probably a result of a noticeable decrease in the population size in about the mid-6th century.

The crisis in the 6th century is observable in several neighbouring areas, for instance, in the palynological and archaeological record in Sweden. Indications of the crisis are very clear in Gotland, where 10–15% of households remained empty in the 6th century (Stenberger 1955; Carlsson, D. 1979; 1983). A decrease in settlement can be observed in Mälaren Valley (Ambrosiani 1964, 210; Sporrong 1971, 197). Also, in Hälsingland County on the shore of the Gulf of Bothnia, pollen diagrams show a clear decrease in the human impact around AD 500 (Engelmark & Wallin 1985). In several locations in Norrland, settlements were abandoned, and the hitherto open cultural landscape became largely overgrown (Selinge 1979; Engelmark & Wallin 1985; Badou 1995). In Östergötland one can observe both a decrease in the human impact in the pollen diagrams and a decrease in the number of archaeological sites in the 5th–6th centuries (Widgren 1983; Ramqvist 1990, 20). The abandonment of farms at the end of the Migration Period is observable as well in the archaeological record of Öland (Stenberger 1933; Herschend 1988, 64; Ramqvist 1990, 20). It is also manifested in an abrupt decrease in the human impact in the pollen diagrams around the 6th century (Königsson 1968, fig. 103).

In Denmark, palynological data show a decrease in the proportion of arable land and afforestation in the middle of the first millennium, accompanied by an abrupt decrease in the number of settlement and burial sites while the number of hoards

increased (Hamerow 2002, 109–112). Judging on the basis of material culture, it seems that the previous foreign contacts of Denmark were totally interrupted in the late 6th century and in the 7th century, to be re-established only in the 8th century (Nielsen 2006, 48). In northern Frisia and in Schleswig-Holstein in northern Germany, too, one can observe a clear decrease in settlement in the mid-first millennium (Hamerow 2002, 112f.). In southern Norway the entire settlement structure and social organization collapsed in the 6th century — many farms were abandoned, rich burials became rare, the production of pottery came to an end, iron production decreased considerably, and the previous trade relations were disrupted (Solberg 1998, 247).

As for Latvia and Lithuania, the archaeological literature does not mention any possible decrease in population around the second half of the 6th century. Nevertheless, both the archaeological sites and the artefact finds show that the area settled by the Baltic peoples witnessed major changes in settlement and culture in the second half of the 6th and the 7th century (see Tautavičius 1996; Asaris *et al.* 2008, 48). Also, palynological studies in Lithuania have revealed a notable decrease in human activity around the 6th century (Simniškytė *et al.* 2003, 283; Stančikaitė *et al.* 2004, 27). The same is true of palynological studies carried out in north-western Poland (Kupryanowicz 2007, 62).

Interestingly enough, it seems that to the immediate north and east of the population crisis zone of the 6th century, the settlement remained stable or even expanded; in some places the local people became sedentary farmers at that time. For instance, in northern Norway the economic, social, and political situation seems to have been stable throughout the 6th century. In southern Norway, where the coastal settlement witnessed a collapse in the second half of the 6th century, hunting, fishing, usage of mountain pastures, and even iron production continued in the mountains and in forested regions (Myhre 2000, 35). In northern Ångermanland in the coastal area of the Gulf of Bothnia in northern Sweden, the 6th century witnessed the emergence of agricultural permanent settlement (Wallin 2004; Pedersen & Widgren 2004, 310f.). Palynological studies conducted in northern Uppland showed that land cultivation might have decreased in the mid-6th century, but not all pollen diagrams attest to this (Randheden 2007, 117). Quite to the contrary, in the region of Vendel the human impact on nature increased during the Vendel Period, that is, AD 550–800 (Karlsson 1999). In the Åland Islands, permanent settlement emerged only in about 600, which was followed by settlement expansion until the beginning of the 11th century (Roeck Hansen 1991, 54, 156f., 166).

Most Finnish archaeological and palynological data does not provide any evidence of a population crisis around the 6th century. Quite to the contrary — at that time in south-western Finland, permanent traces of slash-and-burn agriculture appear in pollen diagrams even in those regions where previously only occasional traces of land cultivation had been found (Tolonen 1983; Vuorela 1985). In inner Finland, too, in several locations in Häme and Savo the first indicators of continuous slash-and-burn practice appear in the 6th–7th centuries (Tolonen 1978; Simola *et al.* 1985). However, one has to consider that in southern Finland land cultivation became the principal means of subsistence only at the end of the Roman Iron Age and even then in combination with cattle rearing and foraging, because the climatic conditions and the agricultural technology of the Iron Age did not enable people to support themselves by field cultivation alone (Solantie 2005). Thus, crop failures affected the Finnish population less than the southern regions, where land cultivation was almost the only means of food production.

In northern Fennoscandia, where land cultivation was not practised, there is no trace of change in around the 6th century. In the Roman Iron Age, this region was integrated with the southern

farming areas into a single trade system visible through archaeological finds, but both ceramics and metal objects disappeared here as early as at the end of the Roman period, though judging by the radiocarbon dates the settlement did not fully vanish (Carpelan 2003, 60f.). One might assume that the crop failures affected the foragers of this region less than the farmers in the south. In north-western Russia, too, it is impossible to identify the population crisis in the mid-first millennium, because finds of even the first half of the first millennium are rare.

Thus, one can observe a sudden population loss in the 6th century in a zone in northern Europe that encompassed at least Estonia, Latvia, Lithuania, Gotland, Öland, southern Sweden as far as Lake Mälaren, southern Norway, Denmark, as well as Schleswig-Holstein and northern Frisia in Germany. In the mid-first millennium AD these were the northernmost areas in mainland Europe where land cultivation had become the predominant means of subsistence — depending on the region the people supported themselves by intensive slash-and-burn or fallow agriculture, or cultivated fertilized permanent fields. In these areas population loss was manifested in the abandonment of settlements, afforestation of fields, decreased numbers of burial grounds or burials, increased number of hoards, and, finally, in significant changes in material culture. The latter is reflected also in the fact that in the archaeological chronology of Sweden, Norway, and Finland, the year 550 marks the end of the Migration Period.

In Scandinavia researchers have expressed different opinions with regard to what happened at the end of the Migration Period and to its possible causes. It has been repeatedly assumed that the crisis was triggered by the Plague of Justinian, a pandemic that raged in 541–544 (Gräslund 1973; Seger 1982; Herschend 1988, 64). On the other hand, it has been doubted whether the Plague of Justinian could have reached northern Europe. The written accounts provide evidence that the pandemic may have been caused by the bacterium *Yersinia pestis* (Sallares 2007). It lives in the rat flea (*Xenopsylla cheopis*), the host of which is the black rat (*Rattus rattus*), which originated in tropical Asia. The plague contagion spreads to humans through fleas. However, the earliest evidence of black rats in northern Europe is dated to the 11th century (Bågenholm 1999, 162f. and citations therein), which makes it unlikely that the Plague of Justinian might have spread to the Baltic Sea region. However, one cannot rule out the possibility that the black rat might have been present in northern Europe earlier, or that rat fleas carrying the plague could have spread through domesticated animals (Seger 1982, 192 and citations therein).

In Gotland and Öland the settlement loss has been explained by farmland exhaustion due to too intensive land cultivation, which resulted in decreased crop yields and the subsequent emigration of the population (Widgren 1983; Carlsson, D. 1988; Herschend 1988; Näsman 1988). Some researchers claim that the abandonment of the settlements and a decrease in the number of graves may have been a result of reorganization of land cultivation and land use or relocation of settlements (Sporrong 1971, 197; Carlsson 1979; Näsman 1991, 168; Hedeager 1992, 224; Myhre 2000, 36). Some researchers have even doubted whether one could speak about a crisis at all — the decreased human impact in the palynological evidence could have resulted simply from changes in settlement (Pedersen & Widgren 2004, 309). Other researchers have argued that the crisis in the 6th century was caused by a war (Liedgren 1989, 77) or the disruption of the previous trade relations (Kivikoski 1961, 186; Huurre 1979, 168). It has also been assumed that the crisis might have been from several unfavourable circumstances coinciding — an ecological crisis, reorganization of trade relations, war, and the plague (Meinander 1977, 42f.; Ambrosiani 1984; Magnus & Myhre 1986, 403–408).

Since the late 1990s, when the event of 536 became widely known among the academic community, several archaeologists have discussed its possible indicators in the archaeological record of northern Europe or mentioned its possible impact (e.g. Randsborg 1997, 198; Axboe 1999; 2001a; 2001b; Nielsen 2006). It has also been assumed that the spread of the Plague of Justinian to Ireland, which is recorded in chronicles, was facilitated by a food shortage caused by the climate anomaly, which weakened the immune system of the populace (Dooley 2007, 216). In fact, Frands Herschend had argued even somewhat earlier that the deterioration of the climate might have triggered the crisis (Hershend 1988, 64).

Because the crisis in about the 6th century could be observed in a large area in northern Europe, its causes cannot be local, such as war, emigration, relocation of settlement, exhaustion of arable land, or changes in ideology. The drastic population loss seems to have affected first and foremost the northern agricultural regions in southern Norway, Denmark, southern and central Sweden, and the Baltic States, while it did not affect the northern and eastern neighbouring areas, where foraging and cattle rearing were the main means of subsistence. This suggests that the population crisis in the 6th century might have been caused by an extensive famine. In areas of Europe more to the south, where the climate was warmer, the food shortage following the crop failures after the event of 536 might have been less devastating. It is true that in the Mediterranean, too, the 6th century was an era of significant population loss. However, it is difficult to highlight a single cause of this phenomenon, as here the event of 536 coincides with the period of the Plague of Justinian, extensive migrations, large-scale military activity, and major political changes.

To summarize, it is likely that the climate event of 536 caused a population disaster also in Estonia, and it took the entire Pre-Viking Age and the first half of the Viking Age until at least the end of the 9th century to return to the previous population level. Pollen studies show that in the vicinity of Tallinn and in southern Harjumaa, the human impact on the environment started to increase rapidly only in the second half of the Viking Age (Veski & Lang 1995; Lang & Kimmel 1996; Lang 1996b; Veski 1996; 1998, 42; Heinsalu *et al.* 2003). Also, the pollen spectra of northern Viljandimaa reveal an increase in human impact in about the 10th century (Niinemets *et al.* 2002). A palynological study of the Kiilaspere and Velise swamps in eastern Läänemaa revealed that traces of land cultivation were insignificant until about the year 900, and that the human impact increased considerably only in the 10th century (Veski 1998, 69). In Saaremaa the entire land that could be cultivated with the help of the implements of that time had been put to use by the 10th century (Saarse & Königsson 1992, fig. 16).

The rapid growth of population in the Viking Age implied an increased amount of sites and portable finds in the archaeological record. By comparison with the previous periods all the site categories are better represented in the Viking Age: there are approximately 120 burial sites, about 40 settlement sites, and at least 34 forts, 27 of them coupled with a major settlement close by. By comparison with the sites of the Pre-Viking Age, the sites of the Viking Age, especially those of the 10th century and the early 11th century, are rich in finds. It is only in the context of the Viking Age that one can speak about populous settlements with hundreds of inhabitants; first and foremost fort-and-settlement type centres can be considered as such. In addition to an increase in the total number of sites, the second half of the Viking Age witnessed settlement expansion — sites of the Viking Age (Fig. 4) are distributed more evenly in Estonia than sites of the Migration Period or the Pre-Viking Age (Figs. 2–3).

Population growth in the Viking Age can be observed also in the neighbouring countries, especially in areas with space for internal

colonization. For instance, in Mälaren Valley in Sweden the distribution of graves suggests that the population doubled during the Viking Age (Ambrosiani 1980). Climate warming at the beginning of the Viking Age (see 1.3.1) made the cultivation of less fertile lands profitable. The regions that could not support internal colonization witnessed extensive emigration because of population pressure. For instance, during this period Scandinavians from Norway and Denmark inhabited the Faroe Islands, Iceland, as well as large areas in the British Isles and on the coast of western Europe.

New population losses can be observed around the Baltic Sea and in north-western Rus in the 860s and the 940s–950s, though they were not as extensive as in the mid-6th century. The previously mentioned periods are relatively rich in hoards. Because this tendency can be observed in a vast area, these hoards cannot be associated with military aggression or some political reason. Ivar Leimus (2004a) assumed that in the 860s and the 950s, the Nordic lands were struck by a food shortage, and as a consequence, many people died and their hoards were left buried in the ground.

7.2. Settlement units

The main settlement and economic unit of all agrarian societies in northern Europe has been the farmstead. Judging by the surface area and thickness of the cultural layer, in Estonia, too, the settlement sites of the Middle Iron Age and the Viking Age that are located separately from the forts (see 2.1.8; Fig. 213) represent individual farmsteads. Unfortunately, none of the settlement sites of this period have been studied sufficiently enough to determine the number of buildings that were used at a time. Also, research into the settlement sites alone does not reveal how many people usually lived on a farm. Burial grounds, which in most cases represent sites established and maintained by an individual farmstead or household, offer more clues in this respect.

In order to calculate the size of the community that had buried its dead in a burial site, the following formula is commonly used: K = M : SA, where K stand for the size of a community, M is the number of burials, S denotes the mortality rate (which, similarly to the Scandinavian societies of this period, is usually calculated as 40‰), and A denotes the use life of the burial site (e.g. Ligi 1989; Lang & Ligi 1991 and citations therein). Accordingly, the calculations show that the community that buried their dead in the cairn graves of Lihula and Maidla I in about 450–550 (see 6.1.2) included 5 and 5.25 persons, respectively. Actually, the communities could be somewhat larger, because one cannot rule out that the graves were used for a shorter time, and because the delicate bones of small children buried in the graves make it difficult to determine with accuracy the number of individuals. Priit Ligi (1989), applying the same calculation method, claimed that the size of the communities that had buried their dead in the Pre-Viking Age barrow cemeteries I and II at Rõsna-Saare was 7.9 and 6.6 people, respectively. His calculations were based on the number of bone clusters in the barrows; however, in the meantime these bones underwent a specialist study, and in the light of the new data (see 6.1.5) the size of the discussed collectives is believed to be 9.25 and 7.5 people, respectively. As a more recent example, one could mention stone grave-field II at Maidla, which was used in the 10th–13th centuries by a family of 8–9 people; the mortality rate was 36‰, and the number of births per woman was 4–5. The household or some other group that maintained this grave may have included 4–5 adults and 3–4 children (Allmäe 2006).

These findings are in line with the Scandinavian data, where the size of a farmstead in the Iron Age is believed to have been 5–10, mostly 6–8 people. In addition to the family members, this figure includes the landless dependants who lived

Fig. 213. *Settlement site at Ala-Pika, pictured from the south (photo: Andres Tvauri).*

on the farm, and whose number could change depending on seasonal work (Ringstedt 1992, 39–42). It is believed that in Viking-era Gotland, where very good archaeological source material is available for the assessment of the size of the population, an average farmstead may have included 6–10 people (Carlsson, D. 1983, 17).

It is likely that a farmstead of the second half of the first millennium in Estonia may have corresponded to the local farmstead or household of the historical period. It was an independent agricultural production unit, which included the landed property together with the farmyard, buildings, and other accessories (Tarvel 1992b, 180–182; ERL, 279). A 16th-century farmstead in northern and western Estonia is thought of as consisting of 6–8 people (Ligi 1961, 201). Until the beginning of the 20th century, a family that consisted of a farm owner, his wife and children, and their close relatives (brothers and sisters, parents) was called *pererahvas* (for *pere* see below; *rahvas* can roughly be translated as 'folk, people'). The word could also imply an extended family, for example, a family consisting of the families of a father and his sons (or even grandsons). These people differed from the other people living on the farm in that the ownership rights and the title to the farmstead belonged and was transferred to one or several members of this group (Tarvel 1992b, 191f.).

The word *pere*, broader in content than *pererahvas*, encompassed all the people who lived and worked on a farm, including those who were not part of the family but participated in the activities of the farmstead and were members of a single household (Moora 1951, 62; Tarvel 1992b, 191; Palli 1998, 399). In older Estonian *pere* (nowadays 'family') generally denoted a farmstead (Tarvel 1992b, 180). It is probable that in the Iron Age, too, at least more prosperous farms hired farmhands and maids, but there were probably also slaves (Lang 1996a, 457). In the historical period farmhands and maids and their families were called *sulasrahvas* ['farmhand folk'] or *tööpere* ['labour folk'] (Tarvel 1992b, 191), and it was common that also farmhands had families. An Estonian farm of the historical period often included some single or widowed close relatives of the *pererahvas*, and

also more distant relatives and other people who for some reason were offered accommodation on the farm (Moora 1951, 218).

In the case of a family of the historical period one has to take into account that its composition was determined by the Christian understanding of marriage as a monogamous union. In pre-Christian northern Europe also polygamy was practised, although such families probably were a minority. However, the early northern European folkloric and written sources provide no evidence that a man could marry several wives (see Mägi 2009). Polygamy implied the keeping of concubines, whereas the legal and social status of concubines and their offspring was not equal to that of a married wife. Nevertheless, the offspring of concubines could act as heirs, for example, in the case that the legal marriage did not yield any heirs (Sawyer & Sawyer 1993, 169f.). It could well be that only those men who were wealthier and enjoyed more power and reputation in society than usual could afford concubines. As for the role of women in the society of this period, Scandinavian oral history in the form of sagas could shed some light on it. In pre-Christian Nordic agrarian society the existence of offspring, to be more precise of heirs, was of paramount importance, especially for the higher social strata. The task of the woman was to provide offspring and first and foremost legal heirs. If a woman was able to perform this role successfully, she could probably enjoy a rather high position in society (Callmer 2008, 185).

Probably the largest and most populous settlement units of the Iron Age were forts and adjacent fort-settlements. Among the forts of the period in question only the courtyard of the fort at Rõuge with an area of about 850 m² has been totally excavated (see 2.1.3). Excavations uncovered the remains of five or six buildings with clay floors. Unfortunately, it was not possible to determine whether they had been used concurrently or not. Assuming it was the case, up to six households may have lived in the fort at a time — in case each house was inhabited by a single household. Larger forts probably accommodated more people than Rõuge, which is a rather small fort with regard to its compound area. For instance, in the Viking Age the yard area of the fort at Iru surrounded by defences amounted to 4000 m² and that of the fort at Kuusalu was about 2200 m²; both courtyards also have a cultural layer rich in finds. Unfortunately, only a small proportion of these forts have been excavated, and it is not possible to make any secure conclusions about the number of their residents.

Nor is there sufficient data about the number of people who lived in fort-settlements, that is, the settlements next to the forts of the Pre-Viking and Viking Ages. Some of the settlement sites (e.g. Kloodi and Peedu) are not much larger than the surface area of the courtyard of the fort. On the other hand, the surface area of larger fort-settlements (e.g. Iru, Linnaaluste (I and III), Pada, Tartu, and Rõuge) amounts to a dozen hectares, which is comparable, for example, to the size of some early urban centre, such as Hedeby or Birka. However, the cultural layer of the Estonian fort-settlements is so thin and so poor in building remains and finds that in this case one cannot speak about population density characteristic of early urban centres. Rather, the thickness, surface area, and composition of the cultural layer resembles the cultural layer of the local villages of the Middle Ages and the Early Modern Age, which, judging by 17th-century maps, originate from the densely located farmyards of clustered or linear villages. Written sources reveal that in the second half of the 16th century the mean number of farmsteads per village was about 4.6 in Harjumaa and Läänemaa and 6.5 in Järvamaa; the largest villages could consist of as many as 22 households (Tarvel 1992a, 142). Assuming that on average a farmstead was inhabited by 6–8 people (Ligi 1961, 201), the largest villages in the second half of the 16th century could have had a

population of as many as 200 individuals. Given this, one can assume that the larger Viking-era fort-and-settlement type centres in Estonia had a population of about 100–200 people.

It is important to note that the settlements adjacent to forts were not villages — their origin and social structure were probably completely different. A settlement unit that consisted of a fort and a settlement was probably inhabited by a nobleman and his kin and military retinue. However, although a fort-settlement could have emerged and grown at the expense of the descendants of the nobleman, people from other places may have settled there. The settlements probably included also craftsmen and dependants. The population size and social composition of fort-settlements may have largely depended on the will of the chieftain.

The emergence of true villages in Estonia dates to the period when the fort-and-settlement complexes had been abandoned. In the Iron Age a village implies a settlement unit where two or more farmsteads constitute a village community. One of its salient features is the division of arable land into narrow strips between the farmsteads, while pastures, forest, and fishing grounds belong to the communal ownership of the village. It has been thought that the principal mechanism underlying the emergence of villages was the division of farmsteads into separate households as a result of inheritance; in other words, in the course of time the heirs started to run a household of their own, and divided the arable land among themselves (Johansen 1925, 73–77; Troska 1998, 247f.). Thus, a village of the Iron Age was not simply a group of closely located farmsteads but first and foremost a social organization, which in many cases was bound together by kinship ties. Accordingly, a village could have consisted also of households that were located at some distance from one another, which makes the archaeological research into the emergence of villages extremely difficult.

Judging by the earliest strip fields, the emergence of villages may have begun in the 7th–10th centuries (see 3.1.1; Lang 1996a, 496; 2000a, 235f., 246). However, most Estonian settlement sites of the Iron Age and the Middle Ages that can be associated with specific villages of recorded history date no earlier than to the 11th century, which seems to indicate that generally villages emerged only in the Final Iron Age. Also, the partition of farmsteads, and, thus, the emergence of villages, was possible in conditions of population growth. Given this, one may argue that the prerequisites for the emergence of villages in Estonia developed only in the 10th century, when all the signs indicate population growth (see above, 7.1). The emergence of villages in Estonia is similar to contemporaneous settlement shift in Scandinavia. For instance, in Denmark, too, villages emerged as late as at the end of the Viking Age (Schmidt Sabo 2005).

7.3. Social stratification

In Scandinavia society was divided in the Migration Period at the latest into three social classes: aristocratic or noble families, free farmers, and dependants (Ramqvist 1987). One might assume that also in Estonia the majority of the population in the Middle Iron Age and in the Viking Age was made up of free farmers, who lived in dispersed farmsteads and subsisted mostly from the agricultural production of their own farm. As for the burial practices of this social class, these have remained largely invisible to archaeologists. It is certain that the more prosperous social strata buried their dead in graves and with grave goods, but usually it is impossible to distinguish between the burial sites of a wealthy farmstead and a noble family.

During the period under review nobility can be defined as those families that owned arable land, which they rented to farmers, and/or who taxed landed farmers in exchange for military

protection or 'ruling service'. Valter Lang put forward a hypothesis that at least in more densely populated areas in north-western Estonia taxation of arable land may have commenced as early as at the turn of the Bronze Age and the Pre-Roman Iron Age (Lang 1995, 158f.; 2007c, 114). Thus, there had been nobles in Estonia long before the Middle Iron Age. In the context of the Middle Iron Age and the Viking Age, the existence of forts alone can be regarded as proof of taxation of farmers or rental of land to them, because the building of forts and the upkeep of the military retinue presumed resources that could not have been generated by fields tilled by a single household. Although one might assume that the 'arms race' and the accompanying warrior ideology, observable in the archaeological record since the Migration Period, expressed first and foremost a power struggle between the noble families, the weapons and the military retinue provided the nobles also with the means of taxing the free farmers.

According to Priit Ligi, the long-time use of forts as living quarters alone could be regarded as direct proof of a complex and socially stratified society. The status of a ruler (i.e. the right and the opportunity to become one) was handed down to the offspring from generation to generation (Ligi 1995, 232). Also, several graves or grave groups with abundant and extraordinary grave goods that span a very long period of time (e.g. Proosa, Maidla, and Ehmja) show that one or several consecutive noble families could have inhabited these places for at least several centuries.

Only a small proportion of society was engaged in handicraft as a primary occupation, and it is not certain whether professional craftsmen of this period should be regarded as a separate social class or not (see also 4.5). Apparently, professional craftsmen included a large number of blacksmiths, who generally enjoyed a high status in society, although the latter also depended on their skills and abilities as a blacksmith. Kristina Creutz (2003) assumed that a weaponsmith was a free man, a sedentary, professional craftsman highly respected in society who enjoyed a high status, and who had both real and 'magical' skills and knowledge. However, a blacksmith was economically dependent on the local chieftain whose orders he fulfilled, and therefore the distribution area of the weaponsmith's products coincided with the territory controlled by the chieftain. Nevertheless, the 11th-century richly furnished 'blacksmith burials' at Raatvere suggest that at least in some places, the nobility not only controlled iron production and weaponry ironwork, but may have in fact been engaged in it.

Also, it is likely that international trading may have been the prerogative of the nobility, as noted in section 5.4. For instance, the younger sons of nobles who did not manage to inherit land might have been engaged in trading.

The written sources suggest that slaves were kept and traded all over northern Europe. The Estonian archaeological sources do not reveal anything about the number, origin, and legal status of slaves. As noted above (5.3.3), a slave in Viking-era Scandinavia cost at least 200 g of silver or approximately 70 dirhams. The price appears to be rather high, which suggests that usually only the nobility could afford slaves. Even if slaves were obtained during forays, it was the nobles who organized them.

The social relations in Iron Age society were largely dependent on the ownership or conditions of use of arable land by a social class, family, or individual, because arable land was the most important source of subsistence and revenue. In Estonia private ownership of permanently cultivated land had been established long before the mid-first millennium AD (Lang 1996a, 500–502; 2007c, 113–115). The existing source material does not reveal who had ownership of the land — whether it was the farmers who tilled it or the nobles who rented it to farmers. However, there is reason to think that in the Iron Age the concept of land ownership was different

from its present-day meaning. For instance, in Scandinavia according to Viking-era customary law, land did not belong to an individual but to the entire lineage, including the dead forefathers (see Magnus 2002, 11; Arrhenius 2002, 45). The decision-making power with regard to land ownership was vested in the position of the head of the lineage. It is unknown how permanent the ownership relations were. One might assume that as a consequence of the population disaster in the mid-6th century, but probably also due to the food shortages in the 860s and the 940s–950s, many farmsteads remained empty, which could have brought about significant changes in ownership relations and social organization.

7.4. Lifestyle of the elite

The lifestyle of the nobles differed from that of other people, because they probably received the majority of their income from taxes, trading, and looting. The people who worked included taxable farmers, hired farmhands and maids, and slaves. In pre-industrial societies, the activities of the elite implied all kinds of non-production undertakings, that is, leisure activities in general. Apart from warfare, the elite lifestyle included festivities, competitions, hunting, music, dancing, board games, etc. to demonstrate that the nobles did not have to do any work. The Estonian archaeological record allows making more conclusions about warfare, while there is only occasional evidence of elite hunting and leisure pastimes.

Scandinavian sagas provide a good account of the role of warfare in the life of the nobility in the Viking Age. Warfare was probably one of the principal activities of the political elite of the time. Military campaigns against other rulers were generally regarded as fully legitimate both in Christian Europe and in pre-Christian Nordic areas (Jansson 1997, 12; Hedenstierna-Jonson 2006, 24). Military heroism was a major method of enhancing one's reputation, which also implied more power. In a situation where combat took place between men belonging to Nordic cultural space, a battle was a highly rule-governed action, associated with religious beliefs and rituals. Viking-era rulers were expected to have a permanent military retinue. For young nobles, membership implied an opportunity to improve one's reputation and gain experience and revenue (*ibid.*, 26f.). The military retinue of a noble was considered sufficient only in the case that the men were close to the chief and in constant combat readiness — the retinue was indeed part of the ruler's household. It is likely that the forts in Estonia should be regarded as places where the families of nobles lived together with their military retinue and their family members.

The belligerent identity of the nobles was expressed by weapons, especially more expensive weapons — swords, iron-bossed shields, and spears adorned with silver. A weapon had not only utilitarian but also symbolic significance. The presence of a weapon in a burial does not assure that the dead person had fought in a battle; it could simply represent a symbol of power or family affiliation, which demonstrates that warfare was prestigious (Ligi 1995, 233; Jonuks 2009, 251). Weaponry was important in shaping group identity (see Pihlman 1990). For instance, Kristina Creutz (2003) argues that a spear with an M-type head was a status weapon, the sign of a professional warrior. She does not believe that weapon users themselves could have ordered M-type spearheads from weaponsmiths; rather, their production and spread were probably controlled by the elite, or in other words, the leaders gave status weapons of special significance to the members of their retinue. On the other hand, there is no proof whatsoever that the nobility exerted total control over the work of weaponsmiths. It could well be that M-type spearheads represent expensive and fashionable products reflecting the taste of the period, which were meant to exhibit of the

prosperity of its owner, and which were made and sold by the weaponsmith as a free man with autonomy (Valk 2003, 173).

Hunting was closely related to warfare and weaponry. For instance, in Mälaren Valley, hunting, especially the hunting of big game, had undoubtedly become an upper-class pastime by the second half of the first millennium (Ljungkvist 2006, 104). This kind of hunting also implied military training, as riding horses and some of the same weapons were used both in battle and hunting; also, in battue one had to coordinate the movement of many people in terrain. The high status of hunting is also proved by the fact that the graves of the Germanic noblemen contain many hunting weapons (Dahlgren 2001). The only firm traces of hunting by nobles found in Estonia — the falcon remains in burial boat I at Salme (see 6.1.7) — are associated with Scandinavians. In Estonia hunting was probably not regarded as a highly elitie activity to the same extent as in Scandinavia with its densely populated and cultured landscapes. As noted (3.3.2), for instance, in south-eastern Estonia hunting may have retained an important role in obtaining daily sustenance as late as in the Viking Age.

In the context of its time board games should be regarded as luxury items. The gaming pieces from bone (incl. ivory and whalebone), horn, wood, amber, stone, clay, or glass, wooden gaming boards, and dice from bone or horn have been revealed mostly in richly furnished Iron Age male graves first and foremost in Scandinavia and the British Isles. The Germanic peoples adopted board games from the Romans. In northern Europe they appeared in graves in the Late Roman Age, and continued as grave goods until the spread of the Christian burial tradition. Judging by the grave type and the grave goods, all the dead who were buried with gaming pieces and dice had belonged to the societal elite (Helmfrid 2005; Whittaker 2006; Solberg 2007). The association between board games and warrior ideology is also proved by the fact that the board games of this period represented strategic games with a military orientation (Whittaker 2006; Solberg 2007).

Until now in Estonia gaming pieces have been found only in the boat burials at Salme. Boat I, which was excavated in 2008, revealed 71 gaming pieces coming from two sets (Fig. 202; see also 6.1.7). In Scandinavia the number of gaming pieces revealed in a grave varies between 1 and 63, which means that the Salme find is reportedly the largest archaeological find of gaming pieces at least in northern Europe. This boat burial included two bone dice as well (Fig. 203). What are supposed to be fragments of a similar die, dating from the Roman Iron Age at the latest, were found in stone grave C at Jäbara, Virumaa (Luik 2003, 157f., fig. 3: 1). While in the case of Salme one is dealing with foreigners, the probable die from Jäbara suggests that board games may have been played in Estonia, too.

7.5. Centres and regions of power

As power in society was concentrated in the hands of the nobility, the residences of nobles — permanently settled forts, fort-and-settlement complexes, and farmsteads of noblemen — should be regarded as power centres. Their distribution enables one to assess the size and nature of former regions of power.

Traces of human activity in the Migration Period have been found in ten forts (see 2.1.2). The existing data do not reveal whether the forts of this period, as well as those few sites that are viewed as forts of the Pre-Roman and the Roman Iron Age, were military defences, cult sites, or something else. It is nevertheless clear that forts of the Migration Period were not permanently inhabited, which means that one cannot regard them as power centres.

The Pre-Viking Age witnessed the emergence of fort-and-settlement complexes, where also the fort was permanently inhabited. Such centres reached their maximum size and number in the Viking Age (see 2.1.5). Valter Lang argues that the forts of the second half of the first millennium should be regarded first and foremost as strongholds of the strengthening noble families, which were intended to meet their increasing thirst for power and territorial claims. Such power centres served as magnets for attracting people, which could explain the emergence of sometimes rather large settlements around forts, often in previously empty areas (Lang 2000a, 281f.). The forts also controlled the trade routes — harbours on the coast and rivers inland (see 5.5.2).

The densest network of fort-and-settlement type centres can be found in southern Tartumaa and on the northern bank of the Emajõgi River in south-eastern Estonia. Here the Viking-era fort-and-settlement complexes are located at an average distance of only about 15 km and sometimes only 6–7 km from one another (see Fig. 7). Assuming that the entire area in question was divided between the noblemen who lived in the hill forts, the so-called closest neighbour model enables us to conclude that in this region the power of the nobleman reached about 6–15 km from the fort. At this it seems that the forts with larger surface areas and with more abundant finds (Tartu and Otepää) enjoy a larger space surrounding them than the smaller forts in this region (e.g. Peedu and Unipiha).

The fort-and-settlement complexes probably mirror the power struggle between the nobles and their aspirations to expand their territories. For instance, Valter Lang assumed with regard to such a complex at Iru that after its emergence in the 7th–8th centuries its residents started to extend their holdings to the neighbouring areas. This could be done both by resorting to violence and forming family and political unions. The expansion of the territory dominated by Iru created the preconditions for the establishment of two-level ruling structure — in addition to the 'central power' at Iru there were lesser local nobles, who were tied to the rulers in Iru through various contracts (Lang 1996a, 477f.). In other words, at Iru or in the region of the lower reaches of the Pirita River, inequality among the nobility in the form of so-called prehistoric vassals emerged, which implies the advent of early feudal social organization.

Lang (1996a, 477) assumed that a region that was governed in this manner could have been called *kihelkond* ['parish'], as this term, denoting an administrative unit, was derived from *kihl*, which had the meaning of contract (Vilkuna 1964, 24ff. and citations therein). Priit Ligi, too, argued that the earliest prehistoric parishes emerged around fort-and-settlement type centres, whereas the ruler of a parish was called *kuningas* ['king'] (Ligi 1995, 215, 232). The latter word had been borrowed from the Germanic languages by the Baltic-Finnic languages as early as in the Late Bronze Age or in the Pre-Roman Iron Age (Ariste 1956, 16; Moora 1956, 87). However, one has to add that the parish rulers of the Estonian Pre-Viking Age and the Viking Age cannot be compared to the contemporaneous Scandinavian or the European Christian kings. It is true that these 'kings' were on top of the local social hierarchy, but their territories did not extend beyond a day's journey, and the number of subjects amounted to several hundred but not thousands or millions of people. Nor is there any reliable data about how these parishes emerged — the noble in a central fort may have established subordination relations with subjugated nobles or perhaps seized their taxable lands and farmers.

However, the Viking-era parishes cannot be considered as direct predecessors of the pre-conquest parishes in the early 13th century. The beginning of the 11th century witnessed a rapid change in power relations and administrative division, which involved the abandonment of

the greater part of the previously inhabited fort-and-settlement centres and the establishment of new forts in new locations. Only in few cases was a new fort built in place of the previous fort (e.g. Keava, Tartu, and Otepää) or next to it (e.g. Lohu and Pada), or the fort was abandoned, but the settlement persisted (e.g. Iru and Kuusalu). However, in the regions with a dense network of fort-and-settlement type sites (e.g. south-eastern Estonia and Virumaa) the number of new forts remained smaller than previously. In most cases, there were no settlements next to the forts of the Final Iron Age.

In Estonia the abandonment of the centres consisting of a fort and a settlement occurred at a time when all of northern Europe witnessed major social, religious, and economic changes, which mark the end of the Viking Age. In Scandinavia the early urban centres Hedeby, Birka, Kaupang, etc. were abandoned, and the previous trade system collapsed. The power of kings developed in Denmark and Sweden; Christianity was adopted, and Scandinavian forays and trading expeditions came to an end. Also, the rulers of Rus adopted Christianity and became Slavicized. The abandonment or transformation of the Estonian fort-and-settlement type centres may have been part of the historical developments that embraced the entire northern Europe. The changes occurred concurrently all over Estonia, and for this reason they cannot be explained by local causes, such as the military campaigns of Rus princes into south-eastern Estonia (cf. Valk 2009b), or the supposition that the centre of trading beaver furs and castor was relocated from the basin of Lake Peipsi to the lower reaches of the Daugava River (cf. Leimus & Kiudsoo 2004, 46).

The reasons for the abandonment of fort-and-settlement type centres probably lie in changes that took place in social organization. Valter Lang (1996a, 477f.) assumed after the example of Iru that inequality among the nobility developed during the time when fort-and-settlement complexes emerged. The development of early feudal relations could also account for why these centres disappeared. The power struggles in the second half of the 10th century resulted in a situation in which the supreme power was concentrated in the hands of an increasingly smaller number of noble families, and the defeated nobles became their vassals. Only the kings on top of the power pyramid were allowed to build forts but not their vassals. The much larger forts could accommodate also those people who had previously lived in the settlements adjacent to forts. The development of early feudal relations was accompanied by the emergence of villages, which also served as taxation units. Similar processes took place, for instance, in Denmark at the end of the Viking Age (see Schmidt Sabo 2005).

These changes were probably a rather long social process and not the intentional 'reform' that Priit Ligi claimed. In his opinion this reform was carried out because of an increased foreign danger, which had been triggered by military activity of the inhabitants of Estonia themselves, the latter caused by overpopulation and the accompanying internal social tensions (Ligi 1995, 235–238). However, one should mention that the hypothesis of overpopulation is actually based on a single palynological study that claimed that by the 10th century all the arable land in Saaremaa had been put to use (Saarse & Königsson 1992). However, one cannot claim the same with regard to the rest of Estonia.

Because forts of the Viking Age are not known everywhere in Estonia, and are sometimes absent even in densely populated regions and in the vicinity of richly furnished graves, one has to assume that part of the nobility resided in large farmsteads. Today such farmsteads are probably represented by settlement sites that yield more abundant finds than usual, such as Rebala in north-western Estonia and Suure-Kambja and Kaarnajärve in south-eastern Estonia. In Saaremaa and Läänemaa, which were densely

populated in the Viking Age and where fort-and-settlement complexes are absent, noblemen's farmsteads probably acted as power centres. They were possibly located in places where forts were built in the Final Iron Age. For instance, the cultural layer of a Viking-era settlement site found in the courtyard of the Final Iron Age ring-fort at Pöide could originate from a nobleman's farmstead prior to the fort.

No doubt, social organization and the administrative system differed regionally. Densely populated centres with a developed power structure were surrounded by more sparsely settled regions with a different social arrangement — for instance, nobility might have been absent there. Such regions probably included southern Virumaa, Setumaa, and eastern Läänemaa, which were still rather sparsely populated in the Viking Age (Fig. 4). The regional differences in power relations and the administrative structure are proved by the fact that fort-and-settlement type centres cannot be found in all the regions of Estonia.

7.6. Regional differences within Estonia

From the Bronze Age onwards one can observe two main cultural areas in Estonia (Fig. 214). The first area includes coastal Estonia: Saaremaa, continental western Estonia as far as the Pärnu River in the south, and northern Estonia. The second cultural area covers southern or inland Estonia. The cultural phenomena characteristic of this area can be best observed in south-eastern Estonia, south of the Emajõgi River and to the east of Lake Võrtsjärv, while they are somewhat less pronounced in Viljandimaa and northern Tartumaa (see also 4.3.6).

Between these two cultural areas lie expanses of forests and bogs where agricultural settlement was absent or very sparse. These include the southern part of Pärnumaa and Alutaguse to the north of Lake Peipsi. Sites of Järvamaa are poorly examined and therefore cultural characterization of this region in the Middle Iron Age and the Viking Age is not possible. However, judging by the archaeological material from the Roman Iron Age and the Final Iron Age, Järvamaa appears to be close to coastal Estonia.

The third major cultural area could be observed around Pskov to the east of Estonia, which also reached the boundaries of the present-day south-eastern Estonia and the western shore of Lake Peipsi. Because of its characteristic grave form, this area can be regarded as the 'Pskov group of the Long-Barrow Culture' (see 6.1.5).

Northern and western Estonia is a region where new land emerges at the expense of the sea as a result of land uplift. In the flat coastal terrain, vast field systems developed long before the Iron Age, which in places are observable as clearance cairns and baulks even today. In this region natural conditions were suitable for primitive agriculture — the maritime climate implied a month longer growth period and milder winters than inland (*Eesti lumikatte teatmik*, 31), and the soils on top of limestone were easier to till.

The artefact assemblages in sites of coastal Estonia as well as the burial practices show that in the Middle Iron Age and the Viking Age this area had close overseas contacts with eastern Sweden, Gotland, and Finland, and to a lesser extent with the south-eastern coast of the Baltic Sea. The region under review was generally characterized by pottery of the Iru type. Very similar vessels were made also in south-western Finland, in the area of Daugava Livonians, and in Courland.

Four smaller cultural regions (as sub-sections of larger cultural areas) could be distinguished in coastal Estonia in the Middle Iron Age as well as in the Viking Age. In general they match the counties of the historical period — Saaremaa, Läänemaa, Harjumaa, and Virumaa (Fig. 1). The Scandinavian sagas and runic inscriptions

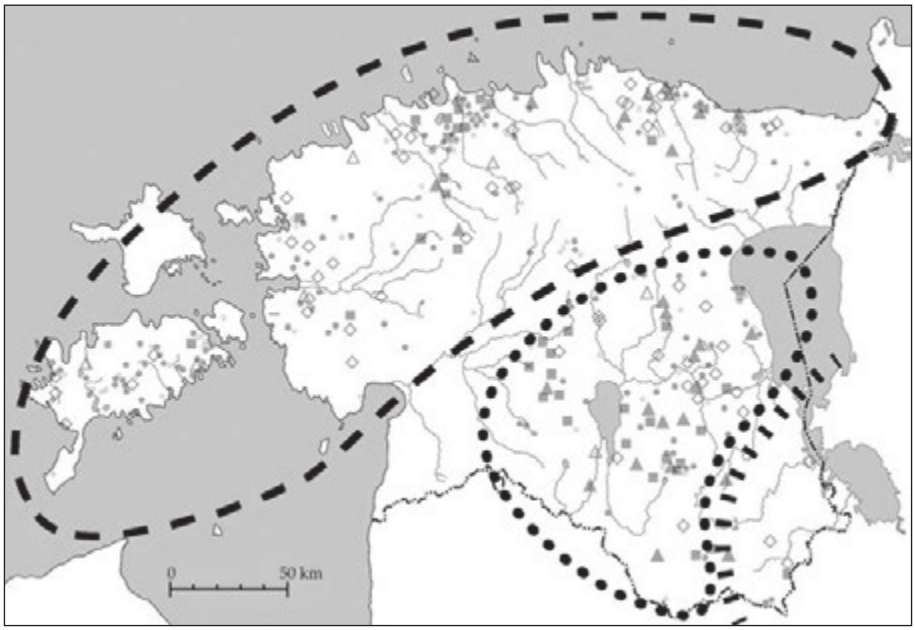


Fig. 214. *Distinct cultural areas in Estonia during the second half of the first millennium AD. Key as in Fig. 4.*

suggest that these four regions were clearly distinguished also in the eyes of the Scandinavians of this period, who used separate names to designate these districts (see 1.2). However, it is not known whether there had been any political and administrative structures before the Final Iron Age that would have embraced the entire territories of the later counties.

In the western archipelago, sites of the Middle Iron Age and the Viking Age are known only from Saaremaa and Muhu, while Hiiumaa, the second largest island of Estonia, seems to be empty in this respect. Saaremaa, the largest island in the archipelago, was much smaller at the time, and the present-day Sõrve Peninsula was a separate island. By the Viking Age Saaremaa had become one of the most densely populated regions in Estonia. In western Saaremaa iron production from local bog ore began in the Viking Age at the latest. Iron may have served as an important export article, as it was probably produced in amounts that surpassed the local demand. It is likely that large-scale iron production contributed to the political and military rise of Saaremaa in the Final Iron Age.

Saaremaa also stood out with regard to its grave types, which are not known elsewhere in Estonia. As examples of such sites one should mention the probable mortuary houses of Paju and Lepna and the cremation burials surrounded with stone circles. Saaremaa also differs from continental Estonia (with the exception of Läänemaa) in that the number of Migration Period graves is higher than that of the Roman Iron Age. Until the end of the Migration Period the material culture revealed close ties with Courland; however, in the Pre-Viking Age contacts with Scandinavia, especially Gotland, became more important (Mägi 2006a, 61). The Viking-era insular jewellery, belt mounts, and weapons resembled those of Gotlanders, Curonians, and Livonians, remaining foreign in continental Estonia. For example, the composite

neck rings, adopted in Saaremaa in the 10th century, resemble similar finds from Courland. Because the main island of Saaremaa was once called Kuresaar, it has been assumed that the ethnonym *kuralane*, which usually is known to have denoted an inhabitant of Courland, in some written sources might have denoted an inhabitant of Saaremaa (Mägi 2002, 33).

Läänemaa emerged as a distinctive cultural region in the Migration Period when the dead were buried with abundant grave goods. Different grave types are known: cairn graves, underground cremation graves, and perhaps also underground inhumation graves. Similarly to Saaremaa, typical *tarand* graves of the previous period are unknown there. The Pre-Viking Age is represented by occasional artefacts in some graves, established already in the Migration Period. The number of graves increased in the 10th century, when cremation in stone grave-fields and pit graves was practised. Throughout the second half of the first millennium the material culture reflects contacts with Swedish areas. However, strong regional peculiarities are present, which can be seen for example in bridle parts with a unique design found in the graves of the Migration Period.

The fort-and-settlement type centres, common in northern and southern Estonia in the Pre-Viking and Viking Ages, are absent in Saaremaa and Läänemaa. This difference could be partly explained by the closer ties between western Estonia and Scandinavia, as it is true that fort-and-settlement complexes are not known in Scandinavia — they are first and foremost characteristic of areas to the east and the south-east of the Baltic Sea. On the other hand, the absence of these sites could be partly explained by the flat terrain in western Estonia. There are no hills with steep slopes or river valleys with high banks, which were usually employed when establishing a fort. However, the erection of ramparts on flat terrain would have required resources that noblemen did not possess until the end of the Viking Age. Only in the Final Iron Age were some noble lineages able to concentrate so much power and wealth that it became possible to erect large ring forts.

What later became Harjumaa had been one of the most densely populated regions since the Late Bronze Age, and it remained so throughout the period covered in this volume (Lang 1996a). The centre of north-western Estonia was the area around the lower reaches of the Pirita River, first and foremost the fort-and-settlement complex at Iru. Among the forts of Harjumaa, Iru was the largest and the one with the most protracted period of use. The fort had been settled as early as in the Migration Period, and in the Pre-Viking Age it was the only fort-and-settlement type site in this region. Four such complexes are known from the Viking Age, which is much less than, for instance, in Virumaa or south-eastern Estonia. On the other hand, relatively many burial sites are known in Harjumaa from the entire period under study. The stone graves of the Migration Period and the Pre-Viking Age mainly cluster in the vicinity of the lower reaches of the Pirita River. The graves known from the Viking Age do not outnumber the graves of the Middle Iron Age, but they are distributed over a larger area than before. Probably also the southern part of Harjumaa was settled more densely in the Viking Age than before.

In the Migration Period direct contacts of the coastal region of Harjumaa with eastern Sweden can be observed. The most abundant assemblage of objects of Swedish origin, including lavish agraffe buttons, belt fittings, etc. has been found in the stone grave-field at Proosa in the lower reaches of the Pirita River. In the Viking Age the coastal Harjumaa had close ties with the nearest early urban trade and handicraft centres, which is proved, among other things, by the presence of Iru-type fine ware vessels in these centres, for instance, in Birka (Bäck 1995, 11–13) and in the Rjurik's Fortress at Novgorod (Plokhov 2006, 29, figs. 23–27).

The artefactual record also reflects close ties with south-western Finland, which is only natural because north-western Estonia is geographically very close to the Finnish coast. The distance between the island of Naissaar to the north of Tallinn and the island of Mäkiluoto in front of Cape Porkkala on the southern coast of Finland is only 34 km. In the Migration Period objects of Finnish origin or influence included angons and shield bosses; in the Pre-Viking Age such items included concavo-convex bracelets, crayfish fibulae, pottery, and penannular brooches with flat triangular rings and rolled terminals, and in the Viking Age they were mostly represented by pottery. An example of a locally developed object type is disc-headed bronze pins, which were used to some extent also in Virumaa, but were not in fashion elsewhere in Estonia. Object types characteristic of only north-western Estonia in the Pre-Viking and the Viking Age are not known.

Virumaa is separated from Harjumaa by swampy and forested landscapes of Lahemaa and Kõrvemaa, where settlement is absent or sparse even today. In Virumaa the Iron Age settlement was clustered mainly on the Viru Plateau between the North-Estonian Coastal Plain and the Alutaguse Lowland by Lake Peipsi. Here, dense agricultural settlement emerged as early as in the Late Bronze Age, and this region was densely populated also in the second half of the first millennium AD. Forts of Virumaa, at least eight in number, cluster on the banks of the rivers that flow into the Gulf of Finland. Probably such a location of the forts can be explained by the fact that the banks of the river valleys provided suitable terrain for building forts. Graves erected in the Migration Period have not been found in Virumaa, but it is known that burial in several *tarand* graves continued in this period. Pre-Viking Age burial sites are also few. The number of graves increased considerably in the second half of the Viking Age, whereas the main burial practices involved cremation and inhumation in pit graves. Virumaa was one of the first regions where inhumation was adopted in the Viking Age.

The material culture of Virumaa is rather similar to that of north-western Estonia — here, too, the imported items show ties with eastern Sweden in the Migration Period and with Finland in the Pre-Viking and Viking Ages. In the Viking Age several artefact types emerged that linked Virumaa with the eastern part of central Estonia and southern Estonia: for instance, pins with double crossheads, neck rings with flattened overlapping ends, neck rings with a flat midsection and hook-and-eye clasp, penannular brooches with prism-shaped terminals, concavo-convex bracelets with plaited motifs, bone pendants, and Slavic-type wheel-thrown pottery.

Throughout the period under review, *southern or inland Estonia* constituted a rather uniform cultural region, which included Viljandimaa, Tartumaa, and those parts of Võrumaa without barrows. This area, especially the uplands of Haanja, Otepää, Karula, and Sakala, as well as the area of Vooremaa, is characterized by hilly and indented terrain. The climatic and landscape conditions for land cultivation in inner Estonia were not as favourable as in the coastal region, and until the Viking Age, the development of farming and agricultural land use lagged behind by comparison with western and northern Estonia. However, the backwardness could be to some extent deceptive — in moraine plains and hillocks stone clearance was not important, and therefore no field remains emerged that could be observed today. On the other hand, the osteological record of the forts and settlement sites suggests that in southern Estonia hunting and fishing were more important in subsistence than in western and northern Estonia, where these means of livelihood had lost their significance by the later first millennium. In the Viking Age trading in furs, especially beaver furs, might have been an important source of revenue for the nobility of south-eastern and eastern Estonia.

Southern Estonia is richer in forts and fort-and-settlement complexes than northern Estonia, let alone western Estonia where such sites are unknown. The highest density of forts and settlements could be found in southern Tartumaa. On the other hand, throughout the later first millennium southern Estonia is characterized by the small number of burial sites. In the Roman Iron Age there were many typical *tarand* graves in this region, but few of them continued into the Migration Period. Also, all reported Pre-Viking Age burials have been found in stone graves of the Roman Iron Age, mostly as occasional artefact finds. Burial sites of the second half of the Viking Age are somewhat more numerous, mostly represented by underground cremation burials. In the first half of the 11th century inhumation burials spread in northern Tartumaa.

The pottery tradition of southern Estonia is characterized by Rõuge-type clay vessels, which most characteristically spread in south-eastern Estonia (except for the area of cremation barrows) and in southern Viljandimaa. Vessels that are rather similar to Rõuge-type pottery were made as well in the Pskov region and in northern Latvia. Also, the closest equivalents to the remaining material culture of inner Estonia can be found in the Pskov region, where in the second half of the first millennium one can find both similar fort-and-settlement complexes and very similar artefact finds. The rise of the cities of Novgorod and especially Pskov in the second half of the 10th century was important and influential. Handicraft products made in these centres reached Estonia as well. Also, contacts with the Balts in Latvia and Lithuania were more apparent than in northern Estonia. In the course of time the role of the western Balts declined while contacts with eastern (Latgalian) tribes rose to the foreground (Aun 1985a; Laul 2001, 184).

The *distribution area of cremation barrows* in Estonia can be viewed as culturally belonging to the Pskov group of the so-called Long-Barrow Culture, the main distribution area of which lies to the east of Estonia. Similarly to most of Estonia, in the Pskov region, too, fort-and-settlement complexes had been present since the Pre-Viking Age (though only Hinniala remains within the boundaries of present-day Estonia); even the artefactual record is similar to southern Estonia but the burial practices are completely different. The find material of the barrows is rather scanty and difficult to date. However, it seems that burials into barrows began in the second half of the 6th century and ended in the 9th century at the latest. No burials of the 10th century and the early 11th century have been found in this area. Thus, unlike the rest of Estonia, in the south-eastern-most corner of the country the number of sites increased in the Pre-Viking Age but decreased in the Viking Age. Sites of the second half of the Viking Age have not been investigated in this area.

Southern Estonia together with the distribution area of cremation barrows were part of a vast cultural space in the second half of the first millennium, which reached at least as far as the upper reaches of the Volga River. During this period Finno-Ugric languages were spoken throughout this area. The material culture of inland Estonia and the Pskov group of the Long-Barrow Culture reveal several phenomena that are common eastwards, such as clay vessels with pinched decoration, which have counterparts from eastern Latvia to the area of the Djakovo Culture, comb- and bird-shaped bone pendants, pendants from the beaver astragalus, and double-cone clay spindle whorls, etc.

7.7. Summary

On the basis of the earliest written records it has been estimated that at the beginning of the 13th century the population of Estonia might have been about 150,000 people. Proceeding from

this figure and the assumption that population growth in the Middle Iron Age, the Viking Age, and the Final Iron Age was constantly 2–3‰, it has been concluded that in AD 500 about 23,000 people may have inhabited Estonia, and in AD 900 about 95,000.

These figures need not be accurate, because population growth might not have been constant. Palynological studies show that in the mid-6th century the human impact on the environment decreased abruptly, and roughly at the same time archaeological sites and artefact finds disappeared almost completely for a period of at least fifty years from the archaeological record. The only type of finds the amount of which increased considerably in the 6th century is votive deposits. Some major disaster may have occurred during this period, probably famine, as a consequence of which a large part of the population died, the farmsteads remained empty, and the fields became overgrown. It could well be that it was caused by the climatic anomaly of 536, which has been described in written records. The temporal distribution of coin hoards suggests that food shortages struck Estonia also in the middle of the 9th and the 10th century. However, their impact on population growth was much smaller than that of the disaster in the mid-6th century.

In the Middle Iron Age and the Viking Age the majority of the Estonian population consisted of free farmers, who lived in isolated farmsteads and subsisted from the labour of their family members and the hired workforce. The farmstead, usually inhabited by 6–8 people including farmhands, was the principal settlement and production unit of this period; villages began to emerge only at the very end of the Viking Age. At least some farmers paid taxes to the nobles, of whom one part had lived since the Pre-Viking Age together with their military retinue in centres consisting of a fort and a settlement. The fort-and-settlement complexes also served as trading, handicraft, and religious centres. In those regions in which there were no forts the nobles resided in large farmsteads. However, during the period under review the territory of a nobleman was still rather small, extending to a distance of only 5–20 km from the power centre. The nobles probably earned most of their revenue from taxation, trading, and looting. Warfare was one of the main activities of the elite at that time, and, accordingly, a distinctive warrior ideology emerged, which was manifested also in burial practices. In addition to free farmers and nobles, there were also slaves, who due to their high price could be kept probably only by nobles. A small proportion of the population was engaged with handicraft as their main occupation. Among the professional craftsmen the number of blacksmiths was probably the largest.

Estonia was divided into two areas with regard to culture — on the one hand, there was northern and western Estonia or coastal Estonia, and southern or inland Estonia on the other. In addition, the eastern edge of Estonia belonged to the cultural area embracing the Pskov region, which was characterized by burials in cremation barrows. This area, as well as the cultural area of southern Estonia, belonged to the broader cultural space with a Finno-Ugric background, which in the east reached at least the upper reaches of the Volga River. In the coastal area four distinct cultural regions, which match the historical counties Saaremaa, Läänemaa, Harjumaa, and Virumaa, could be distinguished as early as in the Middle Iron Age. However, there is no evidence to suggest that they represented political or administrative territories in the second half of the first millennium. The two principal cultural areas of Estonia developed against the background of different cultural contacts and climate, which was more favourable for primitive agriculture in coastal region than inland. The regional differences in culture show remarkable stability — they can be observed in the Late Bronze Age at the latest and have partly been preserved to this day.

General Conclusions

The present book covers the period AD 450–1050 in the history of an area by the Baltic Sea. The span of 600 years is equal to about 24 generations. This period in Estonian history is represented by less than 50 forts, about 40 settlement sites, almost 200 burial sites, and slightly over 60 hoards, as well as by stray finds. It is not much. Moreover, the majority of the sites date from the end of this period — the 10th century and the first half of the 11th century — and few sites have been excavated on the contemporary scientific level. Therefore, it is inevitable that our knowledge of the Middle Iron Age and the Viking Age remains patchy, and many questions are without answers.

In the economic system that included the Baltic Sea region and eastern Europe, Estonia was on the periphery, where the power, trading, and handicraft centres did not exceed local significance. Nevertheless, this stretch of land was closely tied to the rest of the region through a network of economic and human relations. During the Migration Period, the centre in relation to Estonia was the south-eastern coast of the Baltic Sea and eastern Scandinavia, and during the Pre-Viking and the Viking Age this role was performed by eastern Scandinavia. As a result of Scandinavian trade expeditions a trade system developed that embraced the Baltic Sea region and eastern Europe as far as the Volga River and the Black Sea. As part of this system, the first early urban centres emerged on the shores of the Baltic Sea. Also, in the course of this process Staraja Ladoga, Novgorod, and Pskov emerged in the eastern vicinity of Estonia.

In the second half of the first millennium Estonia was not a single cultural or political entity. The archaeological evidence shows that Estonia was divided into two different cultural zones — coastal Estonia and inland Estonia. The grounds for this difference were the overseas contacts of the coastal regions and the more favourable climate for primitive agriculture there than inland. The culture of coastal Estonia bore evidence of contacts with Scandinavia; north-western Estonia had contacts also with south-western Finland, and Saaremaa with Courland and Livonian areas. Cultural phenomena characteristic of inland Estonia can be best observed in south-eastern Estonia to the south of the Emajõgi River and to the east of Lake Võrtsjärv. In the second half of the first millennium this area belonged to the vast cultural space that reached the upper reaches of the Volga River. During this period the entire area constituted a Finno-Ugric linguistic and cultural continuum, which spanned from Estonia and Finland to the areas of the Djakovo Culture around the upper reaches of the Volga.

The social structure of the Middle Iron Age and the Viking Age was an agrarian society without urban centres, with most people living in isolated

farmsteads. An individual farm, accommodating on average 6–8 people, constituted the main unit in the settlement pattern of this period. The dwellings of the time were small chimneyless log cabins with *keris* stoves, which in winter would accommodate also animals. The farm buildings were surrounded by fields, with slash-and-burn lands and pastures in the distance; the latter could have been shared with neighbouring farmsteads. Land cultivation and to a lesser extent animal husbandry served as the main sources of subsistence. In northern and western Estonia mainly permanent fields were tilled. In southern Estonia slash-and-burn agriculture was more important than in the coastal zone, but there, too, its significance decreased over time because of increasingly dense settlement. Hunting and fishing were important as subsistence practices only in southern Estonia.

However, the majority of the sites (forts, fort-and-settlement complexes, and mortuary sites) and artefact finds (weapons and jewellery) do not reflect the activities and ambitions of simple farmers but those of nobility. In the Pre-Viking Age and the Viking Age one part of noble families established their residences in forts with an adjacent settlement, the latter accommodating the nobleman's military retinue and craftsmen. The fort-and-settlement complexes were the most important centres of power in Estonia at the time. However, it is highly likely that the population of even such centres was not larger than a few hundred people, and the nobleman's power did not reach farther than a day's journey from his fort or farmstead. Unfortunately, there is no detailed data about government and administrative organization available about this period.

Although handicraft and trade can be studied with greater success on the basis of the archaeological sources than farming, they were, in fact, of minor importance. Most handicraft products were made in one's household for one's own use. Products made by professional craftsmen included jewellery, high-quality textiles, more sophisticated clothing and footwear, and weapons. The quantity and range of such products seem to have increased constantly throughout the second half of the first millennium. Starting with the Pre-Viking Age iron smelting and iron-working were the best developed branches of handicraft. From the 10th century onwards, iron production might have been the only industry in which production volumes exceeded the local need, first and foremost in Saaremaa and perhaps also in northern Estonia.

Trade was mainly the preserve of noblemen. In the Migration Period and at the beginning of the Pre-Viking Age trade in the Baltic Sea region mainly consisted in mutual exchange of prestige goods by noblemen. In the 8th–9th centuries Estonia became integrated in the trade networks of northern and eastern Europe, which is proved by hoards of silver coins and numerous imported items. Usually trade consisted in exchanging goods for goods. However, in the second half of the Viking Age silver, measured by weight, started to be used as currency.

We do not know much about the world view and beliefs of people of this period. People may have worshipped various deities and other supernatural beings, for whom offerings were made in order to ensure a good crop and healthy cattle. It was probably believed that souls, at least the souls of people of noble birth, would live on after their death somewhere where they would need weapons and other implements, which were provided as grave goods.

When turning to the major changes that took place during this period, one has to first mention that according to the previous periodization of Estonian archaeology, the most important chronological divide of the first millennium AD had been placed at the end of the Roman Iron Age, around the year 450. This time marked the end of the establishment of typical *tarand* graves, the most monumental stone graves in Estonian pre-

history. The Migration Period, which followed the Roman Iron Age, was regarded as a period that ushered in a new era in which prehistoric Estonian society started to take the shape that is known from the written records from the beginning of the 13th century. Also, the temporal scope of this book proceeded from this view.

However, after an examination of all the existing artefactual record, the excavation reports, and the research literature on the Estonian Middle Iron Age and the Viking Age, I would shift the beginning of the era of changes, which until now has been at the beginning of the Migration Period, to the end of this period — around the year 550. Although in the mid-5th century the building of a certain type of graves came to an end, new grave types emerged, and weapons and tools appeared in graves, one might still claim that the Migration Period is a direct continuation of the Roman Iron Age. The burial customs changed, but in the sphere of settlement and economy the end of the Roman Iron Age did not mark any important transformation. The entire artefactual culture of the Migration Period continued to be based on direct or indirect Roman examples. However, while the Migration Period did witness renewed ties with Sweden that had been interrupted at the beginning of the Roman Iron Age, the previous trade and cultural contacts with the south-eastern coastal region of the Baltic Sea were preserved throughout the period.

The true change took place in the mid-6th century, when the human impact on nature abruptly decreased, and sites and artefact finds seem to have disappeared for at least half a century from the archaeological record. On the other hand, this period is represented by more votive deposits than any other era. This shows that the land and the people were struck by a major disaster, probably starvation, as a consequence of which many people died. It could well be that the disaster was caused by the climatic anomaly in 536, described in Mediterranean chronicles. However, this natural disaster and its consequences have not yet been fully explained.

The crisis in the mid-6th century and the related changes in the economy, culture, and society can be observed everywhere in northern Europe. The archaeological record suggests that the crisis initiated a kind of 'reboot' process in the society in the decades that followed, with the advancements of the period leading up to the crisis lost. The new era was fully manifested during the period that is known as the Viking Age. In Estonia its prelude, the 7th–8th centuries, was completely overshadowed by the Viking Age with regard to both the number of sites and the diversity of finds. The Pre-Viking and the Viking Age in Estonia are characterized by continuous development — increases in the number of sites, in the quantity and range of artefact finds, as well as in the human impact recorded in pollen diagrams can be observed. Accordingly, the population increased, and agricultural settlement expanded. The background of these developments probably included more favourable climatic conditions than before, agricultural innovations, and the rapid development of seafaring. Power centres consisting of a fort and a settlement emerged, which suggests that the power of the nobility increased. Throughout the Pre-Viking and the Viking Age one can observe increasingly close ties between coastal Estonia and Scandinavia, especially eastern Sweden and the island of Gotland. Inland Estonia had the closest trade and cultural contacts with the eastern and southern neighbouring areas. From the 10th century onwards, one can observe the economic and cultural impact of Rus centres on Estonia, especially in the basin of Lake Peipsi. In ca 1030–1061 there was even a fort of the Kievan grand prince in Tartu, coupled with an extensive settlement.

The first half of the 11th century was a transition period from the Viking Age to the Final Iron Age. These decades witnessed a major change

in settlement — the majority of the forts and the adjacent settlements inhabited in the Viking Age were abandoned, and a settlement pattern characteristic of the Final Iron Age emerged. During the 11th century the land use systems and village settlement emerged that were generally preserved, despite foreign conquests and political and religious restructuring, until the 19th century. At the beginning of the 11th century, new types of weapons and jewellery appeared, which were mostly used in the Final Iron Age and partly even in the historical time. However, these developments will be discussed in the next volume of *Estonian Archaeology*.

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Abbreviations

AVE // AFE = Arheoloogilised välitööd Eestis / Archaeological Fieldwork in Estonia 1997–2007. // Archaeological Fieldwork in Estonia / Arheoloogilised välitööd Eestis 2008–.

EAA // EJA = Eesti Arheoloogia Ajakiri / Estonian Journal of Archaeology, 1–7 (1997–2003). // Estonian Journal of Archaeology / Eesti Arheoloogiaajakiri, 8 – (2003–).

NHB = National Heritage Board of Estonia.

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Index of Archaeological Sites

Aakre, fort-and-settlement complex, 40, 52, 56, 58–59, 67, 91, 109, 111, 120, 154–155, 230
Ääsmäe, hoard, 221, 227–228
Adila-Oru, burial site, 252
Äherdi, burial site, 251
Ahisilla, fort, 40, 47, 59
Aindu, settlement site, 58, 64–65, 67, 69, 74, 93, 102, 155
Aizkraukle, fort in Latvia, 156
Alansi, hoard, 221
Ala-Pika, settlement site, 58, 64–65, 98, 103, 129, 148, 151–152, 313
Alasoo, burial site, 80, 252
Alavere manor, stray find (spearhead), 191
Alt-Laari, fort-and-settlement complex, 40, 56–59, 76, 197, 243
Alulinn, hoard, 124, 221–222, 291–292, 296
Ängby, rune stone in Sweden, 31–32
Angerja, settlement site, 64
Āraiši, lake settlement in Latvia, 62, 87–88
Are, burial site, 252
Århus, early urban centre in Denmark, 26, 219
Arniko, burial sites, 79, 121–122, 151, 214, 251, 253, 271
Aru (or **Keblaste**) manor, burial site, 252
Arula, settlement site, 64
Aseri, burial site, 251–252, 255, 277
Asva, fort, 40, 51, 59, 101, 197, 211, 238, 241, 243
Auvere, burial site, 252

Baghdad, urban centre in Asia, 218, 224
Beloozero, early urban centre in Russia, 26, 100
Belz, early urban centre in Ukraine, 33
Birka, early urban centre in Sweden, 18, 26, 28, 72, 74, 76, 81, 89, 92, 117, 137, 144, 151, 176, 211, 218–219, 314, 320, 323
Bukhara, capital of the Samanid Emirate, 218, 225
Bulgar, capital of Volga Bulgaria, 218

Cologne, town in Germany, 227
Constantinople, capital of the Eastern Roman Empire, 27–28, 32, 218, 226

Damascus, urban centre in Asia, 218
Daugmale, fort in Latvia, 150, 156, 237

Ehmja (Kuradimägi), fort, 52
Ehmja (Madise), burial site, 250, 265
Ehmja (Varetemägi), burial site, 93, 149–150, 167, 169, 174, 189, 191, 201–205, 229, 250–252, 260–261, 281, 285–287, 316
Erra, burial site, 174
Erra-Liiva, hoards, 221
Esna manor, stray find (spearhead), 190–191
Essu, burial site, 251–252
Essu, hoard, 153–154, 220–222, 251, 291, 296
Essu, stray find (axe), 125

Frugården, rune stone in Sweden, 31

Gnëzdovo, early urban centre in Russia, 26, 89, 176, 218–219
Goslar, town in Germany, 226–227
Grobiņa, settlement site in Latvia, 26, 28

Haimre, burial site, 151, 252
Haljava, burial site, 251
Haljava, stray find (spearhead), 190–191
Hamburg, town in Germany, 26
Hannuste, burial site, 99, 251
Harku, settlement site, 64
Harmi, burial site, 252, 265
Hattelmala in Hämeenlinna, hoard in Finland, 222–223
Hedeby, early urban centre in Germany, 18, 26, 28, 92, 144, 176, 218–220, 227, 233, 235, 239, 314, 320
Helgö, early urban centre in Sweden, 26, 28, 170, 174
Hindoala, burial site, 251
Hinniala, fort-and-settlement complex, 40, 44, 47, 56, 76, 93, 129, 193, 243, 325
Hõbeda, stray find (spearhead), 190, 192
Hönsåkerskullen in Karjaa, burial site in Finland 268
Hummuli, burial site, 148, 252
Hummuli, hoard, 158, 221–222, 291, 296

Igavere, burial site, 252
Igavere, hoard, 124, 221–222, 291–292, 297
Iila, burial site, 89, 92, 126, 164, 196, 198–199, 204, 207, 252, 254, 256, 280–281
Iila, field remains, 98
Iilaste, stray find (spearhead), 190, 192
Ilmandu, field remains, 95–97
Ilmatsalu, burial site, 124–125, 252, 265
Ilpla, burial site, 252
Ilumäe, burial site, 72, 250
Imma, hoard, 221
Inju, burial site, 162–163, 251, 265
Iru, fort-and-settlement complex, 40, 45–47, 52–53, 55–59, 65, 67, 69–76, 78, 80–81, 91–92, 100, 102, 105, 109, 118, 123, 130, 134, 140, 144, 152, 197–200, 230, 233, 241–243, 314, 319–320, 323
Iru, burial site (stone-cist graves), 252, 256
Iru (Matsu), burial site, 251–252, 281
Itil, Khazar urban centre, 218
Izborsk, fort in Russia, 68, 78, 99, 105, 121, 129, 151

Jäbara, burial site, 92, 139, 174, 186–187, 201–202, 250, 290, 318
Jägala, fort, 40, 44–45, 133
Järise, hoard, 221
Järve, burial site, 250
Järve, hoard, 185, 220–222, 291, 293
Joa, settlement site, 64, 73–74
Jõe, burial site, 252
Jõelähtme, burial site, 201–202, 252
Jõelähtme, settlement site, 63–64
Jõuga, burial site, 84, 252

Kaarlijärve, settlement site, 64, 80
Kaarma, stray find (spearhead), 194–195, 197
Kaarma parish, stray find (lock), 93
Kaarna, settlement site, 64, 80
Kaarnajärve, settlement site, 320
Kabala, settlement site, 64
Kaberla, settlement site, 73–74
Käbiküla, burial site, 169, 251
Käbla, burial site, 250, 264–265
Kaersoo, stray find (sword), 186
Kahala, burial site, 252
Käku, burial site, 92, 144, 160, 165, 171–172, 194, 252, 262–263, 287
Kalana, fort, 40, 44–45, 52
Käldamäki in Vöyri, burial site in Finland, 285
Kaliküla, hoard, 221
Kalmumäki in Kalanti, burial site in Finland, 74
Kalvi, burial site, 250
Kamno, fort in Russia, 48, 68, 78, 121
Kanama, burial site, 182, 184, 251, 281
Käräjämäki in Eura, burial site in Finland, 91
Kardla, hoard, 132, 157, 161–162, 221–222, 291, 294
Kärevere, burial site, 252
Kärla, fort, 40, 47, 51, 59, 213
Kärneri, stray find (spearhead), 195–196

Karula, fort-and-settlement complex, 40, 52, 56
Kaseküla, field remains, 95, 97
Kassinurme, fort-and-settlement complex, 40, 47, 56
Kata (Heinassoo), corduroy road, 243
Kaupang, early urban centre in Norway, 26, 28, 219, 320
Kavastu, hoard, 221
Keava, fort, 34–35, 40, 44–45, 47, 56–57, 59, 74, 76, 102–103, 195, 307, 314, 320
Kehra, burial site, 90, 204, 252, 265
Kehra, hoard, 73, 153, 221, 225–226
Keila, ornament find, 146–147, 163
Ķenteskalns, fort in Latvia, 78
Keo, burial site, 252
Keskvere, burial sites, 106, 130, 134, 204, 251–252, 265–267, 285–286
Kibura, settlement site, 64
Kiev, urban centre in Ukraine, 19, 29, 33–35, 59–61, 83, 219, 225, 227, 236
Kiikka in Satakunta, burial site in Finland, 141
Kirbla, burial site, 136, 252, 285, 287, 355
Kirimäe, burial site, 90, 124, 127, 132, 138–139, 146–147, 157, 161–162, 181–182, 187, 190–191, 201–202, 250, 264–265, 268
Kirumpää, hoard, 221
Kisejärv, stray find (axe), 124
Kloodi, fort-and-settlement complex, 40, 57, 314
Kloodi, hoard, 221
Kobratu, burial site, 252, 281, 283
Kobruvere, settlement site, 64, 80
Kodasema, burial site, 134, 252
Kodijärve, burial site, 252, 265
Koela, burial site, 250, 265
Kogula, burial site, 252
Kohtla, burial site, 162
Kohtla, hoard, 153, 221, 224
Kohtla-Järve, burial site, 250
Koigi, hoard, 221
Kõiguste, stray find (pin), 139
Koila, burial site, 148, 251–252
Koila, fort, 40, 45, 243
Koimula, burial site, 252
Kokumuiža, hoard in Latvia, 293
Kolu, burial site, 251–252
Kõmsi, burial site, 229
Konguta, burial site, 89, 252
Kõnnu, burial site (barrows), 79, 251, 273
Kõnnu, burial site (underground cremations), 250, 252, 265
Konuvere, fort, 174, 230
Kõola, burial site, 73, 146–147, 164, 252, 256–257
Koonga, hoard, 221
Koorküla, hoard, 124–125, 193, 221–222, 249, 291, 293
Kõrenduse, burial site, 250
Kõruse, burial site, 144, 162, 251
Kõrveküla, burial site, 168, 252
Kose, hoard, 152, 226–227, 230
Koseveski, burial site, 88–89, 99, 251, 289
Kostivere, burial site, 252
Kriimani, finding place of a silver vessel, 87, 221–222, 291
Kudina, settlement site, 64, 84
Kuigatsi (**Puka**), fort, 52
Kukruse, burial site, 142, 174
Kunda I, hoard, 120, 124, 182, 191, 193, 221–222, 291–292, 296
Kunda II, hoard, 221–222, 291, 296
Kunda, sacrificial deposit (pin), 220–222, 249, 291, 293
Kuningaküla, burial site (barrows), 84, 252
Kuningaküla (Stroga), burial site, 252, 265
Kuninguste, burial site, 139, 250, 280
Kurevere, burial site, 151–152, 251–252, 263, 289
Kurista, fort, 40, 47–48, 59
Kurna, burial site, 90, 130, 139–140, 161, 190–191, 205, 250–252, 255, 287
Kutsala, field remains, 98
Kuude, burial site, 84–86, 125, 252
Kuusalu (Pajulinn), fort-and-settlement complex, 40, 43, 46, 52–57, 59, 68–69, 73–74, 76, 78, 80, 102–103, 105, 121, 198, 314, 320
Kuusalu, burial site, 202, 252
Kuusiku, burial site, 252
Kyrksundet, harbour site in Finland, 243

Laadjala, burial site, 188–189, 252, 281
Laekvere, burial site, 252
Lagedi, settlement site, 64, 74, 81
Lagedi, burial site, 72, 133–134, 139, 167, 189, 250–252, 255–256, 277
Lahepera, burial site, 82–86, 89–90, 127, 135, 144, 146, 154, 156, 163–164, 166, 169, 171–173, 197, 199, 205, 207, 252, 256, 281–283, 289
Lähte, fort-and-settlement complex, 40, 56
Lähtse, settlement site, 64
Lähtse, stray find (bracelet), 163
Laossina, burial site, 140, 149, 251–253, 269–273, 285
Lapetukma, settlement site, 64
Laukskola, burial site in Latvia, 81
Leebiku, stray find (pendant), 150
Leedri, burial site, 134, 250, 252
Leeska (**Lezgi**), burial site in Russia, 287
Lehetu, burial site, 252
Lehmja, settlement site, 58, 64, 184
Lehmja-Loo, burial site, 88, 90, 124, 130, 148, 162, 182, 187, 190–191, 204, 250–251, 259–260
Leina, burial site, 139, 251
Lemmaku, burial site, 122, 214, 251, 253, 273
Lepna, burial site, 72, 90, 92, 139, 146, 148–149, 157, 161, 167, 177, 201, 203–204, 250, 277–279, 285, 301, 322
Lepna-Taaravainu, burial site, 252
Lepna-Taaravainu, stray find (sword), 183
Levala, hoard, 221
Levänluhta in Isokyrö, burial site in Finland, 285
Lihula, burial site, 90, 106, 108, 124, 150, 162–163, 169–170, 192, 203, 250–251, 257, 285–287, 312
Lihula, fort, 40, 47, 51, 59
Lihula, hoard, 221
Liiva-Putla, burial site, 204, 250, 252, 255, 284
Lindora, burial site, 79, 84–85, 88, 90, 93, 251, 271, 285–286
Linnaaluste, settlement sites, 34, 56–58, 67, 74, 102–103, 156, 307, 314
Linnakse, burial site, 250
Linnakse, hoard, 226
Linnamäe, burial site, 251–252, 265–266
Linnuse, settlement site, 64
Ljubahin, burial site in Russia, 150
Lõhavere, fort, 54, 86, 154
Lohu, fort-and-settlement complex, 40, 53, 56, 59, 122, 320
Lõmala, hoard, 221
Loona, burial site, 251–252
Loosi, burial site, 79, 120–121, 150, 211, 214, 251, 273
Loosi, hoard, 159, 221–222, 291, 296
Luige, burial site, 187, 250, 252
Luistari in Eura, burial site in Finland, 194, 208, 236
Lüllemäe, stray find (axe), 124
Lümanda, hoard, 221
Lund, town in Sweden, 61, 211

Mädara, fort, 246
Mäense, burial site, 250
Mäetaguse, burial site, 197, 207, 252, 281
Mähkli, settlement site, 64
Maidla, burial site, 60, 126, 197–199, 203, 214, 229, 236, 250, 252, 257–258, 260–261, 264, 280, 285–287, 312, 316
Mainz, town in Germany, 227
Majala, settlement site, 64, 80
Mäksa, hoard, 221
Mäla, burial site, 139, 144, 251, 261
Mäletjärve, burial site, 105, 252
Malla, burial site, 250
Meeksi, hoard, 221
Metsaküla, hoard, 221, 224, 227–228
Mihkli parish, stray find (pin), 139
Mõigu, hoard, 157
Mõigu, settlement site, 64
Mõigu (Peetri), burial site, 88, 93, 164–165, 250, 252
Mõisaküla, burial site, 252
Mõrgi (Kuningamägi), fort, 40, 47, 59
Mudiste, settlement site, 64
Mügra (Tordi), burial site, 252
Mustamäe in Tallinn, corduroy road, 243
Mustamäki in Halikko, burial site in Finland, 159–160
Mustivere, settlement site, 64, 77, 80, 91

Muuksi, fort, 241–242
Muuksi, burial site, 80
Muuntajamäki in Sääksmäki, burial site in Finland, 141

Nadalama (Matsi), settlement site, 64
Narva (Joaorg), fort-and-settlement complex, 40, 47, 57, 243
Navesti, hoard, 158, 221–222, 291, 296
Nishapur, urban centre in Asia, 218
Nõva, hoard, 221
Novgorod, town in Russia, 19, 26, 29–31, 33–35, 76, 83, 85, 87, 89, 93, 100, 105, 108, 148, 156, 174, 180, 218–219, 227, 232–233, 236–238, 245–246, 248, 325, 327
Novgorod, Rjurik's Fortress, 74, 83, 219, 233, 323
Nurkse, fort-and-settlement complex, 40, 57
Nurme manor, stray find (axe), 125–126
Nurmsi, burial site, 123, 169, 250–251, 254, 287

Obinitsa, burial site, 251, 270–271
Obinitsa, stray find (axe), 125
Ojaveski, burial site, 90, 92, 139–140, 142, 148–149, 164–165, 170–171, 179, 250–251, 254, 290
Olustvere, hoard, 152
Olustvere, settlement site, 58, 64, 66–67, 79–80, 125
Oonga, burial site, 252, 265
Öötla, ornament find, 145–147, 159
Otepää, fort-and-settlement complex, 40, 43, 47, 56, 59, 65, 77–78, 80–82, 86, 90, 99, 102, 109, 121, 125, 140, 155–156, 163, 176, 187, 197, 319–320
Oti manor, burial site (?), 138
Õvi, 78, 82, 84, 101, 108, 182, 185–186, 252, 281, 283

Paali, burial site, 80
Paali, hoards, 132, 157, 161–162, 166, 169, 221–222, 291, 295
Pada, burial site, 201–202, 250
Pada, fort-and-settlement complex, 40, 47, 52, 54–59, 65, 67–69, 72, 76, 78, 91, 101–102, 106–107, 109, 118–119, 130–131, 135, 144, 154–156, 165, 243, 314, 320
Pada-Kohina, settlement site, 64
Padise, fort, 40, 47, 52, 59, 243
Paemõis at Rõõsa, settlement site, 63–64
Paevere, burial site, 251
Päidla, burial site, 121, 159, 176
Päidla, settlement site, 64, 80
Päidla, stray find (axe), 126
Paikna, burial site, 252
Paiküla, burial site, 250–252
Paju, burial site, 92, 138, 148, 167, 174, 184, 189, 201–202, 250, 277–279, 253, 322
Pajumaa, burial site, 142, 250–252, 265
Pajumõisa, burial site, 250, 252
Pajusi, burial site, 89
Paljassaare, hoard, 221, 224
Paluküla, hoard, 89, 133–135, 137, 140, 157, 184–185, 190–192, 205–206, 221–223, 231
Paluküla, stray find (bracelet), 163
Pamma, burial site, 252
Pappilanmäki in Eura, burial site in Finland, 141, 171
Parasmaa (Vahenurme), stray find (pin), 140, 142
Parivere, burial site, 252, 265
Parivere, hoard, 151–152, 221
Paunküla, hoards, 153–154, 221, 228
Paviken, harbour site in Gotland, Sweden, 233, 243
Peatskivi, fort-and-settlement complex, 40, 44, 47, 56, 198–199
Peedu, fort-and-settlement complex, 40, 45, 52, 56, 59, 80–81, 118, 130, 184, 189, 243, 314, 319
Pidula, field remains, 98
Piila, burial site, 93, 165, 172, 252, 262–264, 274, 285, 287
Piilsi, hoard, 221–222, 231, 290
Pikkjärve, burial site, 133, 250
Pöide, burial site, 253
Pöide, fort, 51, 69, 89, 195–196, 198–199, 209, 238, 243, 321
Pöide, settlement site, 64
Pöide parish, stray find (fibula), 134
Polatsk, early urban centre in Russia, 26
Põlgaste, burial site, 251, 271
Põltsamaa, hoard, 221, 225

Prague, town in Bohemia, 218, 232
Preedi, burial site, 150–151, 162, 250–251, 257
Proosa, burial site, 72, 90, 92–93, 101, 123, 132–133, 138–140, 142, 148, 161, 167–171, 173–174, 177, 179, 181, 184, 188, 190, 201–202, 208, 250–252, 256, 259–260, 277, 290, 316, 323
Pskov, early urban centre in Russia, 19, 26, 34, 56, 60, 62, 68, 78, 82–83, 85, 129, 180, 233, 236–238, 245, 248, 273, 321, 325, 327
Pühaste, hoard, 121, 146–149, 159, 165, 176, 220–223
Pulleritsu, settlement site, 64
Purdi, burial site, 250
Purtse (Tarakallas), fort-and-settlement complex, 40, 47, 52, 54, 57, 197–200, 243
Purtse-Matka, burial site, 250
Püssi, burial site, 125, 128, 185, 188, 207, 250, 252, 265–266
Püssi, stray find (pin), 141–142

Rääbise, hoard, 221
Raadi, hoard, 221
Raadi manor, finding place of a *srebrenik*, 227
Räägi, burial site, 252
Räägi, hoard, 221
Raasiku, burial site, 84, 86, 252
Raatvere, burial site, 83, 85–87, 89, 93, 101, 114, 119–120, 126–127, 136, 143, 146, 163–164, 166, 168, 173–176, 182, 185, 193–194, 197, 207, 214, 252, 265–267, 281–283, 316
Raatvere, iron smelting site, 114–115, 266, 282
Raatvere, settlement site, 64, 80, 84
Rabavere, burial site, 126, 195, 252, 281, 284
Rae, burial site, 140, 240, 250–251, 277
Rahivere, settlement site, 64, 84
Rahu, burial site, 146–147, 252, 260
Raigastvere, burial site, 80, 252
Rakke, cremation site, 274
Rakvere, fort, 40, 44–45, 47, 59
Randvere, burial site, 153, 205, 236, 252, 260, 289
Rapola at Sääksmäki, fort in Finland, 81
Ratla, stray find (hammer), 123
Raudi, burial site, 101, 252, 265
Rebala (Lastekangrud), burial site, 256
Rebala (Presti), burial site, 142, 184, 193, 251, 255, 290
Rebala, settlement site, 64, 74, 320
Reola, settlement site, 64, 84
Ribe, early urban centre in Denmark, 26, 28, 219
Ridala, burial site, 252
Rikassaare, hoard, 181, 186, 190–192, 221–222, 291–292, 297
Ristimäki in Kaarina, burial site in Finland, 277
Risti, stray find (spindle whorl), 60
Riuma, burial site, 252
Rohe, hoard, 221, 227
Rohu, burial site, 74, 252
Rõngu, hoard, 221
Roobaka, burial site, 251
Roosiku, settlement site, 64
Rootsiküla, hoard, 221
Ropka, hoard, 221
Rõsna-Saare, burial site, 79, 87–88, 92–93, 102, 129, 137, 149–151, 169–170, 214, 251, 253, 268, 271–273, 285–286, 289–290, 312
Rõuge, fort-and-settlement complex, 40–42, 47–50, 52, 54–59, 66–69, 77, 79–82, 84, 86, 89–93, 102–103, 106, 109–110, 117–119, 121–123, 125, 128–131, 140, 144, 148–149, 151–152, 154–156, 158, 162, 176, 192–193, 197–200, 211, 221, 224, 230–231, 314
Rõuge, hoard, 50, 221, 224, 230

Saadjärve, fort-and-settlement complex, 40, 47, 54, 56, 58, 70, 80, 91, 151–152
Sääritsa, settlement site, 84
Sääsekõrve, settlement site, 64
Saha (D), burial site, 101, 139, 148, 170, 174, 250
Saha (Mardimägi), burial site, 138, 250
Saha, settlement site, 63–64, 67, 81
Saka, burial site, 250
Salevere, fort, 78, 98
Salme, burial site, 91–92, 119, 128, 182, 184–185, 189, 192, 198, 201, 208, 239–240, 251, 253, 275–276, 287, 299, 318
Samarkand, urban centre in central Asia, 218, 225

Sammaste (Kirikumägi), burial site, 140, 250–252, 255
Sammaste (Taru), burial site, 252, 255
Sargvere, settlement site, 136
Sarkel, Khazar capital, 218, 225
Saue, hoard, 159, 221, 225
Saunakünka, iron smelting site, 113–114
Savastvere, settlement site, 64, 84
Savastvere, stray find (neck ring), 155, 160
Savastvere, stray find (pin), 143
Seli, settlement site, 64
Severiki, burial site in Russia, 273
Sigtuna, early urban centre in Sweden, 61, 83, 156
Siksälä (Kalmetemägi), burial site, 78, 84–86, 252, 265, 267
Siksälä (Kirikumägi), burial site, 252–253, 265, 267
Simuna, stray find (spearhead), 192
Sipa, burial site, 252, 265
Släbro, rune stone in Sweden, 32
Smolensk, early urban centre in Russia, 26
Sooküla, settlement site, 64
Soontagana, fort, 40, 47, 51, 54, 59, 102
Sootaga, hoard, 221
Sõrve, burial site, 190–193, 251
Speyer, town in Germany, 227
Staraja Ladoga, early urban centre in Russia, 18, 26, 28, 83, 92, 100, 120, 129–130, 155, 218–219, 224, 233, 237, 327
Suure-Jaani, stray find (sword), 182, 186
Suure-Kambja, settlement site, 64, 80, 193, 320
Suure-Kareda, burial site, 252
Suure-Lähtru, hoard, 221
Suure-Rõsna, burial site, 79, 167, 251, 271–273, 285–286, 289
Suur-Nõmmküla, hoard, 221
Suur-Rahula, burial site, 252
Suur-Rahula, stray find (axe), 127

Taadikvere (Kivimäe), burial site, 252
Taadikvere (Kõõre), burial site, 136, 190, 252
Tagametsa, burial site, 151, 251
Tähtvere in Tartu, stray find (neck ring), 158
Takka-Aesku, burial site, 252
Talka, burial site, 251, 253
Tammiku, burial site, 252
Tamsi, burial site, 250, 252
Tarbja (Kalamehe), burial site, 252
Tarbja (Miku), burial site, 251, 255
Tartu, fort and settlement, 19, 33–35, 40, 47, 54, 56–57, 59–62, 80–86, 92, 100, 117, 119, 121–122, 129–130, 154–155, 197, 199–200, 224, 236–237, 243, 245–246, 314, 319–320, 329
Tartu, hoard, 221
Tigase, burial site, 252
Tilleoru, fort-and-settlement complex, 40, 47, 56
Tīra, hoard in Latvia, 202
Tõdva, iron smelting site, 114–116
Toila, burial site, 162, 197–198, 251–252, 254–255, 290
Tõnija, burial site, 251, 255, 284
Tõnija, stray find (scabbard chape), 188–189
Tõnuvere, stray find (axe), 124–125
Toolse (Ussimägi), fort-and-settlement complex, 40, 56, 243
Tooste, burial site, 252
Tori, stray find (sword), 183
Tõrma, settlement site, 64
Tõrma (Reinapi), burial site, 132, 250, 254
Tornimäe, burial site, 252
Tornimäe, harbour site, 76, 101, 106, 110, 238, 241, 243, 281
Tõrva (Tantsumägi), fort-and-settlement complex, 40, 47, 50, 56–57, 59, 67, 77, 80, 82, 154–155
Tõrvase, stray find (spearhead), 109, 195
Toshkent, urban centre in central Asia, 225
Tõugu, burial site, 97, 256
Tõugu, field remains, 95, 97
Truso, early urban centre in Poland, 26, 219, 235, 237
Tserepi, settlement site, 64, 81
Tsiistre, burial site, 250, 253
Tsitre, harbour site, 241–242
Tuiu, iron smelting area, 51, 114, 116–117, 213
Tuula, burial site, 252
Türsamäe, burial site, 187, 250

Uduvere, burial site, 229, 252
Uduvere, hoard, 221
Uduvere, stray find (brooches), 137
Üksnurme, burial site, 251
Ulila, burial site, 126–127
Unipha, burial site, 250
Unipiha, fort-and-settlement complex, 40, 44–45, 47–48, 52, 56–57, 59, 67, 70, 80–82, 91, 106, 117, 121–122, 149, 155–156, 165, 197, 199, 319
Urvaste, fort, 40, 47, 52, 59
Uugla, burial site, 89, 252, 260–261, 285, 287
Uugla (Veskimäe), settlement site, 64, 69, 142
Uuri, hoard, 157, 221–222, 291, 296
Uusküla, burial site, 253, 274
Uusküla, field remains, 95, 97

Vaabina, hoard, 221, 226
Väänikvere, hoard, 221, 225
Vaibla, stray find (weights), 228–229, 245
Väike-Apja, stray find (hoe), 99
Väike-Kalju, burial site, 251, 265
Väike-Lähtru, burial site, 252, 265
Väike-Maarja, burial site, 125, 207, 252
Väike-Rõude, hoard, 137, 221, 228, 230
Valgjärv, lake settlement, 58, 62, 77, 80, 87–88, 246
Valjala, fort, 198
Väo (Jaani and Kangru), burial sites, 250, 255
Väo, settlement site, 64
Väo, stray find (bracelet), 161–162
Vara, hoard, 221
Varangu, fort-and-settlement complex, 40, 57
Varikkoniemi in Hämeenlinna, settlement site in Finland, 152
Varnja, stray find (silver cup), 86–87, 221–222, 291
Vaskjala, settlement site, 64
Vasta, field remains, 98
Vatku, stray find (sword), 183
Vendel, burial site in Sweden, 191, 205
Venevere, settlement site, 64, 80
Verevi (Läätsa), burial site, 76, 250, 257–258
Verevi (Sandimärdi), burial site, 125, 252
Verilaske, settlement site, 64, 81
Vesneri, burial site, 136, 158, 162, 252
Vesneri, hoard, 221
Vidruka, burial site, 252
Vigala, hoard, 221, 229
Vihula, hoard, 221
Viimsi, burial site, 101, 250, 254
Viira, coin hoard, 221
Viira, hoard, 159, 221–222, 291, 295–296
Viljandi, fort-and-settlement complex, 40, 56, 69, 100, 106–110, 230, 245
Viljandi (Männimäe), settlement site, 58, 64, 80
Villevere, hoard, 105, 157, 159, 161, 174, 221–222, 291, 295
Viltina, burial site, 92, 236, 238, 242, 252, 260, 277
Viltina, harbour site, 128, 238, 241–243, 277
Viru-Nigula (Chapel of St. Mary), burial site, 252, 265
Virunuka, burial site, 164, 250, 252
Visusti, settlement site, 64
Võhma in Läänemaa, burial site, 250, 265
Võhma in Saaremaa, burial site, settlement site, 63–64
Võhma in Saaremaa, field remains, 98
Võhma in Virumaa (Tandemägi), field remains, 95, 97–98
Võlla, hoard, 221, 226
Võnnu in Läänemaa, hoard, 221
Võnnu in Tartumaa, hoard, 221
Võõpsu, hoard, 221
Vooru, fort, 40, 42, 59, 77, 80, 230, 243

Wolin, early urban centre in Germany, 26, 219
Worms, town in Germany, 227, 282

Ylipää in Lieto, burial site in Finland, 150, 202
Yliskylä in Perniö, burial site in Finland, 191, 277

Zalahtov'e, burial site in Russia, 81, 159–160, 281