

Hortus novus



Fresh approaches to medieval archaeology in Finland

Edited by Visa Immonen, Mia Lempiäinen and Ulrika Rosendahl

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FOREWORD

Although the interest of historians in the medieval period in Finland has continued since the 17th century, and the country's first archaeological excavation took place at a medieval site in the 19th century, medieval archaeology as a self-aware academic discipline with specialized professionals did not emerge in Finland until the late 1970s. Since then, the efforts of archaeologists to study and publish medieval material have significantly grown, and the number of post-graduates working on theses in medieval archaeology grew from a few to a dozen at the turn of the millennium. As a matter of fact, several doctoral dissertations are expected to be finished by the early 2010s. If the scholars who received their doctorates in the 1990s are considered as the older generation of medieval archaeologists, the doctoral students now working on their dissertations represent the new generation. To promote their work especially for an international audience, the Society for Medieval Archaeology in Finland has compiled the present collection of articles. This compilation also presents in a nutshell the special characteristics and current disciplinary developments of medieval archaeology in Finland.

The very definition of the chronological limits for the Middle Ages in Finland differs from Central Europe or even the other Nordic countries. In southwestern Finland, the transition from the Late Iron Age to the Middle Ages is regarded as the conversion from prehistory to the historical period and is dated to the 12th and 13th centuries. This transition period is essentially characterized by the establishment of Christianity and the rule of the Kingdom of Sweden in Finland. In the northern and eastern parts of the country, however, Christianity struck root much later. In addition, written sources remained few in number in the rest of Finland far longer. In parts of Lapland, Christianity did not gain an established position until the 18th century, when also the first written sources appeared. Furthermore, the Orthodox Church, the state of Novgorod and later the kingdom of Russia left a permanent imprint on the easternmost parts of present-day Finland.

In Finland, the medieval period is considered to have ended in the 16th century, when King Gustavus Vasa ascended to the Swedish throne in 1523. He established a hereditary monarchy and began the transformation of a medieval kingdom into a modern nation-state. Another crucial year was 1527, when the Reformation of Sweden was made official and ties with the Catholic Church were severed. Despite these dramatic political events, the structure and economic basis of society changed at a slower pace. From a socio-economic point of view, historians usually date the transition from the Middle Ages to the modern era to the late 16th century.

In addition to the time frame, also other features of the medieval period in Finland mark it as a special case in the European context. One defining characteristic is the sparseness and highly biased nature of written sources. In terms of social structure, they were made mainly by ecclesiastical administration and the secular higher classes, and in geographical terms, they concentrated in southwestern Finland. Besides the lack of written sources, Finland, due to its marginal position in the far corner of Europe, is often thought to be a prime example of a periphery. In studies on the effects of Hanseatic trade on local material culture, the distant position of Finland and its reliance on the wilderness economy have been given pivotal significance. Whether one agrees with these established assumptions or not, the fact remains that the paucity of written sources emphasizes the role of archaeology in re-evaluating them and in studying the medieval period as a whole. Moreover, these characteristics make Finnish medieval archaeology an interesting and important case in the field of general archaeological research.

To present fresh views by Finnish post-graduate students on the problems and issues of medieval archaeology, the Society launched in the spring of 2006 an open call for papers for scholars in the discipline working on their PhDs. The original idea for the book came from Kari Uotila, who was the chairman of the Society at the time. The intention was also to provide an opportunity for the members of the Finnish Graduate School in Archaeology to participate in the making of a publication which meets high scholarly standards. The call attracted a lot of interest, and the editors received a number of proposals, of which fourteen were

finally selected for publication. The first drafts of the articles were submitted for academic review at the end of 2006 after which the authors completed them by the spring of 2007.

The collection comprises articles on various subjects covering all aspects of medieval archaeology. Especially pioneering in the context of Finnish medieval archaeology are the four articles on rural archaeology, a field of study that has long remained neglected. In contrast to rural archaeology, four articles deal explicitly with urban material. They reveal the centrality of Turku in urban archaeology, as it is the oldest, largest and most extensively excavated of the six towns founded in Finland during the Middle Ages. The rise of the archaeological study of medieval towns in the 1980s was soon accompanied by interest in post-medieval urban archaeology, and this line of research is represented by one of the articles in the collection. Also the marine archaeology of medieval sites has experienced an immense growth in recent decades. A similar increase has occurred in the study of lines of communication, whether in the form of seafaring routes or land roads.

Although urban cartography and the study of medieval material culture are not new venues of research, they both have experienced a considerable transformation as the consequence of novel theoretical approaches and methodological innovations. Moreover, the use of scientific analyses, including osteological and dendrochronological studies, has provided completely new means for approaching the medieval past. The recent increase in the amount of archaeological material available to scholars as well as the new methodological and theoretical views have also affected the ways in which the research process, the aims of the discipline, and its relationship with contemporary society are conceived. The last two articles of the compilation address medieval archaeology as a process fundamentally incorporating museum practices and communication with the public. Each article in the collection was read and commented by at least two anonymous scholars one of whom was from outside of Finland. The list of the reviewers' native countries comprises Denmark, Estonia, Finland, Norway, Sweden, and the United Kingdom.

The editors would like to express their gratitude to the reviewers, whose efforts have made an invaluable contribution to the finished articles. Also the young authors must be thanked for their enthusiasm and fluid cooperation. Finally, the language checking and the editing and printing of the book were made possible by financial support from Fingrid Plc.

Visa Immonen, Mia Lempiäinen and Ulrika Rosendahl

PRODUCING OBJECTS, USING OBJECTS

ARTEFACTS AND ENCULTURATION – Examples of toy material from the medieval town of Turku

Introduction

This article presents an overview of the medieval toy material found from various excavations in the present-day city Turku, Finland. The background of this article lies in the theory of enculturation and how material culture plays an important role in the enculturation of children. As the term 'childhood' is important to this study, I begin with examining this concept. Every one of us has memories that are connected with our childhood and naturally, we all have our own idea what it is to be a child. But if we observe the concept of 'childhood' from a historical or prehistoric point of view we find the definition to be anything but simple.

In simplified western opinion, childhood is seen as a period of human life cycle, when the individual is not yet fertile. Children are seen as dependent on other people's care; they are not independent and cannot survive alone. Childhood can also be seen as a period when the individual learns skills that are needed in future life. According to Joanna Sofaer Derevenski (1994b, 8), the usage of the western child concept is problematic because it is too narrow and simple. The definition does not permit a consideration of developmental differences between individuals or differences in the amount of independence or status of an individual. According to Kanvall (1995, 8, 9), when we talk about an individual's age we must distinguish three different categories from each other: chronological, biological and social age. When talking about past societies, the grading of a young person as having also at the same time automatically low status reflects our Western definition of childhood with regard to the past and this cannot be done without criticism.

Childhood can be seen as partly a cultural concept, which, according to Leena Alanen (1992, 61, 62), can be compared with the socially constructed idea of gender. The opposite view is represented by the natural, biologically based and developmental-psychological idea of childhood. The juxtaposition of these two ideas limits our understanding of the complexity of the concept of childhood (Kalliala 1999, 33). In archaeology, the term child is usually based on the former view (Derevenski 2000, 8 < Ginn & Arber 1995), and this means that 'children are therefore identified in a naturalized and reductionist

manner as a universal biological category, rather than as social beings whose categorization is a relative concept negotiated through context and the materiality of experience' (Derevenski 2000, 8). This easily leads to an ethnocentric simplification of the idea of childhood. Fortunately, there are studies (e.g. Park 1998) that show us that working from a position where we perceive childhood as culturally constructed and contextual concept can be more than fruitful.

When it comes to archaeological source material, children often have been regarded as the invisible members of society. Reasons for this have been sought from, among other things, the invisible role of children as the working members of the family/society (Ylönen 1999, 16). According to Kathryn A. Kamp (2001, 3), the economic role of children (and women) in prehistoric societies has been underestimated, and scholars have also had an emotional attitude towards childhood. This is why the primary sphere of action of children has been associated mainly with home or the surroundings of the home, and not with public places. Kamp argues that has led to a situation where the traces of the actions of children and women have been traditionally considered to be more invisible than those of men. The archaeological study of childhood needs to recognize the role of children as active and productive members of society (Derevenski 1994b, 10).

But how can we then address children's agency through material culture? The answer is not simple, but still I think it is worth attempting. First of all we should start to think critically about the concept of childhood, which we are about to reflect on the past. Are we still thinking and formulating the idea of childhood through our Western view? For example, even a young child can be skilful if he or she has practised certain skills from a very young age. That is why we cannot automatically think that poorly or hastily made toys (and other artefacts) are made by children themselves. On the other hand we should keep in mind the possibility of finding traces of children's learning processes.

Sally Crawford (1999, xvii) sees children as a separate group, whose standing in society is special: Children are members of a society and try to learn

to act right within the rules and norms defined by this particular society. On the other hand, Crawford claims, the children form a group, which is outside the rest of society and has special rules and needs. This children's anomalous and subliminal position in society has the result that also evidence of adults' attitudes towards children is conflicting. However, Crawford continues, it is important to study and understand this special position of children. Only in this way can we gain a complex picture of the society that is under study.

From the definition of childhood we move now to discuss another term important to this article, viz. the term 'toy'. The fact that toys are not discussed very often in archaeological studies might be partly explained by scholars' attempts to avoid reflecting Euro-American stereotypes on what artefacts of the source material are interpreted as toys (Derevenski 1994a, 4). According to Bo Lönnqvist (1992, 21, 54) studies of toys have previously been limited to studying them merely as artefacts. Due to this, the identification source material from earlier times than the 18th century has been difficult as the more extensive industrial manufacturing of toys did not begin until the 19th century. Lönnqvist considers this as having an effect on archaeologists' analyses of historical toys, which have been based on the 19th-century bourgeois idea of what a toy is. The concept of a toy has been narrowed also by the idea that artefacts should be considered to be toys only if they are made by adults and for the sole purpose of play.

But, of course, children have always been able to make their own toys. Annemarieke Willemsen (1997, 405) stresses that many of the medieval toys were probably made spontaneously by the children themselves. The most suitable materials for these kinds of self-made toys are leather, wood and cloth, all of the materials that are easily accessible, inexpensive and quite durable. At the same time, we must, according to Willemsen, remember that usually artefacts of these materials have not survived to the present day. This has had an effect on our idea of what kinds of toys children played with in the Middle Ages. Of course children have always played also with artefacts that are not primarily considered as toys. There is a medieval account known from England on how in their play children used everyday household artefacts and materials, altering them with their imagination and handicraft skills into the toys that they preferred (Owst 1966, 34). According to ethnographic sources, toys have also been made from materials found in nature (Kaljuvee 1964; Rasmussen 1982, 13).

Small-sized artefacts have often been connected with children. This is probably based on the idea of children being smaller than adults, which can automatically lead to the conclusion that also their artefacts are smaller (Derevenski 2000, 7).

But small-sized artefacts can also be interpreted in a totally different way. For example if we take the small artefacts made of metal, we find that in addition to having been interpreted as toys, they have also been interpreted as magical items (Näsman 1973, 100; Park 1998, 275) or to have been used as grave gifts as substitutes for normal-sized artefacts (Lillehammer 1982, 6–9; Park 1998, 275). We must also notice that many of the small-sized artefacts might have been used in various tasks requiring small tools. Small axes or knives, for example, might have been used by adults in these kinds of tasks (Söyrinki-Harmo 1992, 143). Thus, the small size of an artefact cannot automatically be the primary criterion for classifying it as a toy, we have to have some kind of other evidence as well, such as written or illustrated sources.

Play and toys in the process of enculturation

For the continuity of society, it is important to pass on its cultural traditions to the new generations. Hence, to become a fully authorized member of a society, the individual must adopt its cultural capital (Aukia 1979, 1). Learning a culture can be described as a process in which the individual adapts to the culture and learns how to behave according to his or her social roles (Hultkrantz 1960, 101). This preparation starts at an early age and continues until cultural competence is more or less achieved. However, no explicit end to this process can be pointed out; on the contrary, the process continues throughout the individual's whole lifespan (Hirschberg 1965).

Because of the continuity of the individual's cultural learning, it can be described as a process. In cultural studies, this process is termed 'enculturation' (Hultkrantz 1960, 101, 102; Therkildsen 1974, 90–92; Leimu & Talve 1976, 10). The process of enculturation includes the learning of the society's culture, the transfer of the knowledge to the individual being raised and his or her adaptation to the society. In addition to the above-mentioned conscious attempts at influence that are directed at the individual by other members of the society, the process of enculturation also includes autonomic learning (some of which can be conscious self-upbringing) (Weibust 1969, 211–233).

The play of children can be seen as a part of the enculturation process. Through it the child learns physical and social skills. Play and games offer the child the means to practise the different roles occurring in the society (Stone 1971, 6; Kamp 2001, 19). Through play, the child learns to act in a competitive situation or in cooperation with other children using social and physical operational models approved by society (Kamp 2001, 19 < Sutton-Smith 1989). Play can be seen as a model of the society that trains the individual to adapt to new situations and roles by offering them the

opportunity to learn different kinds of behavioural and problem-solving models (Kamp 2001, 19).

Child's play and the culture that is linked to playing and games can be seen as an inseparable part of the society's culture. On the other hand, it is also a distinct subculture that requires special cultural competence. The link between culture and play can be seen in the thematics of play (Kalliala 1999, 50). As an ethnographic example we can look at the mimicking play of the Sámi people that still in the beginning of the 20th century mirrored the means of livelihood of the Sámi people: fishing, hunting and reindeer herding. The following quotation is from the Finnish ethnographer Paavo Päivänsalo (1953, 49 [translation by the present author]): 'All the play of the Sámi children has a more or less educational meaning and in a way play trains the children precisely the practical tasks that they have to be able to cope with in their adult life.'

By including the different roles that appear in society in his or her play the child prepares to adopt these roles in future life, and to communicate with other people that have adopted the same role (Stone 1971, 10). However, the child's play is not a mirror directly reflecting surrounding reality. Children are critical when choosing the role to be played (Peller 1971, 110). The roles that children find interesting and important appear again and again in their play world (Goodman 1974, 158).

As we can see, playing and toys can function as mediators of values, norms and rules in the process of enculturation. Especially the toys that are made or purchased by adults for children represent the attempts of the adults to transfer certain behavioural rules linked to gender, age and socio-economical status to their children (Wilkie 2000, 101). These kinds of toys reflect the social and gender-linked roles regarded as positive in society. But the role of children is by no means passive in this process. Also they actively shape their own material culture by purchasing toys or artefacts that their parents would not want them to have (Wilkie 2000, 101, 102). Thus, the wishes and demands of adults do not always receive a sympathetic response.

Imitated roles can also reflect different power relations, for example gender relations (Newson & Newson 1982, 20). Gender is also reflected in the visual parts of the culture, and it permeates almost every area of human life from language to social roles (Smith 1991, 85). The material side of culture is by no means an exception: in fact material culture is one of the elements upon which gender roles are built (Gilchrist 1993, 16). Material culture affects the development of gender construction because it acts as a reflector of it, and is associated with gender stereotypes already from an early age. In other words, the child learns to understand that material culture bears meanings within it, and also to translate

these meanings (Derevenski 1997, 196). Toys can also be seen as performing acting as part of above-described process.

How is material culture linked to the adaptation of gender? To this question Roberta Gilchrist (1993, 16) gives the following answer:

For instance, children are enculturated by their societies through material culture – buildings and space, the coding of dress, food, and social activities. They learn what is perceived to be correct behaviour for a boy or a girl. Today children are enculturated through books, television and toys, at its worse guns for boys and little ironing boards for girls. Similarly in the past children were enculturated by the material world around them, and by observing interactions and activities of older children, men, and women. Working from this learned knowledge, individuals can create change through material culture.

As Joanna Sofaer Derevenski (1997, 196) notes, material culture has an effect on the development of the idea of gender, because it acts as a reflector and is associated with gender stereotypes from an early age. In other words, the child learns that material culture bears meanings within it and also to decode these meanings. Toys can be seen as acting in the above process. Some toys can be seen as gender-linked, while others have more neutral status.

Medieval toys from Turku

The source material for my MA thesis and this article was collected from artefacts either found in various archaeological excavations in Turku or recovered without particular context. In this article I concentrate mainly on the toys that can be dated to the Middle Ages. There are 29 objects that fall into this category. The majority of the toys presented here are from excavations in 1998 at so-called Åbo Akademi site. The excavations revealed a great deal of organic material, including 27 toys of wood or leather. The dating of the objects is based on the stratigraphy of the site. The undatable finds are mainly from various contexts around Turku. Even though I cannot date them to the Middle Ages, I have chosen to present them here as representatives of the successors of the medieval toy tradition. Some of the toys presented here were found in disturbed deposits and thus their context is not very interesting. None of the toys was found in burials, but some can be linked with buildings or other kinds of structures. The find contexts of the toys are commented on below only in the cases where they are distinct and undisturbed.

I have chosen to divide the finds presented here into twelve groups. At least one toy find will be introduced as an example from every group. The



Fig. 1. A wooden doll (TPM inv. no 21816:KP049) that can be dated to the beginning of the 16th century. Photo by the Turku Provincial Museum/Martti Puhakka.

finds from Turku are then compared with foreign material mainly from Russia, Scandinavia and Germany.

1. The wooden dolls

There are two possible wooden dolls from Turku. The first one (TPM inv. no 21816:KP381) is a flat figure with no hands and a ring-shaped head. Half of the head has been broken off. The figure has legs and there are curved horizontal marks in the knee area. The height of the figure is approximately 10 cm. The doll was found in a deposit that can be linked with the courtyard of one-roomed building and can be dated to the end of the 14th or the beginning of the 15th century. The other wooden doll (TPM inv. no 21816:KP049) is more three-dimensional than the first one, and it has no legs or arms (Fig. 1). Instead it has engravings on its face area marking the eyes, nose and mouth. The height of this artefact is also approximately 10 cm. The doll was found from a deposit by the side of a road where a wooden building with a stone foundation was located at the

beginning of the 16th century. The toy can be dated to the beginning of the 16th century.

The Russian scholar B. A. Kolchin (1989, 201) has used ethnographic examples as comparative material in studying wooden human figures found in Medieval Novgorod. Kolchin claims that the flat human figures made from wood are children's toys. According to Kolchin, the other kind of wooden human figures than the flat ones can be interpreted as magical figures. There are 11 wooden figures from the excavations of Medieval Novgorod and five of them have been interpreted as toys. The wooden toy dolls of Novgorod are all flat and have an evocatively shaped face. They resemble the dolls found from Turku. But distinguishing between a doll used for magical purposes and a toy is not straightforward or by any means clear. Besides that, the interpretation of the first-mentioned doll from Turku must be opened to questions for other reasons. It has been suggested that this artefact could also be related to textile work and the making of cloth.

Some wooden dolls datable to the Middle Ages have also been found in Lübeck, Germany. Some of these figures can be identified as representing women whereas the others are more neutral in terms of gender (Mührenberg & Falk 2001, 97, 105). The two wooden human figures from Turku do not seem to resemble either men or women.

2. Human figures made of clay

There are finds of two human figures made of red clay from Turku. Neither of these artefacts can be dated. We can nonetheless draw some conclusions regarding their age from their outer appearance. The clay figures are partly broken: The first one is a glazed torso painted in brown and yellow (TPM inv. no 16591:1). The second one is a female figurine (TPM inv. no 18447:1) with clothing of extraordinary appearance: the hood of this figurine has a long tail.

Red-clay figurines have been made as children's toys since Middle Ages (Schütte 1982, 203–207; Waterstrandt 1987, 148–149; Oexle 1992, 394–395; Willemsen 1997, 408–409). The figurines found in Turku do not, however, resemble the medieval dolls made mainly in the area of modern Germany. There is one certain doll find from Finland that can be dated to the Middle Ages. This artefact was found in the medieval church of Messukylä, Tampere. It is a doll's head made of clay and was found under the church floor. The fragment can be dated to the beginning of the 15th century and was made probably in Cologne, Germany. The figure is a toy even though it most likely found its way to the church as some kind of a votive gift. It is to be noted that some of the little clay figures can also be interpreted as votive pictures (Pylkkänen 1961).



Fig. 2. A dog figurine of clay (TPM inv. no 16591:523). Unfortunately this figure cannot be dated. Photo by the Turku Provincial Museum/Martti Puhakka.

3. Human figures made of leather

There are two very interesting finds found from the Åbo Akademi site in Turku. They are two pieces of leather (TPM inv. no 21816:NE20424, NE204268) found in the very same context. Actually these two pieces fit together and form a row of figures holding each other hand in hand. Some of the figures portray humans while others are not so recognizable. They might represent some kind of animals or artefacts. The length of the row of figures is about 60 cm and each figure is about 10 cm tall. The idea behind this row of figures might have been to picture humans playing some kind of a round game. According to the stratigraphy of the site, these leather figures can be dated to the end of the 14th century.

Figures found in the same context included other leather waste material. Finds like these two rows of figures are very rare in the archaeological material. The inspection leather waste material can, as we can see, reveal interesting finds. We cannot be sure whether these figures were cut by a child, but it seems very probable. The figures are cut quite clumsily which suggests that they were made by a person who was still training the art of handling leather.

4. A wooden animal figure

There is only one wooden animal figure from Turku. It is from the Åbo Akademi site and according to the stratigraphy of the site it can be dated to the beginning of the 15th century. The figure itself

is 4 cm tall and 8 cm wide. It is flat and only 1 cm thick. The artefact is very poorly preserved; it is partly burnt and the other side of it has been broken. The form of the figure is quite evocative, but it resembles mostly a bear or a bovine. It has two legs and a roundish shaped head.

The figure from Turku has similarities with animal figures from medieval Novgorod. According to Kolchin (1989, 197–200), the figures of Novgorod have been interpreted as toys representing horses. There are several types of these figures, some of them being flat and having wheels underneath. In some cases horse figures have a saddle carved from the same wood as the figure itself or/and cuttings marking the harness. Some of the figures are very evocatively shaped and could not be recognized as horses without the saddle. Wooden horses have been found from medieval contexts also in Oslo (Weber 1990, 163) and Trondheim (Roesdahl 1992, 231 fig. 14) in Norway. These figures are of the flat type and especially the find from Oslo is shaped very evocatively. The figure from Turku can be compared to the flat type animal figures of Novgorod and Oslo.

5. Animal figures of clay

Two animal figures of clay have been found from Turku. Because of unclear information on the context in which they were found, we cannot give them any precise dating. However, similar clay figures have been produced as children's toys since the Middle Ages. Both of the figures are made of

red clay. The first one of the figures (TPM inv. no 16713:4) is badly damaged: it does not have legs or head, only body. It reminds either a horse or a dog. The figure is hollow and decorated with white clay. The other one of the figures (TPM inv. no 16591:523) is better preserved: it pictures clearly a dog that has a curve tail. This figure has even roundish marking on its head marking the eyes and little ears. It is painted with white and green paint and glazed (Fig. 2).

Animal figures of clay have been produced in Germany since the Middle Ages. Some of them were decorated with white clay, paintings or glazing. The most popular figure was a horse. Sometimes these horses have a rider. Other popular animal figures made of clay as toys for children were dogs, elks and rams (Fraser 1972, 56, 57; Schütte 1982, 203, 207; Waterstrandt 1987, 149; Falk 1995, 38, 39). Both of the figures found from Turku fit this picture well, although we cannot date them with help of the context in which they were found.

There are finds of a few animal figures of clay from the town of Pori in West Finland founded in 1558. These figures represent horses and a dog. There is also a whistle in the shape of a bird among the finds from Pori. Unfortunately the finds cannot be dated (Tulkki 1998, 10). Birds, however, were also common figures among medieval toys (Lindqvist 1981, 83, 120, 121).

6. Wooden bows

Eleven toy bows or pieces of them have been found in Turku (TPM inv. no 20764:970, 1405; 21448:589; 21816:PU72, KP1105, KP1284, KP1304, KP1431, KP5041, KP5094, KP11814). All the bows except one can be dated. The height of the toy bows varies between 24 and 60 cm. The bows can be classified in two groups: 1) bows of circular or flat cross-section and a notch at both ends or at least one end; 2) bows of flat cross-section with a notch for the string at both ends. In toy bows of this kind the handle was marked by curving it flatter than the rest of the bow or by leaving it thicker.

Most of the little toy bows from Turku can be dated to the end of the 14th and the beginning of the 15th century. Only one bow is younger, from the beginning of the 16th century. All the toy bows were found at the Åbo Akademi site. The bows with a definite find context can in most cases be said to be found in areas that used to be courtyards. Only two of the bows can be linked with buildings: one was found inside a wooden building interpreted as a animal shelter or barn and the other one can be linked to a one-roomed wooden building with a fireplace.

Toy bows have also been found also in excavations of medieval Novgorod (Kolchin 1989, 203, 204).

Also from Amsterdam in Netherlands, three little bows have been found and interpreted as children's toys. These artefacts are dated to the 15th and 16th centuries. Two of these toy bows (nos 875, 876) resemble bow type 2 from Turku (Baart et al. 1977, 462, 463). In addition, wooden toy bows have been discovered in medieval contexts in Lübeck, Germany (Mührenberg & Falk 2001, 106).

Although toy bows have been found in medieval context in various countries we have to take into consideration the second interpretation of these artefacts. Again, it has something to do with textile work. It has been suggested that these little bows could have been used for processing wool. There are ethnographic analogies showing that the fibres of wool could have been separated from each other by this artefact. 'Bows' of this kind, however, were longer (64–82 cm) than those found in Turku and interpreted as toys (Hoffmann 1991, 27 fig. 21).

7. Wooden swords

The finds from Turku include three wooden toy swords or pieces of them. Two of the finds are pieces of the sword's blade (TPM inv. no 16376; 21816: KP51351), while the third artefact is complete but broken into two pieces (TPM inv. no 20315:1648). Only one of the swords is datable, while the other two are from loose contexts and cannot be dated. The datable piece of a possible toy sword's blade is dated to the end of the 14th century.

Fifty pieces of toy swords have been discovered medieval context in Novgorod. In his study Kolchin has suggested that most of them were made by children themselves while others were the work of professional craftsmen. The archetypes of these toy swords would have been real medieval sword types: the decorations and shape of the toy swords display similarities with real medieval sword types of the same age. Some of the toy swords were marked with the personal marks of craftsmen (Kolchin 1989, 203, 204). Wooden toy swords have also been found in Oslo (Weber 1990, 163) and Bergen (Herteig 1969, 199 and fig. 58) in Norway and Amsterdam in Netherlands (Baart et al. 1977, 464).

8. A wooden knife

A wooden knife (TPM inv. no 21816:PU263) was found at the Åbo Akademi site in Turku. It is 12 cm long and the blade is 2 cm wide. There are clear sharpening marks on the blade. The knife can be dated to the end of the 14th century or to the beginning of the 15th century.

Although wooden knives may have been handy in some of the everyday tasks, I think that this particular knife might have been a child's toy. It looks almost exactly like real knives in use in the



Fig. 3. An undatable (TPM inv. no 21448:586) wooden boat found in the castle of Turku. Photo by the Turku Provincial Museum/Martti Puhakka.

14–15th centuries. When studying bone knives, Arthur MacGregor (1985, 183) has interpreted as toy those kinds of the bone knives that resembled real knives in use around the same time. The knife from the Åbo Akademi site has no handle, but instead it has a tang. I assume that something was to be wrapped around this tang, for example leather or cloth, forming the haft in this way. If this artefact would have been in real use, the maker of the knife would have probably carved also the haft from the same wood than rest of the knife. The tang, however, is too small to fit into the hand of an adult. The wooden knife from the Åbo Akademi site is not the only find of a toy knife: there are in addition two wooden toy knives from excavations in Oslo, Norway (Weber 1990, 163).

9. Leather slingshots

Finds from the Åbo Akademi site include six leather slingshots (TPM inv. no 21816: NE13230, NE5005, NE10421, NE20053, NE50095, NE134100). They are all of the same type, being approximately 10–18 cm long and 2–8 cm wide pieces of leather, quadrangular or rounded at the ends. Most have 2–7 longitudinal cuts in the middle of the slingshot and in many cases the leather used for the slingshots had been in use previously. Three of the finds can be dated to the Late Middle Ages, while one is from 17th century and two are undatable.

The way the slingshots were made suggests that they were meant to be in use for only a short time. They look like they have been made quickly and their material is of poor quality. Slingshots were used as hunting weapons in the Middle Ages, but their discovery in the centre of a medieval town seems rather interesting. The fact that the slingshots were made of recycled material in a rather rough style

might indicate that they were made by children. These slingshots might not have been very suitable or handy for hunting, but they were perfect children's toys.

10. Boats of wood and bark

Four bark boats (TPM inv. no 21816:PU118, KP1283, KP2081; 95032:P1323) and one wooden toy boat (TPM inv. no 21448:586) have been found in Turku. Three of the bark boats are from the Åbo Akademi site. The wooden boat (Fig. 3) has been found from a loose context (inside a well filled up with earth) in the medieval castle of Turku. The bark boats can be dated to the 1300s–1500s, while the wooden boat cannot be dated at all. One of the boats (TPM inv. no 2116:KP2081) was found in an area that used to be a courtyard. This is the oldest of the bark boats and is dated to the end of the 14th century.

Toy boats of wood and bark are one of the most common toy finds from excavations of medieval sites. Like wooden imitations of weapons and tools, boats have not changed much in shape over time. Bark boats have been found from medieval contexts for example in Uppsala in Sweden (Ehn & Gustafsson 1984, 85) and Oslo (Weber 1990, 163) and Tønsberg (Lindh 1992, 220) in Norway. Wooden toy boats, in turn, have been found in the castle of Kastelholma in Finland (Edgren 1988, 158) and in Oslo (Edgren 1988, 157 < Grieg 1933, 149; Weber 1990, 163), Trondheim (Edgren 1988, 158 < Christophersen 1987, 63) and Bergen (Herteig 1969, fig. 58) in Norway.

11. Whirring bones

Whirring bones are a toy type that has been in use for a long time. We know that children have

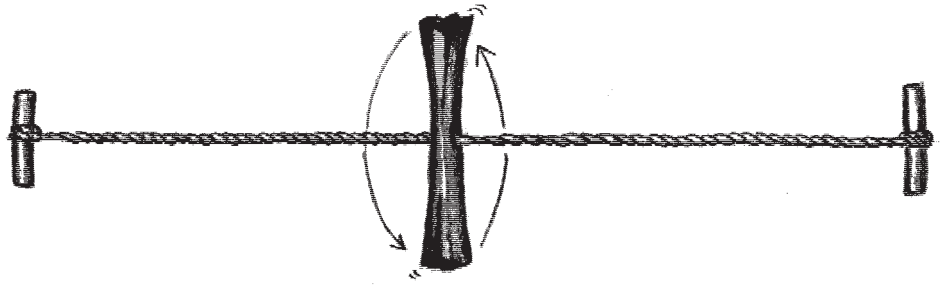


Fig. 4. *Playing with a whirring bone. Photo by Kirsi Luoto.*

played with them at least from medieval times up to the 19th century. Ethnographic analogies provide information on how these toys were used by children. Whirring bones were usually made of the foot bones of pigs or bovines. A hole was drilled in the middle of the bone and a twofold string was threaded through it. The player then rolled the string to twist it around itself and pulled from both ends to produce a whirring sound (Fig. 4) (Kaljuvee 1964, 231, 232; Rasmussen 1982, 56).

Nine whirring bones have been found in Turku (NM Hist. inv. no 95032:L43, L770b, L1485, N472, L1818; 96001:2393, 3563, 3670 and one with no catalogue number from the Österblad site). The oldest of the finds is from the 14th century while the youngest is dated to the 18th century. Whirring bones have been found in medieval contexts in Lund (Blomqvist & Mårtensson 1963, 209, 210), Stockholm (Dahlbäck 1982, 257) and Uppsala (Ehn & Gustafsson 1984, 85) in Sweden, and in Oslo (Wiberg 1979, 62) and Tønsberg (Eriksson & Ulriksen 1990, 99) in Norway.

12. A miniature ceramic vessel

A miniature ceramic vessel (TPM inv. no 21816: KE1199) that might be a child's toy (Fig. 5) was found in the excavations of the Åbo Akademi site in Turku. It is 4 cm in height with a maximum diameter of 4 cm. The hollow and glazed vessel is made of clay. The vessel has one grip and it can be dated to the end of the 14th century.

Miniature ceramic vessels have been found in various medieval contexts in Scandinavia: 42 from Norway (Grieg 1933, 190; Liebgott 1978, 72, 90; Broberg & Hasselmo 1981, 44). Miniature ceramic vessels resemble normal-sized vessels and they have been made in England, South Scandinavia (Schütte 1982, 207) and Germany (Waterstrandt 1987, 150). They were most likely the by-products of ceramic workshops (Stephan 1981, 42; Willemsen 1997, 409). There has been a lot of discussion on the function of the miniature vessels. It has been suggested, for example, that they could have been some kind of storage artefacts for relics (Mowinckel 1926, 77). In many cases, however, they have been interpreted as children's toys (Herteig 1969, 56;

Stephan 1981, 44; Schütte 1982, 207; Waterstrandt 1987, 150; Oexle 1992, 394; Willemsen 1997, 409).

In summary we can say that the finds from the Åbo Akademi site are quite unique in the sense that there are so many organic toy finds among them. The closest parallels can be found from the medieval towns of Novgorod in Russia, and Oslo, Bergen, and Trondheim in Norway. The majority of the toys from Turku were made locally by adults for children or by children for themselves (and for other children). This is understandable, because the majority of the toy finds in general did not belong to the sphere of organized trade in toys. The wooden toy boats and swords, for example, are in many cases regarded to have been made locally (Willemsen 1997, 406).

Nonetheless, similarities with the toy material from Turku and medieval towns from other countries can be found. Bark boats, wooden dolls, toy bows and swords and whirring bones appear, for example, in the Scandinavian and Russian medieval source material. Certain toy types, such as wooden swords and toy bows, are very uniform in shape despite the fact that their geographical distribution is broad.

Reflections on the process of enculturation

The toys found from excavations of medieval sites and described in written sources give us information on medieval toy material that is vast in both quantity and quality. Along with other objects associated with the material culture of children, toys tell us about adults' attitudes towards children and childhood in a period when, as some scholars suggest, the concept of childhood did not even exist. The archaeological source material forms a picture of children as a group that had its own material culture. Among the toys there are artefacts that were purchased or made by adults for children, and objects made by children themselves. Although these two groups of toys are not always easily distinguished from one another, we can say that also adults were interested in their children's well-being and pleasure. Children were given an opportunity to play; they were seen to have the right to their own time in addition of working and learning.

Fig. 5. A miniature ceramic vessel (TPM inv. no 21816:KE1199) from Turku. The artefact is 4 cm in height and 2.4–4 cm in diameter, and it can be dated to the end of the 14th century. Photo by the Turku Provincial Museum/Martti Puhakka.



Some medieval scholars saw the positive side of children's games and thought them to be part of children's natural needs (Shahar 1990, 99). In some cases the scholars even stressed the positive effects that playing and games had on the child's physical and mental development (Shahar 1990, 99 < von Megenberg 1973, bk ½, ch. 14, 89–90). According to modern developmental and social psychological research, playing can be seen as part of the child's enculturation process. Through play the child learns both physical and social skills. Artefacts, in this case toys, can act as bearers and media of values, norms and meanings and through play the child can practise different roles present in society. These roles are often related to gender. Toys can have effect on the development of the child's gender construction because they, like other artefacts, they are associated with gender stereotypes already from an early age.

The toy material from Medieval Turku tells a story of a childhood where also play and toys were included. Although the lives of the children were shadowed perhaps more often than today by the dreary side of life, such as illness, hard work, and negligence, even violence, children were regarded as needing care and attention. There are written sources from the Middle Ages, where children are recorded to imitate the adult's actions or the way they speak (Shahar 1990, 99 < von Megenberg 1973, bk ½, ch. 14, 89–90). Some of the toys can in fact be seen as instruments of this kind for imitating play. There are two different toy categories in the medieval toy material of Turku that can be considered from the above-mentioned perspective. Dolls are the most suitable for imitating play and miniature bows and

swords can be associated with some of the masculine role models of the Middle Ages, such as soldiers. Also the animal figures are suitable for role playing and with them the child might have practised, for example, the right way to treat and take care of animals: milking and herding cows, training dogs or horses, and so on. On the other hand, the little slingshots and bows are suitable for practising hunting skills needed in the future. The analysis of the archaeological toy material from Turku is not yet complete and I hope to be able to continue the research in the future. An interesting question concerning the connection of the toys with gender-linked tasks and roles and different types of playing are to be discussed in the future.

The above-mentioned roles are over-simplified ideas of the role models that a society in the Middle Ages could have offered. Through them, however, we can shed light on the aspects of material culture that are rarely brought up in connection of archaeological source material. Artefacts, also toys, mirror the culture they appear in and have a role in the process of enculturation. Artefacts are filled with hidden meanings and with help of them the meanings and values can be transmitted to the following generations. In this process of enculturation, children are by no means passive. Basing on the toy material from Turku, we can say that the children were active shapers of their own material culture. That was how they also created their own reality that more or less reflected the surrounding world. In the Middle Ages, as today, toys were linked to the surrounding culture and mental environment.

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Abbreviations

NM Hist.	National Museum of Finland, Unit of History, Helsinki.
TPM	Turku Provincial Museum, Turku.

Mikko Moilanen

AN APPLICATION OF THE METHODOLOGY OF EXPERIMENTAL ARCHAEOLOGY TO SCIENTIFIC IRON-WORKING EXPERIMENTS

– The making of early medieval sword blade inscriptions as an example

Experimental archaeology can be seen as a method to test and gain hypotheses through scientifically valid experiments and practical experience. Experimental approaches have been very popular in studying the manufacturing processes of artefacts or to study their functionality. Artefacts made of iron are a minority in this field. Previous research has mainly concentrated on the study of the iron-making process while the crafts of the blacksmith have received much less attention. There has mainly been interest in manufacturing processes of different arms, for example pattern-welded swords and spears (see *e.g.* Anstee & Biek 1961; Andersen & Andersen 1991; Pleiner 1993; Creutz 2003). As elsewhere, only a few blacksmithing experiments appear to have been done in Finland. The only published work was concerned with the forging techniques of brooches and buckles (Lähdesmäki 1991).

The tools and techniques of the blacksmith have been preserved quite well in the form of a living tradition, which in turn may be the primary cause for the partial ignorance of blacksmithing in experimental research. Moreover, experimental archaeology itself is in quite critical condition due to the lack of a solid theoretical basis and the blurring of the discipline partially caused by growing popularization.

This article seeks to present some guidelines for scientific and probative iron-working experiments. It should first be understood what experimental archaeology really means, and why experiments are important for archaeological research. This can be best presented by an example. My own research deals with making pattern-welded inscriptions on early medieval sword blades. This example also attempts to show how experimental research can contribute to other archaeological studies. It is not my purpose, however, to present thorough results or descriptions of my experiments in this article, and accordingly this is not meant to be the primary publication of my experiments.

Defining experimental archaeology

There are many definitions of experimental archaeology, all of which differ little from each other (*e.g.* Coles 1973, 13; Ingersoll & Macdonald

1977, xii; Champion 1980, 45; Bahn 1992, 165). Probably the most compact is the one formulated by James Skibo (2000, 199). According to Skibo, experimental archaeology explores archaeological material or processes by creating an artificial system. Skibo regards experimental archaeology to be a sub-field of archaeology. This sub-field aims at studying the relationship between human behaviour and the course of life of material culture. The experiments can be done to determine how artefacts were produced, used, modified and discarded, including post-depositional changes in materials. Skibo also sees experimental archaeology as theoretically similar to ethnoarchaeology, because they both try to understand the past through present-day material culture and behaviour, *i.e.* through actualistic studies.

The definition of experimental archaeology is often dependent on the researcher responsible for the definition. The above definition by Skibo is quite universal, and also covers quite well the different experiments done since the birth of the experimental approach in archaeology.

In comparing different definitions it can be claimed that experimental archaeology studies the behaviour or technology of past peoples under controlled circumstances (*i.e.* through experiments). The result of experimental archaeology is always a reconstruction of, for example, an ancient artefact or its process of manufacture. Also the formation processes of archaeological sites can be observed experimentally. In other words, experimental research can concentrate on any stage of the course of life of archaeological finds or sites.

Naturally, the most essential part of experimental archaeology is the experiment itself. According to Michael Schiffer (1976, 6), researchers examine in experiments how certain selected variables affect each other. This is, however, a highly theoretical point of view, considering that experimental work includes mainly traditional handicrafts and experiments, which can be performed only outside laboratory circumstances. When experiments are done in authentic conditions of this kind, the control of some 'variables' becomes almost impossible and often unnecessary due to different objectifying techniques, *e.g.* statistics.

According to Jaroslav Malina (1983, 71), an archaeological experiment can be placed in any phase of the archaeological research process to minimize errors of interpretation. In the light of this view experiment is more like a tool in archaeological research than a sub-field of the discipline. This tool helps researchers reduce the number of incorrect hypotheses and enables them to examine the validity of earlier hypotheses and theories. Malina (1983, 69) also states that, besides a tool, an experimental study may also be a topic for research.

In practice, the scale of experiments can vary greatly. The smaller-scale experiments deal with single artefacts, while on a larger scale whole archaeological sites and their formation processes can be reconstructed. As an extreme case, John Coles includes all archaeological excavations in experimental archaeology. Coles sees an excavation as a situation where different excavation techniques are improvised with regard to an unknown archaeological site to obtain archaeological data, and thus every excavation is also an experiment (Coles 1983, 79). This view, however, cannot be included under the term 'experimental archaeology' as defined above.

According to Coles, there are four different levels of experimental archaeology (Coles 1979, 36–43). The first of these is simply the replication of an artefact. This level has advantage mainly as an educational device, for example in museums as copies of different artefacts. The second level tries to replicate the manufacturing processes of artefacts, and the third studies their function. The fourth and final level is called 'contextual'. At this level, the experiments are included in other archaeological research to answer questions of larger scale. At the last three levels scientifically valid results can be obtained, and often these levels are more or less connected to each other. It can also be noted that at an educational level, the aim is to share knowledge, while at scientific levels the production of new information plays the leading role. Scientific here means that the experiments are authenticated and probated, and are thus valid for different kinds of applications in the archaeological field of research.

Ingersoll and Macdonald (1977, xi–xvi) also identify four kinds of experimental research. The first of these deals with the replication and reconstruction of artefacts or activities. The second level is notable here, because it concerns the statistical analysis of different archaeological data, which means that it does not actually fit in the universal definitions of experimental archaeology. The third and fourth types are comparable to those defined by Coles (1979) and Skibo (2000). These are the study of post-depositional processes and the ethnoarchaeological perspective.

Moreover, Peter Reynolds (1999, 158) sees five different categories of experiments: construct,

process and function, simulation, eventuality, and technical innovation. The first three of these are the same as those defined by Coles and also Ingersoll and Macdonald. The fourth – eventuality experiment – combines the first three experiments. Technical innovation experiments are testing new scientific equipment used in artefact studies and data collecting. This category is rarely seen as a part of 'experimental archaeology'.

The levels defined by these different authors can be also seen to reflect the nature of experiments at different times. For example, Coles's first stage, the replication, is also the oldest form of experimental archaeology. The manufacturing processes and functions of artefacts began to be studied only after the necessary replication of certain artefacts was achieved. Experimental archaeology can be considered as a continually developing method, which should have reached its peak by now as archaeology itself has been quite thoroughly organized internally. Nowadays, experimental research should then aim to study contextual, larger-scale questions concerning something bigger than simply a single artefact.

It was stated earlier that experiments can deal with any stage of the life span of the research subject in question. *Chaîne opératoire* is a concept introduced by the French scholar Andre Leroi-Gourhan. *Chaîne opératoire* simply means a sequence of actions and processes in a chain of production where certain material is transformed to a certain end result, e.g. an artefact (Karlin & Julien 1994, 164). This sequence involves the acquisition and preparation of raw materials, the technological manufacturing process of e.g. an artefact, the time of use (i.e. function), and finally the discarding of the product in question. *Chaîne opératoire* is a kind of 'biology of techniques' (e.g. Leroi-Gourhan 1964).

Besides cognitive and behavioural approaches, *chaîne opératoire* can be applied to experimental studies as well. An experiment or a series of them normally concerns one of the links of the *chaîne opératoire*, i.e. some phase of the life span of the subject of research. The whole life cycle is usually far too complicated and laborious to examine through one series of experiments. Observing e.g. artefacts through the *chaîne opératoire* allows the researcher to rediscover the processes behind technologies and their production (e.g. Pelegrin *et al.* 1988).

Problems of experimental research

Perhaps the greatest problem of experimental archaeology is the lack of a valid and generally accepted basis of theory. Because of this, experiments and their results do not have any general applicability to archaeological hypotheses. In addition, experimental archaeology does not have a scientifically designed routine for carrying out the

experiments or to record them. All this has led to the partial ignoring of archaeological experiments in scientific circles (Tringham 1978, 171). Practically, the only clear theory basis consists of the guidelines defined by John Coles (1973; 1979). The normal procedure seems to be that researchers have defined their own sets of rules by using common sense and reasoning, and of course according to questions they seek to answer with their experiments.

The second, growing, problem seems to be the blurring of the whole concept of 'experimental archaeology', which may be the consequence of the increased popularity of experimental approaches in one form or another. Somehow, issues such as experiment, experience and education have been confused (Reynolds 1999, 156), which has caused the term 'experimental archaeology' to be simplified to the public to mean ancient technology or just re-enactment. These simplified views can hardly be considered scientific and archaeologically applicable, although they are important from the educational point of view, and they can give impulses to more serious experimental studies and new, serious, research questions (*e.g.* Linderholm & Gustafsson 1991, 111). Experimental archaeology is being popularized by, among others, the centres of living history or actual experimental farms. These research units are made not only for the public, but also for serious experimentation, which surely takes place in most cases.

Also the result of experimental archaeology, a reconstruction, should be redefined as a concept. Nowadays it seems that the term 'reconstruction' is used to refer to an artefact, which only partially resembles an ancient find. These are for example the reconstructions normally found in museums. In all its complexity, a reconstruction can mean an artefact produced by original methods and from authentic materials. Reynolds (1999, 159) suggests that the term 'construct' should be used in most cases, because 'reconstruction' refers to something quite accurate and certain. Still a mere reconstruction or replication of *e.g.* an artefact, no matter how authentic, is not experimental archaeology, but the process underlying it (*e.g.* Linderholm & Gustafsson 1991, 111).

The commercialization of 'reconstructions' has also contributed to ignoring of all reconstructions among scientific researchers. It can also lead to the differentiation and isolation of experimental experts from 'ordinary' archaeologists (Ljungberg 1986, 16; Rathje 1991, 143). This in turn increases the gap between experimental approaches and other archaeological fields of study, while the opposite should take place.

Most of the criticism that has been aimed at experimental archaeology as a method or a discipline has not been very well reasoned. The whole experimental approach is often ridiculed because

it has not been considered to be able to prove anything. In the 1970s and 1980s, for example, this also appeared to be the processualist opinion. Even if the researcher is able to do something within the limits of ancient technology, this does not prove that it was actually done in the past. Processualists did not believe that experimental archaeology could answer questions concerning complex technologies and the organization of societies. The results of the experiments were to be highly speculative and small in scale. This view is understandable considering that processualists asked different kinds of questions than those conducting experimental research.

The inadequate theory basis and simplified concepts inevitably lead to unscientific experiments. These unscientific experiments are those done without proper scientific criteria. Kimmo Kyllönen (2005, 39) has created a chart by which one can define any experimental study as scientific (*i.e.* experimental) or non-scientific (experimenting). In Finland, Markku Ikäheimo has used the same term 'experimenting' to describe lighter, carefree experiments (Ikäheimo 1984, 9). Reynolds (1999, 157) uses also the term 'experiential' to describe unscientific experiments. Here again, the terms 'scientific' and 'unscientific' can be seen to reflect the levels of authenticity, validity and applicability of experiments.

According to Kyllönen (2005, 37), 'experimenting' archaeology differs from 'experimental' archaeology in three ways. Firstly, in 'experimenting' archaeology the preparations and background work are poorly executed. Secondly, the poor documentation and uncontrollable variables do not allow the experiments to be repeated by other researchers. Thirdly, 'experimenting' archaeology concentrates too much on variables that are of no importance for the experiment in question. In general, 'experimenting' archaeology is a lighter and carefree version of 'experimental', scientific archaeology. Janne Vilkkuna (1988) has also suggested that experimental archaeology can be divided into two parts: the scientific one and the experiencing one, both of which resemble the ones specified by Kyllönen.

Experimental archaeology also entails practical problems. The conducting of experiments usually has high expenses, which may include things such as the materials, tools, documentation devices, and the hiring of staff for the experiments. This kind of research is also very time-consuming and requires some devotion to be executed properly. In addition, experimental research usually requires researchers from many different disciplines. Experts in material technology, in particular, are quite few, but usually needed. The experiments usually deal with some craft or handiwork, and experts of these areas should also be present at the experiments, if not doing the experiment itself while the archaeologist acts as an observer, critic and interpreter (*e.g.* Broadbent & Knutsson 1980, 5–6). It should be noted that in some cases craftsmen with modern education

are not capable of handling their materials with primitive tools. For example, Ole Crumlin-Pedersen (1999, 141) noticed that modern boat-builders are only accustomed to modern technology instead of traditional methods, and this in turn could increase the amount of erroneous interpretations already during the experiments.

The last but not the least problem encountered is the researcher's own attitude. During the experiments, the researcher's own preconceptions may affect the results of the experiments. The results should therefore be examined very critically. The fact that practical experiments are often done outside the laboratory in more authentic conditions, inevitably introduces human factors in the experiments. Also, human errors and pure chance may have an effect on the final results. Reynolds (1999, 158) claims that the human element should always be dismissed to avoid erroneous experiments. This view can produce very accurate experiments at the level of material technology, but it should be remembered that the human element was always present in prehistoric times, and so it should be in the experiments, too. The validity of experiments must then be tested by repeating and with statistical analysis.

The theory basis: research as a process

From a methodological point of view, scientific experimental archaeology is a process with many different phases (*e.g.* Ascher 1961, 810–811; Coles 1973, 14–15; Fansa 1990, 13; Linderholm & Gustafsson 1991, 109). Some authors have schematized the phases of experimental archaeology to clarify the whole process of research (*e.g.* Fansa 1990, 13; Kyllönen 2005, 34). The starting point for the whole process is to define a clear research question. The next step is to gather the required background information – the more, the better. In the experiments the latest research on the subject should always be taken into account (*e.g.* Näsman 1986, 36). The errors should be minimized already while making the required preparations for the experiments, and also during the experiments. The results should also be checked for errors through criticism. The last phase of an experimental project is to publish it as a whole. Without publication, the experiments can be of no scientific use. The published experiment should always contain an explanation of the background work and planning, the experiments and their documentation, and finally the results and criticism. The aim of publishing is also to make experiments repeatable for other researchers. One important point here is that the publishing of experimental studies should take place in a scientific forum, which can reach serious scholars better than popular publications can (Coates & McGrail 1995, 299).

Furthermore, detailed accounts on how to conduct scientific research can be found among the natural

sciences (*e.g.* Cox 1958; Fisher 1960). Various sets of instructions emphasize the division of the research process into different stages, which are quite the same as those defined in archaeological circles. The more detailed instructions are somewhat different in the natural sciences than in archaeological experiments, which is mostly due to different subjects of research. While the natural sciences study reactions evident in nature, experimental archaeology concentrates on the human impact.

Because of methodological diversity, experimental archaeology has sometimes been seen as a research field of its own (*e.g.* Malina 1983, 75). The natural sciences should be used within experimental research, because the experiments normally deal with nature's own materials, and sometimes even with nature's own processes, as in experiments concerned with the formation processes of archaeological sites. Archaeometry – the application of the methods of physics and chemistry to archaeological research – is an important sub-field in experimental archaeology. Archaeometry can be divided into four classes: prospecting methods, dating methods, research methods concerning the origin of materials (provenance studies), and materials science (Dunnell 2000, 47–48). One important and also scientific way to use modern knowledge is to explain the phenomena present in the experiments by using modern terminology and results of scientific examination.

Modern methods are not restricted only to the study of the materials. The documentation, which is a crucial part when considering authentication, the repeating of the experiments or the publication, should also be done in all possible ways. Traditional, written documentation is of course a necessity. In addition, modern technology has enabled the researchers to make more detailed documentation by using digital equipment. All phases of experiments must be photographed, and to give most fruitful documentation for fellow researchers, a video camera is advisable. Combining the different methods of documentation can help create the most complete documentation. Of course, all documentation cannot be included in the publication but only the most important and clarifying items.

Carrying out the experiments requires an understanding of the materials that are used, as well as knowledge of tradition or long-term experimentation. Experiments should be acceptable to both archaeologists and technological disciplines (Reynolds 1999, 157), which may turn out to be very difficult. The researcher performing the experiments must have experience of dealing with the used materials. Optionally, the researcher must take advantage of other professionals possibly capable of working with the materials used in experiments. For example, craftsmen should perform the experiments for the sake of representativity and significance

of the research. Ethnographic data can also be used to answer different questions concerning the applied technology (*e.g.* Ingersoll & Macdonald 1977, xv–xvi; Coles 1979, 39; Kyllönen 2005, 36). This ethnographic data cannot always give certain answers, because knowledge of a certain technology may have disappeared (Schiffer 1976, 6–7) or it could have been transformed. According to Richard Gould (1989, 20), ethnographic analogies can only offer alternative explanations for archaeological source material instead of direct information.

Experimental archaeology resembles ethnoarchaeology, because they both aim to understand the past through modern behaviour and material culture (*e.g.* Kramer 1979, 1; Skibo 2000, 199, 202). The relationship between ethnoarchaeology and experimental archaeology is a complex one, because experimental archaeology can be seen as a separate field from ethnoarchaeology, or then a method combined with ethnoarchaeology. Where ethnoarchaeology studies living communities, experimental archaeology examines artificial behaviour (Tringham 1978, 170). Because of this, both experimental archaeology and ethnoarchaeology use different sources of information. When experimental research is a part of ethnoarchaeology, the subjects of research are natural processes. In pure experimental archaeology, the subject is the interaction between man and material culture. Here should also be mentioned Schiffer's (1976, 6) concept of 'living archaeology', which means observing phenomena present in living communities and applying the results to archaeological interpretations. These experiments can be planned, but they cannot be controlled by the researcher.

Minimizing errors

John Coles (1979, 46–48) defined eight rules, by which errors in the experimental research process can be minimized. These rules are more like recommendations that should be followed according to the research question. Their aim is to create the most reliable results possible, and in any kind of experimental research. These recommendations are the most widely used ones among experimental projects, and in short are as follows:

1. The materials used in the experiments should correspond to those used during the age of the subject of research.
2. The manufacturing methods should be as close as possible to the original ones.
3. Modern methods of analysing should be used both before and after experiments to find out the similarities between original object and the one created in experiments.

4. The scale of the experiment should be the same as original. For example, an artefact should be reconstructed in exact size, not a scale model.

5. The experiment should be repeated to recognize possible errors.

6. The experiment should aim to answer a specific research question. Moreover, new questions may arise during the experiments, and these questions should also be answered.

7. The result of the experiment is not a precise answer, but a possible option.

8. After the experiment, the results must be observed with criticism of stated questions, used materials and techniques. In addition, the preconceptions and characteristics of the experimenter should be taken into consideration.

These rules by Coles are quite similar to those Vilkkuna has described as the principles of his scientific experimental archaeology. According to Vilkkuna (1988, 11–17), scientific experimental archaeology should have a clear aim, it should be measurable and repeatable, and the whole experimental study should be planned well and also guided and executed professionally.

Ultimately, the course of an experiment or a series of experiments is very hard to standardize. All the above-mentioned rules and points of view must be weighted according to the research question. The slavish following of all these rules may lead to experiments which are costly and time-consuming, and which probably cannot concentrate well enough on the defined main research question. The authenticity of the experiments no doubt increases, but at the same time meaningless variables come into play, and the original purpose of the study is easily blurred.

The seventh rule presented by Coles requires clarification. The nature of experimental research is based on hypotheses and assumptions, though guided by the study of archaeological data as well as traditions and ethnographic analogies. Hypothetical experimentation cannot produce exact answers. For example, an experiment cannot prove that a certain functional manufacturing technique is the precise one. Instead, the results are just a suggestion that something may have been possible, because it worked in the experiments. Often the results of the experiments can be seen as 'negative', because they can surely explain what did not function or occur (*e.g.* Plew 1996, 235). The undeniable fact that the results of the experiments cannot say anything positively sure, may be seen to reflect the unsystematic nature of experimental archaeology (Schiffer 1976, 4–5), and this fact surely is the main cause for criticism of experimental approaches.

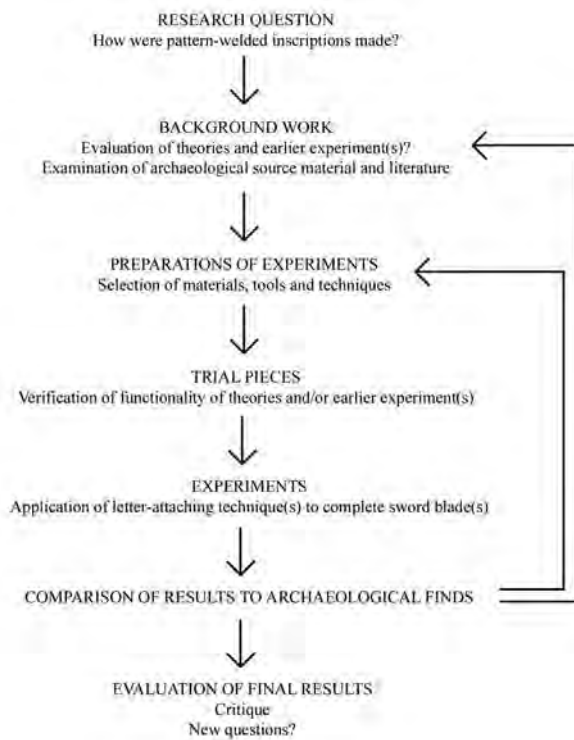


Fig. 1. A diagram presenting the progress of experiments aiming to reconstruct the manufacturing process of sword blade inscriptions.

Theory in practice: sword blade inscriptions

The application of experimental research in the iron-working process is presented with an example. My study in progress – which is based on my master's thesis – seeks to find out how iron inlaid inscriptions were made in Viking Age swords. These inscriptions appear for the first time in the form of symbols, such as omegas and different crosses, during early medieval times already before AD 800 in otherwise pattern-welded blades. The pattern-welding of blades itself seem to have been ceased *c.* AD 900, when the names of presumable swordsmiths, *e.g.* ULFBERHT and INGELRII appear in the form of pattern-welded letters. These later inscriptions also include symbols and religious invocations.

Most of the inscriptions are pattern-welded. This means that the letters are formed from twisted pattern-welded rods, similar to those used in the construction of whole sword blades. In simplistic terms, a pattern-welded rod is a pack of several alternating layers of iron and steel, which have been forge-welded together by hammering them at a high temperature. Pattern-welding could also be produced by carburizing the surface of an iron rod and then folding the rod several times. As a result, this kind of iron rod has steel layers within it. After a pattern-welded pack is welded solid, it is stretched and in most cases twisted to create the pattern.

As all experiments, this too should begin with the definition of a research question (Fig. 1). The main research question is how these inscriptions were

attached to a whole sword blade. Can there be many different ways to do this? How were the pattern-welded rods for the letters made? These questions concern mainly the second level of experimental archaeology as defined by John Coles (1979, 38–39). The aim is to search for a 'lost' technique of making iron inlaid sword blade inscriptions. The technique can be considered lost, because the tradition of iron or pattern-welded inscriptions ceased to exist after the Early Middle Ages. In theory, the technique is not actually lost, but is only an application of the blacksmithing tradition and knowledge of used material. The research question can thus be seen as an attempt to reconstruct a Viking Age technology comprising of materials, tools and techniques.

Needless to say, this kind of experiment should be done in the same scale as the originals. It would be reasonable to first find out a technique for attaching one letter. This can best be done by welding a letter on a small piece of steel, not on a complete sword blade. After a well-working technique for attaching one letter is known, it can then be applied to making full inscriptions on both sides of a whole sword blade.

New questions are most likely to arise during the experiments: can several letters be attached or welded at the same time? How much was the sword blade forged before attaching the letters? Were the letters attached on a ready-made, forged or ground fuller? Were the bevels forged when the inscriptions were welded? What did a polished sword blade look like? Does the material of the blade or the inscription affect the technique of attaching inscriptions?

To gain a full understanding of the process and techniques, whole blades should be produced. In this way the whole manufacturing process of the sword can be observed, and the making of an inscription can be included better as part of the whole manufacturing process. Also the result of the swordsmith's work – the finished, polished blade – can be examined. This is crucial when considering the appearance of a finished sword with an iron inscription. Here the main question is whether the blade was etched to enhance the inscription? How could the blade have been etched, and with what medium?

The background work of the experimental study must include all available previous research on the subject. There exist quite many theories about making these iron inscriptions (*e.g.* Oakeshott 1960, 143–144; Tylecote & Gilmour 1986, 276; Tylecote 1987, 276; Kirpichnikov & Stalsberg 1998, 507). These are only theories, which can be put to the test through these experiments. The diversity of theories gives the assumption that inscriptions could be produced in many ways. The questions are as follows: do the theories work in practice, and if they work, can they be distinguished from each other by their final appearance produced

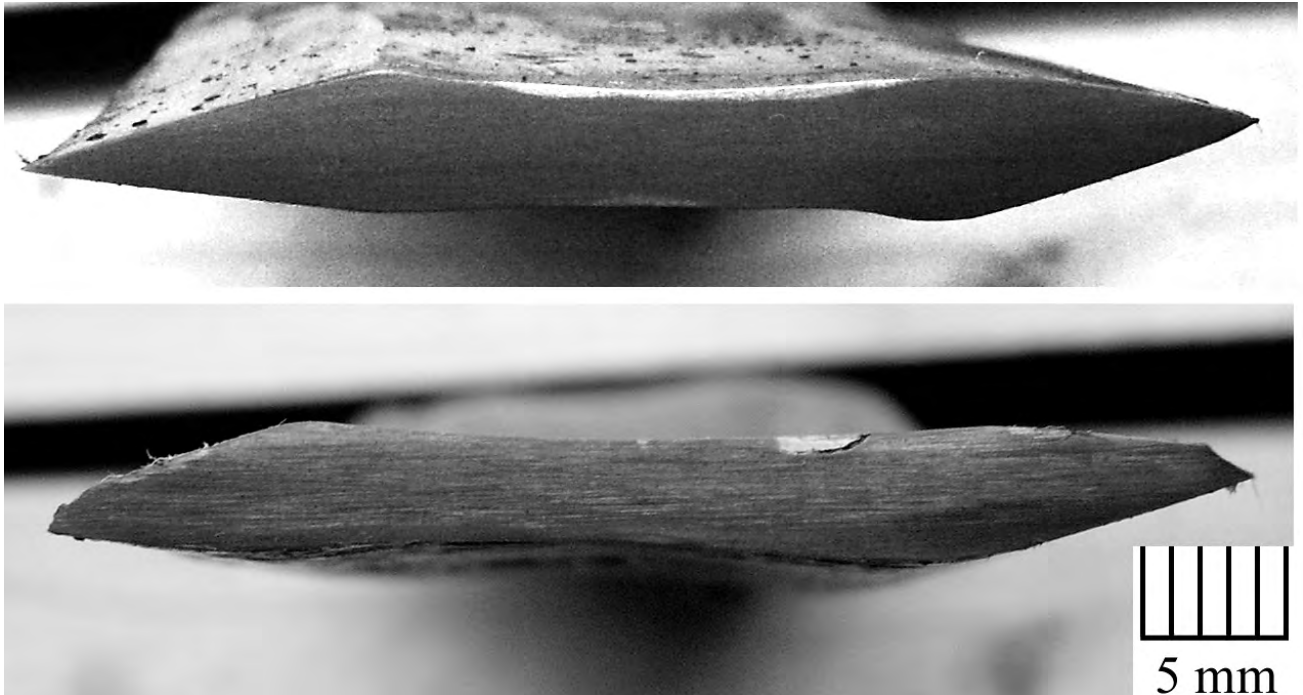


Fig. 2. Polished and etched cross-sections of two reconstructed sword blades, in which the darker area is the sword blade material (carbon steel) and the brighter ones on the fuller are inscriptions (pattern-welded steel and iron). The upper one has inscriptions, which have sunk only about half a millimetre, while the inscriptions of the lower one have sunk almost twice as much. The technique of attaching the inscriptions was varied in these two blades, and this in turn can be seen from the cross-section of the blades. Photos by Mikko Moilanen.

in experiments? Do the results of the experiments test different theories comparable to archaeological finds? Can they even be compared due to the fairly poor degree of preservation of the sword blades?

The starting point for the practical work is naturally in previous experiments. In this case, there is only one (Andresen 1993), which does not fulfil the criteria for scientific archaeological experiment. According to experimental methodology, Andresen based his experiment on an archaeological find. The criticism mainly concerns the way in which his experiment was done. According to the published article, he did not make a complete sword with inscriptions. Instead, he tested his method by welding few steel letters on one side of a flat iron bar. This does not correspond to making full inscriptions on the opposite sides of a complete sword. Moreover, the making of thin pattern-welded rod for the letters needs explanation, because Andresen's experiment did not include it at all, and Andresen does not consider any other technique for attaching letters.

It should be noted here that this experiment by Andresen is the only published one. Moreover, some bladesmiths may have also tried to produce iron inscriptions and could even have succeeded. These kinds of blades are not at all common on the commercial market. This fact, however, does not exclude the possibility that some skilful swordsmiths could produce pattern-welded inscriptions, for example as custom work. After all, many European bladesmiths have examined actual archaeological

finds to imitate them and achieve some degree of historical accuracy.

In dealing with experimental archaeology, the archaeological finds play a crucial role. The materials used in the experiments should closely correspond to those used in the early medieval swords with iron inscriptions. Already previous studies can tell quite a lot about the materials used in the sword blades. The most important factor in the sword blade material is its carbon content. There are some metallurgically analysed sword blades with inscriptions, and these analyses can tell both the carbon content of the used material, and the way in which the blade was constructed. The blades were laminated in all cases, i.e. welded from separate, longitudinal parts, which sometimes had different carbon contents (e.g. Leppäaho 1964, 8–9; Anteins 1973, 40; Williams 1977, 81–84; Törnblom 1982, 25; Tylecote & Gilmour 1986, 218–220, 224–227, 234–236; Thålin-Bergman & Arrhenius 2005, 100–101).

It is not necessary in the experiments to construct the blades exactly according to archaeological finds, but the surface material of the sword should be as similar as possible. The inscriptions were attached on the surface of the fuller (or blood-groove, as it is often misleadingly called), which means the material of the fuller used in the experiments should correspond to that used in the swords of the Early Middle Ages. The already stressed carbon content has an effect on the welding temperature of steels, and since the letters seem to have been welded

on the blades, the selection of the right kinds of materials is of crucial importance for the success and reliability of experiments.

Also the material of the inscriptions should correspond to archaeological finds. It is necessary to study the actual finds, which in this case can be a sample of Finnish early medieval swords with iron inlays. The requirement for these examined finds is that the inscriptions should be seen from the surface of the blade without the help of x-rays. Only in this case it is possible to examine the material and all details that may tell something of the technique used for attaching the letters on the blade. What do the edges of the letters look like? How are the letters arranged on the fuller? What kind of pattern can be seen on the surface of the letters?

It is possible to find a few cross-sectional analyses of swords with iron inlays in earlier studies. In some cases these analyses were made of the middle of an attached letter (*e.g.* Leppäaho 1964, 9; Törnblom 1982, 25; Thålin-Bergman & Arrhenius 2005, 100–101). This is of crucial help for the experiments, because this is the only way to see how deep the letter is attached, and how. According to these studies, the letters appear to be attached by welding, and there are no indications of any pre-cut grooves. The depth of the letters varies, which may be due to different manufacturing techniques. One good way of comparing reconstructed blades with the original ones could be cross-section analyses of reconstructed blades, which in turn are compared to the above-mentioned examples (Fig. 2). In a study like this it would be a serious option to make new cross-sectional analyses of well-preserved swords.

At the forge: practical experimenting

After the careful planning and selection of materials, the first experiments are made. First a method for welding one letter is tested on a steel plate, which simulates a sword blade (Fig. 3). Here, the materials should also correspond to archaeological finds. After this, the same method is used to make a complete sword with inscriptions. The overall process of one experiment thus produces a complete sword blade without the parts of the hilt. To make sure the used methods really work, the experiment is repeated by switching the phase of manufacture of the sword blade. The whole experimental research aimed at answering the presented questions produces many sword blades, which can be called reconstructions. In each experiment (or blade) both the attaching technique of the letters and the forging phase of the blade are varied.

In the planning phase of the experiments, the materials of the blade and the inscriptions were selected according to archaeological finds. Similarly, the tools and techniques used in the experiments should correspond to those used in the Early Middle

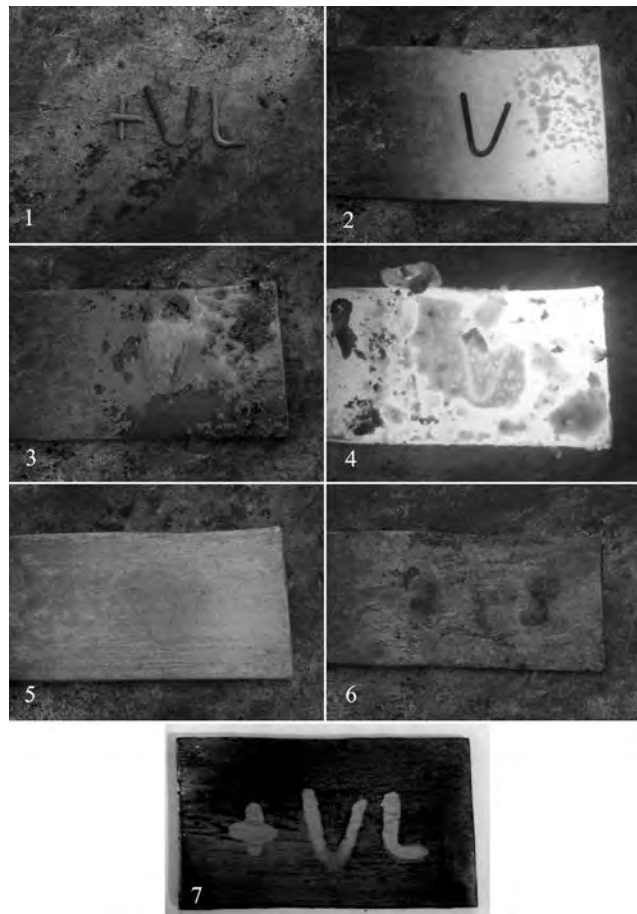


Fig. 3. Phases of welding iron letters on a trial piece simulating a sword blade: 1. Letters +VL formed from iron wire, 2. A cold letter is placed on the steel plate, 3. Molten borax sand on heated steel plate and letter, 4. The plate is heated into welding temperature, 5. Letter V forge-welded by hammering, 6. Letters +VL welded on the plate, 7. Coarsely ground and etched steel plate with iron letters on its surface. Photos by Ulla Moilanen.

Ages. The blacksmith's tools can also be selected in the light of archaeological finds (*e.g.* Grieg 1922; Ohlhafer 1939; Petersen 1951; Pleiner 1962; Blindheim 1963; Oldeberg 1966; Arwidsson & Berg 1983; Peets 2003). During the experiments the aim is to use such tools, which form and function are similar to those used in the Early Middle Ages. Moreover, these used tools must be as simple as possible to find out what tools are needed to forge a sword with iron inlays. Archaeological tool finds are quite diverse and show only little variation over a long time span. The tools of the blacksmith seem to have retained their shape and function since Roman times (Gaitsch 1980, 256). As an assumption, the only needed tools should consist of an anvil, hammers, tongs, chisel, and perhaps small pliers.

The necessary blacksmith's tools also include a forge. Distinct recognizable forges are relatively rare at archaeological sites. However, the basic requirements are that the forge uses charcoal as fuel, and that sword blade can be inserted through the forge to allow any part of the long blade heated to forging or welding temperature. There are many primitive and



Fig. 4. A letter being hammer-welded onto the fuller of a half-finished sword blade. The anvil is relatively small and is attached to the wooden log, while the hammer is also quite small with a little convex face. The fuller of the blade is semi-finished until the letters are hammered in, at the same time deepening the fuller. Photo by Ulla Moilanen.

possible construction alternatives that meet these two requirements. The forge can be just a stone circle on sandy ground or then it can be a raised tower-like and possibly board-framed construction. The heat of the forge should be maximized by hand-operated bellows, although this is not necessary. For example, mechanical air blasting does not have any effect on the experiments or their results, as long as the time and fuel needed are not accurately measured as a part of the documentation and thus considered as comparable evidence. On the same grounds, the reconstruction of a whole workshop or smithy is practically useless in view the research question. Here too, previous experiments concerning Iron Age or early medieval forges should be noted (*e.g.* Giese 1990).

If one wants to go to a more theoretical level, these forging experiments could also be done in laboratory conditions by using, for example, an electrically operated forge allowing pieces of iron to be heated at exact temperatures. The disadvantages are high costs and the availability of this kind of technology. However, if possible, this could be a serious option, because it would minimize the errors arising from chance factors created by primitive technology. On the other hand, forge-welding in laboratory conditions could be very difficult, and it is necessary to include the human element as it plays a very

visible role in blacksmithing and the products of the blacksmith. After all, the forging experiments cannot be scientifically 'controlled', but only observed and compared with archaeological material.

Some results so far

So far I have made seven sword blades with inscriptions in my thesis research. They illustrate several functional methods for making the inscription. Considering the archaeological data, the material for the inscriptions is in most cases pattern-welded. The analysed Finnish finds show that the pattern-welded material has also internal differences. Normally, the pattern-welded rod is twisted but in some cases it is left plain showing a straight pattern. The layer count of the pattern-welded rods can be measured and sometimes even quite accurately counted. It seems that normally the layer count in the material of the letters is approximately between five and nine, whereas in some cases this count is doubled, which may be a sign of, for example, a different manufacturer or workshop tradition.

The thin, pattern-welded rods were most likely constructed in a traditional way by making a pack of alternating layers of iron and steel, and welding



Fig. 5. Phases of the latest experiment: 1. Letters, which are formed from pattern-welded rods, 2. Hand-forged sword blade with welded inscription +VLFBERHT+, 3. The same blade polished and etched to enhance the inscription. Photos by Mikko Moilanen.

this pack into one piece by hammering. Instead of stretching the pack by hammering, it was found that it was easier and quicker to hammer it into a flat sheet. Then a number of thin strips were cut from the sheet with a chisel, hacksaw or sheet shears. These strips were twisted in forging heat with two tongs or pliers, and then the letters were formed from the twisted rods by bending them with pliers.

The forging of a sword blade was done on a small anvil attached to a small log. The hammers were of the same shape as in the Early Middle Ages. The selection of the simple tools was actually quite unproblematic, because the shapes created during the earliest periods of metalworking have survived until modern times. In the experiments, the phase of the sword manufacturing process was changed. The forging of the sword and the welding of the inscriptions were easily done with normal hammers with a small convex face (Fig. 4).

According to the seven experiments, the method used by Andresen (1993) used seems to work, with only small adjustments. The optimal and quickest method seems to be that the inscriptions were forge-welded straight on the surface of a half-forged or half-ground fuller, while the bevels were not yet forged (Fig. 5). The blade blank had to be thicker than designed, because the oxidation of the blade can consume as much as two millimetres from the thickness of the blank. The inscriptions are normally on the upper third of the blade and on the opposite sides. Because of this, almost the same part of the blade is heated several times to low welding heat. In the experiments this caused a great deal of oxidation, and for this reason the number of the heatings and the welding temperature must be kept as low as possible. It should be noted here

that the letters should be hammered very hard at a temperature so high that they actually sink into the blade. This in turn cannot be done at the lowest welding temperature.

However, according to Andresen, the sword find that he examined had an unbroken blade structure, which indicates that no grooves were chiselled for the letters. One way to make the letters sink deeper into the blade is to forge grooves for the letters (e.g. Lang & Ager 1989, 101). This should be done at forging temperature with chisel-like punches. These punches do not break or cut the structure of the blade, but only bend it sharply. This was done in one experiment, and then the pattern-welded letters were successfully welded into the pre-forged grooves with only four heats. This technique also enables the inscriptions to be welded on the blade even when the bevels are already forged. It is only certain, that a ready, polished blade could not have inscriptions welded on it. If a finished sword blade is heated to welding temperature, its cutting edges will most likely burn and, because of the new grinding and polishing operation, the finished inscribed blade would be thinner and narrower at the place of the inscription.

The Andresen method can also be modified to make the letters sink deeper. In the original method, the letter was placed on the even surface of the fuller, and then struck with a hammer at welding temperature. One possible way is to strike the letter deeper while having the previous one just welded in. The blade is at forging temperature after the welding, and the next letter can be placed cold on the hot blade, and when struck with a hammer, the cold letter sinks slightly and can then be hammer-welded deeper with the next heat.

These experiments show that there can be different techniques to make inscriptions. These techniques are dependent on the phase of the forging of the sword. It is clear that to make a full survey of all possible combinations of these methods, more experiments should be done. After that, the results of this survey should be compared to archaeological finds. What is most important, the experiments could inform what techniques are not possible and thus probably not used during the Early Middle Ages.

The experiments could also be refined through more criticism. Mostly modern materials were used in the experiments. This was the case especially in tools. The materials for the sword blades and inscriptions were old carbon steel and non-carbon iron, with as little alloying elements as possible, because these elements have an effect on the working and welding properties of materials. To have more authentic materials, raw iron and carbonized steel should be used. In some cases the letters were made from phosphorus-rich iron (*e.g.* Thålin-Bergman & Arrhenius 2005, 100–101), which should also be tried. It is not necessary to make tools out of more authentic materials, but it could help in observing the whole process of manufacture. Also the forge could be made more authentic by using bellows instead of mechanical air blowers.

Experimental blacksmithing – why?

Blacksmithing experiments – as conducted according to principles of experimental archaeology – are very sensitive to mistakes and errors, as any other experimental research. All these sources of possible errors should be eliminated for example by applying the eight rules defined by Coles, and by using common sense.

Blacksmithing experiments can answer questions of broader scale than just describing, for example, the possible manufacturing process or processes of early medieval swords with iron inlays. These so-called second-level questions can be combined with contextual questions, which may apply to the study of a whole society or societies. The

manufacture of iron objects is firmly connected to trade and commerce, the wealth of population groups, and the structure of society. The crafts of the blacksmith can also tell something about locality of smithies, professionalism, and travelling blacksmiths.

The above example of finding out the manufacturing processes of swords with iron or pattern-welded inscriptions can also be connected to questions of larger importance. The traditional view of these early medieval swords is that they were all made in Frankish smithies, or at least those with the ULFBERHT and INGELRII inscriptions. According to some finds, the fact seems to be that these swords were also made outside the Frankish areas. These finds include for example a sword with the Cyrillic inscription ‘koyal Ljudota’ (‘blacksmith Ljudota’) from the Ukraine (*e.g.* Kirpichnikov 1966, 41; Anteins 1973, 48) and a sword from Great Britain with ULFBERHT and INGELRII inscriptions both misspelt (*e.g.* Anteins 1973, 45–46).

If the inlays – like trademarks such as ULFBERHT and INGELRII – were signs of quality and of course higher price, they were naturally copied locally. This copying activity could be seen as a more potential alternative, if the manufacturing of such blades could be proved to be quite easy, with little equipment, and with different methods. According to the experiments, inscriptions could have possibly been attached to semi-finished sword blades, which in turn could have been imported from elsewhere. In other words, inscriptions could even have been made in different areas than the blades.

The next step could be to examine *e.g.* well-preserved Scandinavian and Baltic finds to see if different manufacturing techniques of the inscriptions could actually be distinguished by comparing them with the results of the practical experiments. Of course, to be able to do this, archaeological finds should be in very good condition. This in turn could make it possible to define areas where inscriptions were copied or at least the spread of a certain smith’s products. To do this, the sword should be seen as a whole, and the different hilt traditions and typologies should be also considered.

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CASTLES AND TOWNS

Terhi Mikkola

DENDROCHRONOLOGICAL ANALYSIS AND THE STUDY OF SPACE IN MEDIEVAL FINNISH CASTLES

– Case studies of the castles of Häme and Olavinlinna

Introduction

This article deals with my studies on the organization of space in medieval castles and how natural scientific dating with the means of dendrochronological analysis may help in that work. By organizing space I mean how the rooms, corridors and other spaces were situated and how people could move between them. Up to now I have focused on the main castles of Häme Castle and Olavinlinna Castle. Both are from medieval times: Olavinlinna Castle was erected in 1475 and the presumed time of construction of Häme Castle is from the late 13th century to the second half of the 14th century. Both castles are suitable for my studies because of their reasonably well-preserved inner structures. Furthermore, they were restored as historical monuments and tourist sites by the Finnish National Board of Antiquities between 1950 and 1980. In this connection their structures were examined and documented, and there are thus drawings of constructions, photographs and notes concerning both castles. They form a good basis for my studies on defining the space and its use in the main castles of Häme Castle and Olavinlinna.

It is clear that the most accurate information possible is needed, when the use of space in a whole castle at the same time level is analysed. Both relative chronology and absolute natural scientific dating are needed. Owing to research historical reasons, surviving structures of the medieval main castles in Finland are mainly dated with written sources and art historical analysis and their relative chronology has been reconstructed through building-archaeological methods. Finnish medieval castles were mainly restored before the 1980s, at a time when dendrochronological samples were not collected for analysis. Natural scientific analysis such as dendrochronology has been used widely in dating medieval buildings in Finland since the 1980s. Comprehensive work has been carried out especially in stone churches (Hiekkanen 1994) and Turku Castle, where dendrochronological surveys were carried out in the 1990s and were used for dating the structures of the outer bailey (Zetterberg 1994; Uotila 1998, 67–71). Today, dendrochronological sampling, where possible, is routine procedure in research projects at medieval sites.

The most extensive analyses thus far in the main castles in Finland have been carried out at Olavinlinna Castle, where in the 1990s samples were taken by the National Board of Antiquities and Pentti Zetterberg from the University of Joensuu (Zetterberg 1990; 2003). The present article reports on the results of the dendrochronological analysis carried out at Häme Castle with in the project *Through the gate tower – Modelling the past of Häme Castle*, of which one goal is to perform scientific analyses of Häme Castle and its surroundings. I also discuss the results from Olavinlinna Castle, where the dendrochronological analysis of its structures succeeded well. My aim is also to discuss how dendrochronological analysis would help in dating the period of use of the spaces I have defined in Häme Castle and how they could be used at Olavinlinna Castle where I am continuing the work.

Studying space in medieval castles

When examining specific archaeological sites, the above-ground features of dwelling sites, or even more easily recognizable structures as this case, a castle, it is only human to find oneself asked where people cooked their food, ate, slept and kept their property. As archaeologists, we first demand well-grounded facts for our conclusions on how we define structures, their boundaries and how to place them in chronological order. For the second step, to decide how all that space was used, we need even more analyses, interpretations and analogies. And finally, when it is been decided, following certain criteria, which of the rooms was a kitchen, hall or chamber; it must be solved how people entered and moved between these spaces. Furthermore, if we consider that the placing of rooms and their structural details is not just coincidental, or determined only by the environment, it can be assumed that by examining the ordering of the rooms, their features and utilization, it is possible to draw conclusions on the society using the complex in question.

So far, I have studied most extensively the inner organization of Häme Castle and I have made conclusions and reconstructions how space was organized and used there in the late medieval period (e.g. Mikkola 2003; 2004; 2005a). In my studies I

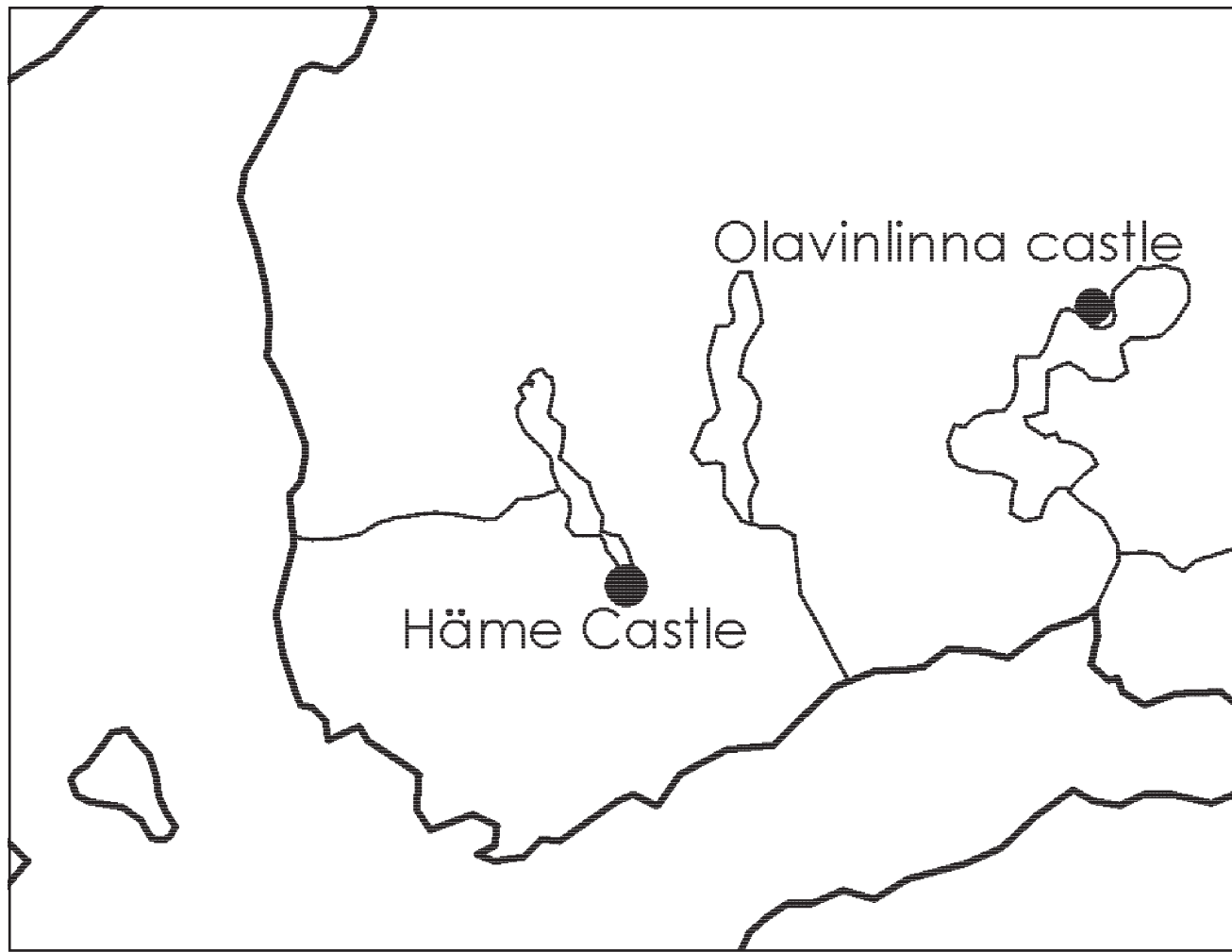


Fig. 1. The locations of Häme and Olavinlinna castles.

have used methods such as access analysis (gamma-analysis) (Hillier & Hanson 1984) for analysing how rooms and other spaces were related to each other. I have defined the function of separate spaces with a decision-tree diagram with a chain of yes/no questions relating to their structural features (Mathieu 1999). Access analysis in particular has been used in castle and other medieval studies because it is well suited to analysing large, complicated structures such as castles, and gives opportunities for interpretations (e.g. Fairclough 1992; Andersson 1997; Hansson 2000; Nordeide 2000; Richardson 2003). In this connection I shall not report my conclusions regarding Häme Castle or present access diagrams of its structures, as I have done so in previous context (see references above). At present, I am conducting a comparable analysis of Olavinlinna Castle, and following that, I shall discuss both castles together in future studies.

My aim is also branch out at a theoretical level. Space in medieval castles, other buildings and landscapes have been examined and interpreted, for example, from the perspective of meaning, social relationships, representations, perceptions and ideology (Dixon 1998; Johnson 2002; Coulson 2003; Eriksson 2005; Hansson 2006). So far I have concentrated on social relationships between

the groups of people engaged in different tasks in the castle, but I am still trying at quite a practical level to figure out the structure of my research objects so that my reconstruction of their spatial organization would be acceptable for further analysis. Relative history of construction elaborated according to established practice is an essential foundation for my conclusions on room organization (e.g. Eriksson, Gardelin & Wallin 1998; Andersson & Hildebrand 1988). With regard to the main castle of Häme Castle the chronological order of medieval structures has been examined and published (Hämeen linnan tutkimustöiden muistiinpanot; Drake 1968). In Olavinlinna, a compilation of the medieval building history is lacking, but there are observations and assumptions regarding it in research reports made in connection with restoration (Olavinlinnan tutkimustöiden muistiinpanot).

The problems I have had in reconstructing the room organization of Häme Castle and Olavinlinna castle mainly concern difficulties in establishing whether or not separate structures in different parts of a castle were in use at the same. It is essential for access analysis to know the routes between the rooms and other spaces, and accordingly I would need to know when doors and gates in the castle were in use. For example, if the room had three doors, were they all



Fig. 2. Häme Castle from the northeast. The low round gun tower, or rondell, was built in the mid-16th century. The brick buildings flanking the castle were built in the 18th century. Photo by Terhi Mikkola / NBA, Häme Castle.

in use simultaneously, or was only one of them used at the time. Or if a door was in use in a certain room, was another doorway on the fourth floor of the North tower in use as well. The same information would be needed also regarding windows, ovens and other separate structures for conclusions on the function of the rooms. The relative chronology of structures gives answers to these questions, but to attain a specific time level in the castle so that its spatial organization could be studied as a whole in a certain timeframe, absolute dates are also needed. In some fortuitous cases there are surviving wooden remains, such as the boarding of doors and window vaults, permitting dendrochronological sampling. This greatly helps in solving the problem of dating, assuming that sampled beams were set in place when the structures were originally built and that the timber was not reused.

Dendrochronological analysis is based on the regular growth of the annual rings of wood species in a specified geographical area. It is an accurate method, providing at best the precise year when the timber was felled. Drawbacks in using this method in my studies are that in most samples taken in Häme Castle and Olavinlinna castle, the original surface under the bark was carved or worn away. In situations of this kind the last surviving ring gives the year when a tree was felled at the earliest and the time when it was felled at the latest is given as an estimate. Also beams in the same structure could have been felled in different years, which lengthen the estimated period of making the a structure in question (Zetterberg 1990, Appendix 1; 2004, 5). Moreover, the survival of medieval timber structures to be sampled is quite random, which means that it

is not possible to use dendrochronological sampling as systematic analysis from the point of view my studies. It is only possible to take samples when there is material for them, and to use dendrochronological results in interpreting the time of use structures alongside information on the building history of the castle.

Häme Castle

Häme Castle is in the Finnish inland, in the northern part of the town of Hämeenlinna on the west shore of the Lake Vanajavesi (Figs. 1, 2). The date of its founding and that dating of its building phases have been based on written sources, stylistic analysis and relative chronology in building archaeology. Scholars have concluded that Häme Castle was erected in the late 13th century or during the first half of the 14th century, and its medieval building phase ended in the 1520s (Lovén 1996, 94–97; Uotila 1998, 113–114; Drake 2001; 2003; Hiekkänen 2003). Medieval Häme Castle was square with towers at each corner, the highest in the north and west. Between the towers were wings with tree storeys. Protruding from the castle's Southwest wing was the so-called Cock Tower, which contained earliest gate to the castle. The castle was surrounded by a curtain wall on all four sides (Uotila 1998, 115–118; Luppi 2003, 145). The National Board of Antiquities restored the castle between 1953 and 1988, and it is now one of the most popular sights in Finland. As a subject of study, Häme Castle has interested historians, art historians and archaeologists, and the following text and earlier articles mentioned in this text are only



Fig. 3. Boarding of the window niche on the mezzanine floor of Häme Castle. Basing on dendrochronological analysis it is dated to the early 18th century. Photo by Terhi Mikkola / NBA, Häme Castle.

examples of the large number of studies concerning it (e.g. Hockman 1996; Hiekkänen 2001; Vilkkuna 2003). I have in my earlier research analysed and made reconstructions of the room organisation of the late medieval period of the castle, by which I mean the situation when its medieval building phase ended in the 1520s (e.g. Mikkola 2003; Mikkola 2005a). Within the project *Through the Gate Tower – Modelling the Past of Häme Castle*, we have now sampled and analysed dendrochronological (Zetterberg 2004) and macrofossil material (Lempiäinen 2004; see also Onnela 2003 on earlier collected macrofossil samples). One of the goals of the project is carry out scientific analyses of Häme Castle and its surroundings to provide a solid basis for its dating.

In Häme Castle, dendrochronological samples were taken from wooden fragments found in the rooms of the main castle. Samples were collected from a number of places that were technically reasonable to study. The authenticity of the samples was ensured with the help of research reports, drawings and photographs of the restoration work done in the main castle in the 1950s and 1970s. In Häme Castle, there is need for extreme caution regarding the origin of the material as some of the wooden structures were replaced or rebuilt during restoration

work, for example in ceilings, and old planks were brought in elsewhere. Dendrochronological samples were taken in four different spaces: in a square room on the mezzanine between first and second floor in the West tower, where samples were taken from the boarding of the vault in the window niche and loose shelves in the wall niche; in a privy on the second floor that was entered via the same staircase as the room mentioned above; and in a room on the ground floor in the Southeast wing, where samples were taken from the ceiling beam of a window niche (Zetterberg 2004; Mikkola 2005b).

Sampling succeeded best in the room in the West tower. Three of five samples taken from the boarding of the vault in the window niche were analysable and their common date of felling is 1670–1700 (Fig 3). They can presumably be connected with repairs carried out in the 1720s, when castle was transformed into a grain store, assuming that these beams were stored for a quite long time (Zetterberg 2004, 5; Mikkola 2005b, 59). The replacement of wooden structures in the room is mentioned in a contemporary map (Nordenberg 1726). In the room on the ground floor, only one beam survived so that it was suitable for sampling. It, too, was badly preserved, but it was possible to limit its felling time to 1543–1613. But of course as we have a date for



Fig. 4. Olavinlinna Castle from the west. The uppermost floors of the towers with round loopholes were laid with bricks in the 18th century. Photo by Terhi Mikkola / NBA, Olavinlinna Castle.

only one beam, it is not possible to consider the time of building of the whole boarded vault. The dating of other contexts did not succeed because of poorly preserved wooden material and series of annual growth rings that were too short. It may be possible to analyse them in the future with an instrument permitting the microscopic measurement of the surface of the wooden remain or if it would be possible to remove beams so that their annual rings could be counted on cross-sections (Zetterberg 2004, 5–6). We will also try to find more suitable wooden remains for dendrochronological analysis. I hope these future samples will produce material which I could use in my studies on late medieval room organization in Häme Castle.

Olavinlinna Castle

Olavinlinna is in East Finland, in the city of Savonlinna (Figs. 1, 4). On the basis of written sources, Olavinlinna Castle was erected in 1475. The castle was built at the border of the Swedish realm in East Finland, or as interpreted by contemporary Russians, the Novgorodians, on the their side of the border, which is why they disturbed and tried to prevent the building work of the Swedes (Sinisalo 1961, 10). The building history and restoration works of the

castle from the beginning of the 18th century to the mid-1970s are presented in a published compilation by Antero Sinisalo, who worked as a curator at the National Board of Antiquities and participated in the restoration work from 1961 until 1975 (Sinisalo 1986). The earlier building history of the castle lacks a compiled work, mainly because of the untimely death of Antero Sinisalo. However, he wrote some articles concerning the medieval building history of the castle (*e.g.* Sinisalo 1961; 1966; 1972; 1978; 1986; see also Lovén 1996, 189–190; Härö 1997; Uotila 1998, 135, 138). I have familiarized myself with the medieval building history of Olavinlinna Castle through this materials and research reports, drawings and other documentation done during restoration work in the castle, and with the assistance of Matti Laamanen, who now works a researcher at the National Board of Antiquities.

Olavinlinna Castle was built in the rocky small island in Kyrönsalmi strait and for practical purposes the castle covers the whole island. The medieval castle had a main castle with three round towers with a bailey surrounded with a curtain wall on its east side (Sinisalo 1978, 247). The founder of Olavinlinna Castle was Erik Akselinpoika Tott, the military commander responsible for the eastern border of the Swedish realm at that time. The castle was

built in late medieval times, when the requirements of defensive structures changed because of the firearms, especially cannon. The castle's round towers were planned to be cannon towers, but they also had dwelling rooms (Sinisalo 1961, 14). These mixed features of old and new castle design make Olavinlinna Castle an interesting object for my studies on the use of space in medieval castles. This is particularly because the original room organization in the towers of the main castle is reasonably well recognizable, although the spaces in the wings between the towers has been changed several times and making a comprehensive reconstruction of them will be more problematic.

Sixty-four dendrochronological samples were taken at Olavinlinna Castle by the National Board of Antiquities and Pentti Zetterberg of the Laboratory of Dendrochronology at the University of Joensuu. As all the samples are from original locations, they also date the structures in the same context: scaffold holes, ceiling and base boards of niches, windows and portholes, supporting beams and other comparable structures. Samples were taken in fourteen different spaces such as rooms, corridors and defence passages (Zetterberg 1990; 2003). They support the earlier interpretation that the most of the castle and its towers were built by the 1480s (Sinisalo 1961, 11). The results also permit the study of the use of space. For instance, two samples were taken from the lowermost room in the tower called Kirkkotorni ('Church Tower'). This room, called Tott's chamber, belongs to the oldest part of the castle and has four doorways and three window openings, one of which can be an embrasure (Ryhänen 1967). The dendrochronological results show that one of the windows was given its present form in the mid-16th century and the short corridor leading to the chamber had ceiling boards of a tree felled in the winter of 1476/1477 (Zetterberg 1990). Findings of this kind are required for conclusions on room organization in Olavinlinna Castle.

Concluding remarks

I have chosen Häme and Olavinlinna castles as my subjects of study because in those castles

the structures of the main castles have survived satisfactorily and restoration and research work in these castles have produced a wide range of documents which are necessary for my studies of using and organizing space in medieval castles. Analysing the use of space in large and complex buildings such as castles is not done without problems. The most serious one is to date defined structures, rooms, doors, windows, ovens, etc., so that they could be treated as being in use in the same period. Knowing the date of them in different parts of the castle is essential for the methods that I use in my studies, such as access analysis. Relative building chronology forms a foundation for this, especially in Häme Castle in where it has been done thoroughly. Natural scientific analysis, such as dendrochronological sampling, gives even more possibilities for dating separate structures.

The dendrochronological samples taken from Olavinlinna Castle are promising from the perspective of interpreting the use of space. There are structures, such as the boarding of door and window openings, which date according to analysed samples to my research period. I assume that when I will be doing the reconstruction of the organization of space in the castle, it will be possible to utilize the results of dendrochronological analysis. In Häme Castle we did not find wooden remains in original contexts, so that they could also date other structures, and there was little preserved wooden material suitable for dendrochronological analysis. The analysed timber there was mainly from the 18th century. Nonetheless, these results are interesting in the perspective of the use-history of castles on the whole and can be connected to repairs made at the time. We are carrying on research in Häme Castle by seeking more material for sampling and trying with other practices to re-analyse the wooden structures the dating of which has not yet succeeded. Also possibilities to use other scientific analyses for dating the castle's structures are under consideration. The use of scientific methods for dating separate structures is essential in studies of this kind, aiming at reconstructing spatial organization in a specific period, especially in research locations such as Häme Castle and Olavinlinna castle, which were use for long periods and for different purposes.

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CATTLE IN MEDIEVAL AND POST-MEDIEVAL TURKU

Introduction

The important role of cattle in medieval and post-medieval society in SW Finland is evident in both osteological material and written sources. The aim of this article is to study the cattle in the town of Turku, their role, importance and purpose with reference to osteological data and documentary evidence. The osteological material from two town plots dating from the 13th century to the 19th century was used for this study. The cattle bones deposited in Turku originate from animals bred in the town and its surroundings. Thus, the importance of cattle in the rural environment is closely connected to urban consumption, and therefore the role of cattle in both urban and rural settings is examined. Animal husbandry in SW Finland can also be examined through a number of historical documents. The documentary evidence, however, is scarce from periods before the 16th century. Moreover, these sources were usually created by the Crown for other purposes than the description of animal husbandry or animal utilization. Information on strategies in animal husbandry and everyday life is usually missing.

Osteological data and historical sources reveal different aspects of animal husbandry. Bones accumulated in the urban layers over hundreds of years contain information on long-term changes in animal husbandry patterns. Animal bones can provide insights on everyday life among the common urban dwellers. In contrast, written sources usually describe the situation during a specific day or summarize the events during one year. Written sources are available from both urban and rural environments, while at the moment only a few rural sites have been excavated. Osteological data represent the 'dead stock', *i.e.* the consumption of the animals, in contrast to written sources describing the 'livestock', in other words, production. This type of information is quantitative or numerical and it can be used to count animal abundances *etc.* In addition, written sources contain qualitative information such as cattle names, colours or details of their breeding. By combining these two very different types of sources a multisided picture of cattle breeding in Turku and its surroundings can be formed. It should be borne in mind, however, that these sources often describe different things

and any comparisons should be carried out with caution (Myrdal 1997; Albarella 1999; Tourunen forthcoming).

Sources used

A total of 36,159 cattle bones or fragments of bones were examined for this study. The assemblage derives from two excavations in the town area of Turku, the Åbo Akademi site and the Aboa Vetus Museum site (Fig. 1), both of which were large-scale excavations in the central area of medieval Turku.

The city of Turku is situated on the River Aurajoki in the coastal area of SW Finland. According to Hiekkänen (2003, 45–46), Turku was founded by the Swedish Crown, Church and the Dominican Order in the late 13th century. The early history of Turku, however, is still debated. Turku soon became a centre of ecclesiastical and secular power of the Swedish kingdom on the eastern side of the Baltic Sea (Kuujo 1981, 17, 45; see also Hiekkänen 2003, 47–48). In Finland, the border zone between medieval and post-medieval is usually placed in the middle of the 16th century, but in slightly different places (*e.g.* Haggren 2000, 39; Kallioinen 2000, 24).

At the Åbo Akademi site (Turku 1/7/4), large-scale excavations (1,300 m²) were conducted in 1998 because of proposed construction work at the site (Pihlman 2003, 70–71). During the fieldwork, a considerable amount of material was recovered, including well-preserved organic finds such as leather, textiles and bones (Pihlman 2003, 71). Most of the bones from the Åbo Akademi site date from the medieval period (late 14th century–mid 16th century), but part of the assemblage dates from post-medieval times (17th–18th century). The material was sieved using a 10 mm-mesh sieve. The medieval layers included many signs of handicrafts, such as leather waste and textile production implements (Harjula pers. comm. 26.1.2006; Kirjavainen 2002).

The Aboa Vetus Museum area was excavated at the beginning of the 1990s (Sartes 2003, 77). The site is characterized by a large number of remains of stone buildings covering most of the excavation area (Sartes 2003, 78). The excavated layers cover

Table 1. The total number of cattle bones from Turku. NISP = Number of Identified Specimens, MNE = Minimum Number of Elements. NISP is the total number of the identified bone fragments, MNE is the minimum number of complete bones that can produce the fragments. The higher number of tarsi MNE than NISP is caused by pathological bones fused together and counted as one in NISP.

Element	NISP	MNE
Cranium	3731	205
Mandibula	1632	368
Atlas	293	136
Axis	216	106
Vert cerv	1070	358
Vert thor	1899	580
Vert lumb	1563	415
Vert sacr	309	46
Costa	6610	1313
Sternum	93	38
Scapula	1276	221
Humerus	825	220
Radius	770	273
Ulna	476	236
Carpi	541	518
Mc	445	355
Os coxae	1093	270
Femur	1001	199
Patella	76	74
Tibia	930	301
Malleolare	35	34
Calcaneus	400	359
Talus	339	315
Tarsi	304	329
Mt	563	381
Ph 1	946	901
Ph 2	648	610
Ph 3	459	452
Total	28543	9613

both the medieval and post-medieval periods. However, as a major part of the excavated area was covered with buildings during the medieval period, the assemblage is mostly post-medieval. An 8 mm-mesh sieve was used for the recovery of this material. Stone buildings indicate high socio-economic status of this settlement during the Middle Ages.

Only a few medieval accountancy documents have survived in Finland (Kivistö 2000, 74). King

Gustavus Vasa of Sweden-Finland strengthened the role of government in the 16th century, introducing more effective administration, which created numerous tax- and accountancy documents (Vilkuna 2003, 21–25) such as the accountancy records of Hämeenlinna castle (Vilkuna 1998; 2003) as well as the landed estates surrounding the castle of Turku (*e.g.* Hausen 1881; Säihke 1963). In addition, estate inventories, travel literature and economic reports from parishes contain information on cattle (*e.g.* Hästesko [1638] 1905; von Linné [1732] 1993; Gadd [1751] 1946; Forsius [1757] 1978; Carenius [1759] 1910; Brenner 1963–1966). In the present study, information has been gathered from historical and ethnological sources from various areas of Finland and Sweden. Owing to geographical variation and the different social background of the Swedish-administered castles, comparisons should, however, be carried out with caution.

The historical documents contain quantitative and qualitative data: both are valuable sources of information. The tax rolls and inventories give quantitative numerical data on the amount of livestock. In addition, a great deal of qualitative data on the animals is present, including information on their breeding and economic value. A fine example of information that cannot be obtained from osteological material is a curious list with names of cow names from Oulu, dated 30 July 1799 (Brenner 1963–1966, 548). Mentioned here are 'better cows' named Pöykkäri, Valkko and Ruskia as well as 'worse cows' named Junno, Mahopunanen and Fikoria. Several of the names reflect the colouring of the cattle and this small cowherd is a good example of the multicoloured nature of the cattle population at the end of the 18th century: 'Valkko' is a name for white cow, 'Ruskia' for a brown one and 'Mahopunanen' literally means 'barren-red'.

Cattle in osteological material

In the osteological material, cattle was the dominant species (as horse, elk or forest reindeer bones were rare or absent in this assemblage, also specimens identified as large ungulates, including mostly ribs and vertebrates, were counted as cattle). The proportion of cattle varies between 40–70 % in different phases of cattle, pig, sheep and goat bone fragments (NISP), depending on the method of counting. All body parts of cattle were recovered in Turku (Table 1), indicating that the animals were slaughtered in the town, probably in the yards by the inhabitants themselves. In the post-medieval phases high utility skeletal parts (the trunk and the upper parts of the limbs) are slightly more abundant than in the medieval phases (Fig. 2), with the exception of the Aboa Vetus medieval phase, which is possibly related to the higher socio-economic status of this area. Moreover, in the medieval phases cattle horn

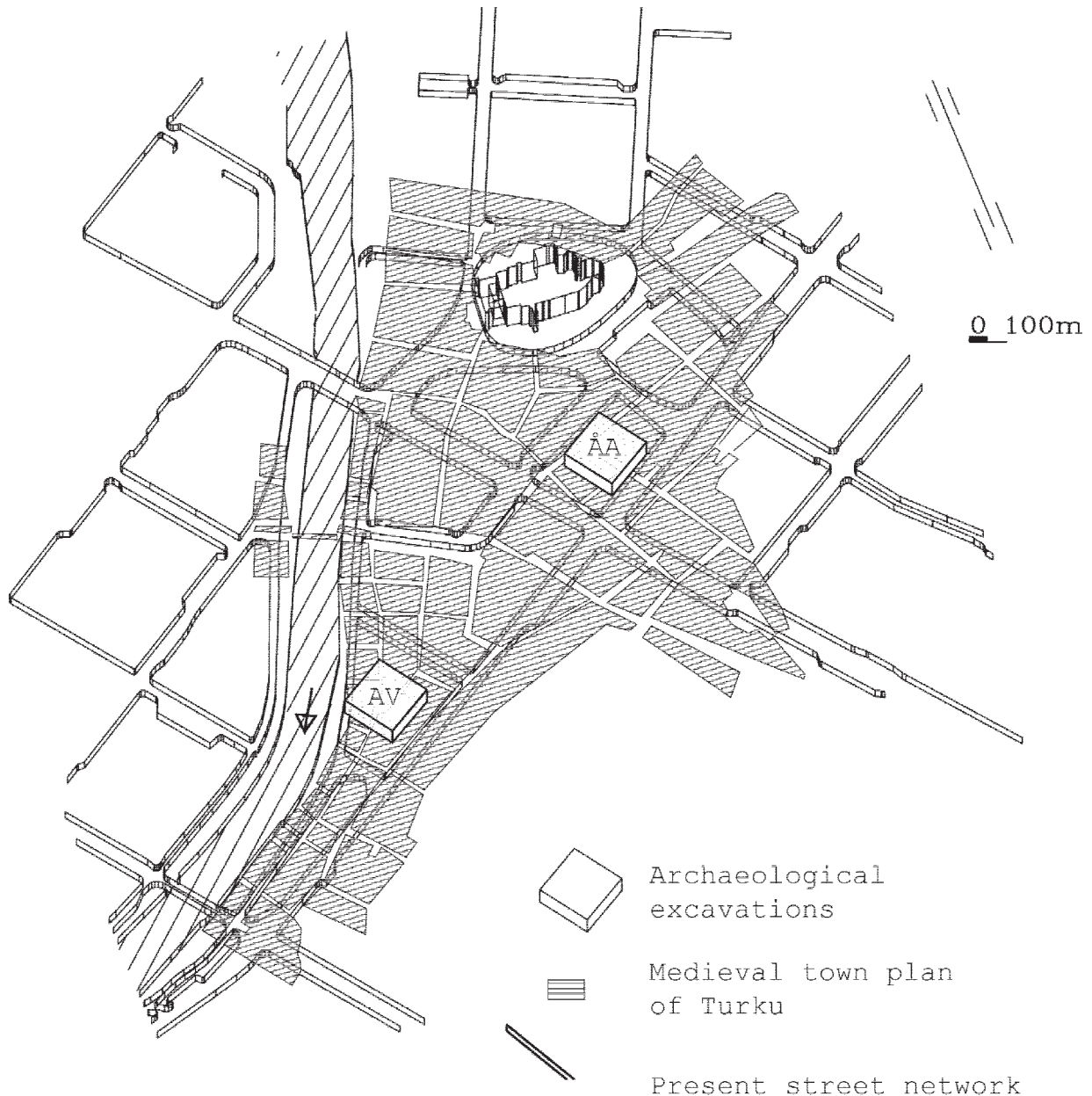


Fig. 1. The locations of the Åbo Akademi and Aboa Vetus Museum sites in Turku. The original by Kari Uotila, changes by Sara Nylund.

cores are present in almost every context but become rare in later stages.

Adult animals dominate the bone assemblage in both the medieval and post-medieval periods, but their proportion is even higher in the post-medieval phases (Fig. 3). Animals under the age of two years are also rare in the medieval layers. Cattle aged between two and four years are more common in the medieval phases, comprising perhaps up to half of the slaughtered animals. In the post-medieval phases these younger animals became less common. In the medieval period most of the slaughtered adult cattle have been females (53–62 % females in different phases counted on metacarpals), but in the post-medieval assemblage male cattle dominate (35 % of metacarpals from females).

The most common pathological condition found in cattle bones in Turku was diseases of joints. This

reflects the use of oxen as draught animals, which caused stress on the joints. Broken but healed fractures were also identified, most of these being situated in the vertebrae or ribs. One specimen represents healed severe fracture of the long bones. It appears that the elbow joint was perhaps completely crushed and healed in deformed and possibly fixed position. Keeping such a lame animal alive requires special attention and probably reflects the value of by-products like milk and butter compared to the cost of extra care.

Distinguishing between the oxen and bulls in this material proved to be difficult, which might reflect the late castration age of the oxen, as the difference increases the earlier oxen are castrated (Brännäng 1971). Oxen castrated as calves exhibit longer and slender bones compared to bulls. In the osteological material recovered from Turku, bones with pathologies typical of animals for draught activities

resemble typical bull bones. However, some male bones are long and slender and probably derive from oxen castrated at an early age. Accordingly, different castration methods appear to have been used in the environs of Turku.

Medieval and post-medieval cattle were very small compared to modern cattle. In Turku, the average withers height of a cow was approximately 106 cm. There were no naturally or artificially polled skulls in the Turku assemblage. Horns from small to long size are represented, most of them falling into category 'short' (length of the horn core between 96–150 mm) (categories according to Armitage & Clutton-Brock 1976, 331). Longest measured horn core in Turku is 207 mm.

Cattle in written sources

The historical sources emphasize the dual role of cattle. On the one hand, they were essential for agriculture as an aid in traction work and for providing manure. Indeed, cattle were essential for the basic subsistence economy. On the other hand, by-products such as butter and hides were important as a monetary source and as a means to pay taxes. As Arvo Soininen (1974, 201) points out, the farmers and the authorities considered cattle differently. For the farmers cattle were above all a part of agriculture. The authorities stressed more the importance of commodity products such as butter and hides. An examination of the products exported from Finland in the 15th and 16th centuries reveals that animal products were of great importance for the merchants (Grottenfelt 1887, 32–33, 151–153).

These different needs partly competed. Cultivation depended heavily on the number of cattle and the manure they could produce. The need for manure forced people to keep as many animals as they could, keeping them alive over the winter, which was a drawback for efficient milk and meat production. The number of cattle that could be kept mainly depended on the amount of hay that could be collected for the winter (Säihke 1963, 48; Törnberg 1973, 140; Soininen 1974, 201; Nummela 2003, 176). The balance between winter feeding and the number of livestock was one of the most central issues in the animal husbandry.

Due to frost and snow cover, livestock had to be kept indoors and fed with hay or other fodder approximately seven months of the year in Finland, usually from the end of September to the beginning of May (Virtanen 1938, 4–5; Säihke 1963, 48; Vilkuna 1992, 125, 269). The conflict between the number of cattle and fodder supply often led animals to starve. Cattle were fed with straw, dried leaves, horse manure, old straw roofs – just anything that kept them alive (Kalm & Cavander 1753, 14; Virtanen 1927, 68; Säihke 1963, 49; Szabó 1970, 26–28; Soininen 1974, 224). In the early spring

and later after the harvest animals could graze in the field and yards, but in the summertime they were herded in the woods (Virtanen 1938, 4).

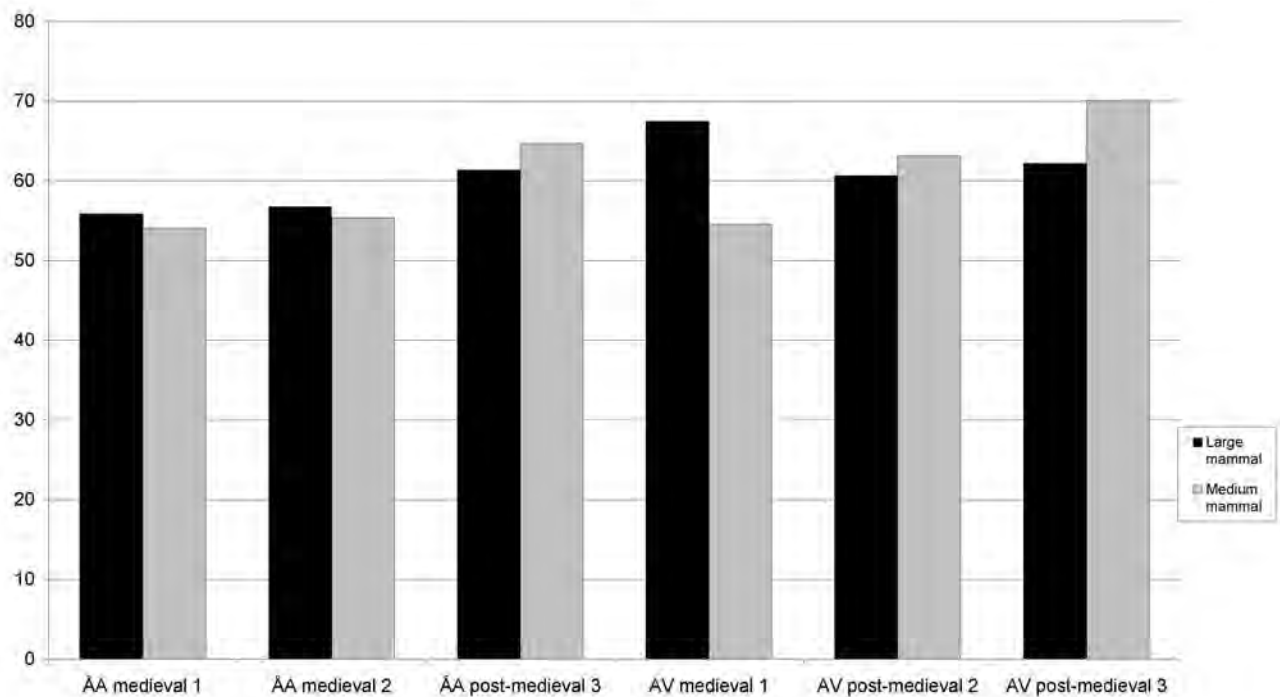
Judging from historical sources it appears that the physical maturation of cattle took place later than today and perhaps also later than in the 19th century (Myrdal 1987, 28; Vretemark 1997, 175). In the tax rolls and other documents the careful definition of young cattle up to four or even up to five years of age is noteworthy (*e.g.* Fontell 1892). Some sources claim that heifers were served only in their third or fourth year (Hausen 1881; Myrdal 1999, 254). However, it seems reasonable to expect that some of the animals classified as heifers had already given birth (Vennola 1901, 29–31; Brenner 1963–1966, 548). According to the historical records, the age of four years seems to be some kind of boundary. After four years, cattle were considered adults with a fully adult capacity, even if cows might have started to produce milk and oxen may have been in use as draught animals a little earlier and sometimes even later.

The role of cattle in Turku and the surrounding landscape

Both written sources and osteological data emphasize the importance of cattle in medieval and post medieval Turku. First, cattle are the most abundant species in both the osteological material and written sources, followed by sheep. As the cattle carcass weighs more than sheep carcass, it was the most important meat provider in Turku. Moreover, cattle also had other significance than abundance alone, being present in both the urban and the rural environment. Most of the cattle were bred in the countryside, but milk cows were common in towns. It was a central animal for the farmers in order to provide manure and traction power for field cultivation. By-products such as butter and hides could be sold or used as tax products. In the urban environment, cattle were kept for milk production. For the merchants it provided butter and hides, which were among the most important exports. Cattle also provided raw material for local leather, horn and bone handicrafts. Cattle meat was of great importance at least in the urban environment, and probably also in the countryside. Thus, cattle had many different roles in the economy of medieval and post-medieval society.

It is evident from the osteological data that the frequency of old cattle increased in Turku between the medieval and post-medieval times. Thus, the consumption of meat of young cattle seems to diminish over centuries. This might be the result of a change in cattle breeding, consumption habits or the affluence of the population. Similar change seems to take place in Sweden (Vretemark 2001, 45–50). In Finnish post-medieval assemblages, however, this pattern can be observed only in Pori

Fig. 2. Proportion of high utility elements in different phases in Turku. ÅÅ = Åbo Akademi, AV = Aboa Vetus. Large mammal = cattle (in theory some horse or elk fragments might be present), medium mammal = pig, sheep and goat.



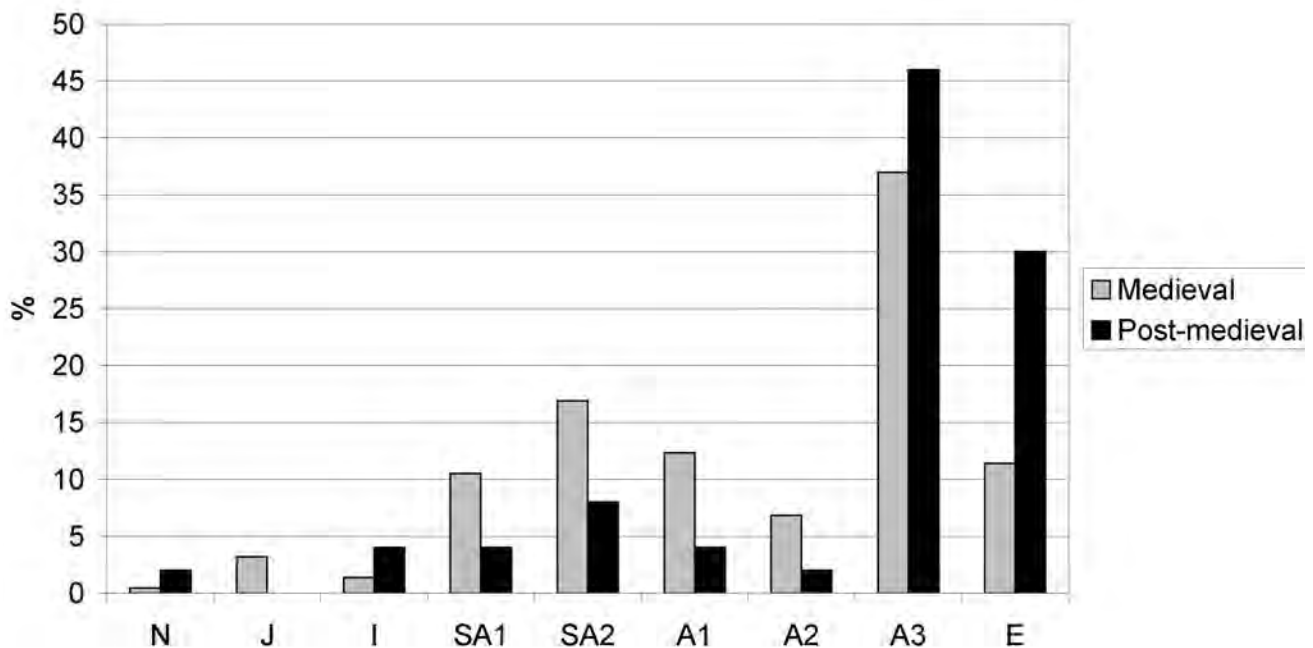
(Tourunen 2000a, 11) but not in Helsinki or in Tornio (Tourunen 2000b, 8; Puputti 2006, 20). Differences might relate to the size of the towns (Turku and Pori being larger ones) or their location (Helsinki and Tornio outside the core draught oxen area).

Historical sources that could reveal information on the cattle breeding strategies in the Middle Ages are almost absent. In post-medieval times the importance of manure, traction and milk is obvious. Both the number of farms and the average number of cattle on individual farms in SW Finland was increasing in the medieval and post-medieval periods (Nummela 2003, 142, 154, 157; Orrman 2003, 84). At the same time, the number of meadows was not increasing, probably quite the contrary as the meadows could sometimes be turned into fields. In addition, a certain change in climate could have affected the availability of fodder. A long, cold period, known as the little Ice Age, began in the 1490s, lasting until the late 17th century (Sartes & Uotila 1997, 124). This could have affected the productivity of the meadows and decreased the availability of fodder. Therefore, a certain change in the cattle breeding strategy was possible. More adult cattle were possibly required for manure production and traction in expanding field cultivation. As there was no increase in the fodder production, less food resources were available for young cattle that were kept only for meat production. Osteological analyses have revealed that the size of sheep diminished in Turku between the Middle Ages and the post-medieval period. This could have been caused by reserving diminishing food resources mostly for the cattle.

Another probable explanation for the changing age structure of cattle through time in Turku is a change in the meat-purchasing system. As a result of the increasing professionalism of occupations in Turku (Nummela 2003, 157), the town merchants and craftsmen probably used more and more meat bought from professional meatmongers while raising fewer cattle themselves. This is to some extent supported by the rising number of high-utility skeletal parts. The increase in numbers of male animals in the material from medieval to post-medieval times implies that a considerable part of the meat needed in Turku was obtained from adult oxen, imported into the town from the surroundings. The historical sources support the idea that in post-medieval times male oxen were an important source of meat in Turku (Nikula 1971, 531–532). However, the 18th-century historical records, mentioning only a small number of slaughterers in Turku do not support the interpretation that the inhabitants of Turku would rely on meat obtained from the market. It seems that in the post-medieval period animals were still kept in Turku and purchased live, even if a change happened in the animals that were bought.

According to historical sources, draught oxen could have been used for traction from the age of two to four and onwards, and the heifers could be served for the first time at the same age. The number of elderly animals in the assemblage appears to be low in view of this information. Ethnological sources claim that the draught oxen reached the age of eight to twelve (Vilkuna 1931, 27). Cattle at least eight years old and having served long and well in milk production or in traction work could therefore be expected to

Fig. 3. Age distribution of cattle in Turku medieval and post-medieval phases based on tooth wear and eruption on mandibles (N medieval = 219, N post-medieval = 50). Age categories according to Terry O'Connor (2003, 160): N = Neonatal, J = Juvenile, I = Immature, SA = Sub-adult, A = Adult.



be abundant. However, elderly animals as indicated by closed spinal column epiphyses and extremely worn teeth are relatively rare in the material. Either the length of the period during which cattle were used for milking or draught was not very long, or old animals were seldom imported into town. Oxen destined for meat production could have been culled in rather young, only after few years of draught use, which would ensure a better quality of meat (a similar pattern is also suggested by Bartosiewicz *et al.* 1997, 119; Johanssen 2005, 47). The mild and scarce pathologies found in the cattle metacarpals could be seen as signs of relatively rapid circulation of the draught animals. This would explain the age profile in which animals around four years of age are abundant in the urban material.

Local castration patterns

Oxen were common in the Turku district at least from medieval times and onwards. This is reflected in medieval and post-medieval documents. In fact, Turku and the surrounding areas are considered a centre of the Finnish draught ox culture, with typical features such as using a pair of oxen instead of only one as a draught team and low number of horses in livestock (Vilkuna 1936, 57, 70–71; Luukko 1958, 105–108). The Finnish draught ox culture can be seen as a part of the Nordic ox culture, including the Baltic countries and parts of Sweden (Vilkuna 1936, 77–80; Viires 1973, 443).

Some differences, however, can be observed in oxen bones between Finland, Sweden and Estonia. In Sweden oxen metacarpals are longer than those of bulls (Ekman 1973, 85; Sten 1994, 44–45), while

in Finland and Estonia such a difference is much less apparent if even existent (Maldre 1997, 108). This may suggest a difference in castration patterns in these countries. Unfortunately, in Finland there are no medieval or post-medieval documents directly describing the castration practices that were used. Early castration, however, is implied in documents as the oxen calves and young oxen are mentioned. Ethnographic data mainly from the 19th century describes early castration (oxen were castrated as calves or young) (Vilkuna 1936, 59–60). In Estonia castration occurred at adult age when bulls were two or three years old or even at the age of five (Vilkuna 1936, 95–96; Viires 1973, 440). Data on the timing of castration in Sweden is not consistent. Some sources claim that bulls were castrated as calves, just a few weeks or months old (Granlund 1969, 108). However, others suggest later ages of up to two years (Rålamb 1690, 54).

Linguistic and other evidence indicate that cattle breeding, castration knowledge and castration vocabulary are of the same origin in Estonia and Finland (Vilkuna 1936, 93–98; SSA). Most of the adult male cattle present in SW-Finland were oxen. Most adult male bones recovered from Turku are more similar to those of bulls. However, some bones resemble oxen castrated at an early age. This pattern is probably the result of the flexible castration pattern, perhaps similar as described in Estonia. Animals castrated around the age of two developed differently than those castrated as full adults.

The apparent contradiction between the historical records and the osteological data may be caused by the different cultural backgrounds of crown administration and local farmers. It is possible that

in both Finland and Estonia late castration was originally followed, but as Finland became a part of Sweden in the beginning of the Middle Ages, earlier castration could have been gradually adopted as a rule.

Past and present – the question of local breeds

The history of existing cattle breeds and the evolution of local races in the past have been addressed in numerous studies. For example, variation in horn core lengths and types has been seen to represent possibly different breeds or types of cattle in the osteological material (O'Connor 1982, 22–23; Armitage 1990, 88–89; Wigh 2001, 73–74). Historical sources do not mention any local breeds in Finland (in contrast to England, see for example Armitage 1990).

Modern Finncattle, the descendants of past animal populations, are divided into three breeds: Northern Finncattle, Eastern Finncattle and Western Finncattle. All these breeds are of different colour (white, red-flecked and solid red accordingly) (Kantanen 1999, 9). Nowadays all three breeds are polled, but still in the beginning of the 20th century horned Eastern and Western Finncattle existed: only Northern Finncattle was mostly hornless (Grotenfelt 1916, 14–16; Kantanen 1999, 9). According to historical documents, animals with a certain colouring were not restricted to any definite area of Finland in the 18th or early 19th centuries (Vilkuna 1936, 67–68; Brenner 1963–1966, 548; Vappula 1999, 91). However, Clarke ([1779] 1997,

227) mentions in 1799 that in Lapland, near the parish of Ylitornio all cattle were similar, white and small.

Some physical properties that could be associated with different breeds are mentioned in the written sources or apparent in osteological data (size, colour and horning). Cattle stock appears to be of heterogeneous colour in SW Finland (Vilkuna 1936, 67–68), and their size and horning varied as evident in the bone material from Turku. Whether they represent different breeds is uncertain. However, it is likely that no definite breeds of cattle existed in SW Finland or elsewhere in Finland before the 19th century, but instead the cattle stock was heterogeneous in origin.

Conclusions

Osteological analyses combined with historical sources have revealed the multi-faceted role of cattle in medieval and post-medieval Turku. Cattle were of great importance in medieval and the post-medieval SW Finland. They had many roles, and their breeding involved a compromise between scarce feeding resources, agricultural and economic needs. A change in the age and sex structure of consumed cattle probably reflects probably both change in the cattle breeding strategy in SW Finland and a more concentrated meat purchasing system in Turku. Cattle were variedly coloured and horned but no evidence of local breeds was present in the material. Castration practices employed in SW Finland point to cultural contacts with both Sweden and Estonia.

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Abbreviations

- SSA Suomen sanojen alkuperä: Etymologinen sanakirja 1–3. 1992. Helsinki: Suomalaisen Kirjallisuuden Seura.

FROM THE PRESENT TO THE PAST – Archaeological surveys in post-medieval towns in Finland and the use of urban cartography

Introduction

This article deals with archaeological surveys in post-medieval towns founded during the 16th and 17th centuries within the present borders of Finland. During the period discussed Finland was part of Sweden. The surveys were carried out in the archaeological survey project of towns founded during the Vasa period and the Sweden's Age of Empire (Swe. *stormaktstiden*, 1617-1721) (official name in Finnish: *Vaasa- ja suurvalta-aikaisten kaupunkien arkeologinen inventointiprojekti*). This project was carried out by Finland's National Board of Antiquities. The author was in charge of the surveys during the whole project from 2000 until the end of 2003.¹

Surveys were put into practice in the town areas which were built before the end of Great Wrath (1713–1721), a period of the so-called Great Nordic War when Russian troops took control over Finland and caused wide devastation in towns. This is also the youngest period that is qualified for the protection of archaeological sites in urban areas guaranteed by the present interpretation of the Finland's Antiquities Act (Niukkanen 2002, 223; 2004, 6). In surveys the town areas built before the year 1721 were restricted and the preservation of the cultural layers within these areas was estimated.

Since Finnish towns founded during 16th and 17th centuries were wooden towns, the ordinary secular buildings predating the 18th century are nearly totally absent, with only few exceptions in the present-day townscape. Over the course of time the old buildings have been destroyed by fire or demolished for other reasons. Because old buildings are missing and the town plan might have been changed several times, in some of the towns all the markers connected with the oldest town plan are currently absent. Under these circumstances, the oldest town survey maps play an essential role as the main source of information on the shape, scale and location of the town area. The locations of the old town areas seen in the oldest maps were roughly known before the urban archaeological surveys. In surveys the locations of the oldest town areas were defined more precisely with GIS methods, in which the surveying maps were anchored to modern maps with modern coordinates. In this way, the old maps

were digitally linked to the same places that they were initially made to illustrate.

As a result of the survey, a predictive model showing the estimated state of preservation of the cultural layers was accomplished in each surveyed town. This estimate is based on an analysis of building activities and other land-use activities practised in the town area. The result of the survey itself – that the cultural layers are most probably preserved in areas where later land use and building activities have not destroyed them – is obvious and thus, scientifically not so interesting. It tells more about the volume of modern building activities in old urban centres. In fact, the most interesting point is how this result was achieved.

This article will briefly outline the urbanization process and shortly discuss urban archaeological surveys in Finland in general. Archaeological surveys in post-medieval towns are discussed in detail. However, the main concern will be on the methodological issues and the way old town maps were used in the surveys with the help of GIS.

Urbanization in Finland

Finland is a country with a low rate of urbanization. During the Middle Ages (*c.* 1150–1520) only five towns were founded.² A low rate of urbanization continued also during Vasa period (1520–1617), when again only five towns were founded. In addition, one of these five towns, namely Pori, was founded to replace the medieval town of Ulvila. The period of Swedish dominion (1617–1721) was the most extensive town building period in Finland with 14 new towns (Fig. 1).³ The number of existing towns included revoked and relocated towns, totalling 25 size, and the size of towns in Finland prior to 1721 was markedly small compared to the situation in Sweden (see *e.g.* Lilius 1987, 271; Ahlberg & Redin 1994; Ahlberg 1998b; Hiekkänen 2001, 6; Lilja 2001, 52, 172), not to mention other parts of Europe (see *e.g.* Lilius 1987, 271; Lilja 1997, 52–55, 74; Sandberg 2001, 30).

In addition to the low rate and late beginning of urbanization there are also other special



Fig. 1. Finnish towns founded before 1721.

characteristics of Finnish towns with relation to other parts of Europe. Already during the Middle Ages Finnish towns were founded by the state alone or by the state in cooperation with the church (Hiekkänen 2001, 67; 2003). Later, during 16th and 17th centuries towns became more clearly the state's medium of economic policy (e.g. Lilius 1985, 11–13; 1987, 272). The existence of urban development in Finland before the introduction of the German concept of a town during the Middle Ages remains an unsolved question (on underlying reasoning, see e.g. Salo 1982).

On the stability of urban structures in wooden towns

Perhaps the most significant feature in post-medieval Finnish towns affecting their internal development was the predominance of wooden houses (e.g. Lilius 1985). There are several reasons supporting this statement. Firstly, wooden towns are highly vulnerable to fire (see e.g. Jutikkala 1997; 1999; Lilja 1999). After fires, the town plans were frequently changed, especially during the 17th century when the state tried to change all the town plans to correspond the ideology of the orderly grid plan (Lilius 1988, 65; cf. Ahlberg 1998b, 82). In addition to changes in town plans, the fires destroyed wooden houses, and thus, excluding churches and castles, there are only few houses older than the 18th century preserved in the existing towns.

Fire is not the only force changing the townscape, as it is relatively easy to reform the town plan in a wooden town. In some towns the new ideology of the orderly grid plan was applied by moving the houses to new sites according to the new plan. This is a possible manoeuvre in wooden towns, since wooden houses are transferable. This kind of regulation was put into action in the towns of Vaasa, Uusikaupunki and Naantali during the 17th century (Lilius 1988, 65).

The above-mentioned facts concerning wooden towns have resulted in a situation where unchangeable and permanent elements scarcely exist in Finnish towns. In another words, there is a lack of permanent physical elements, such as houses, that have been in a same place throughout the centuries. This is especially true in post-medieval towns, where medieval stone churches are missing in most cases. Thereby, the mediating elements bringing a fragment of the early modern town into the modern urban space are uncommon in Finland. The consequences of this matter are re-examined in the section dealing with urban cartography and the use of GIS.

The lack of tangible structures and buildings dating back to the 17th century and beyond is problematic when considering the stability and change of urban structures over the decades. Nonetheless, the situation is not as hopeless as it would seem, since there are several towns where the town plan applied during the 17th century or even earlier still exists, even though the current buildings are from a much younger date. In such towns the permanency on the town plan is highly probable, even though it is not directly evinced by the preserved 17th-century buildings.

Urban archaeological surveys in Finland during the 1980s

The first urban archaeological surveys in Finland were conducted in the 1980s, when the National Board of Antiquities and the Turku Provincial Museum surveyed four medieval towns (Hiekkänen 1981; 1983; Pihlman & Kostet 1986; Hiekkänen 1988). This project was carried out as a part of the Swedish project entitled 'The medieval town: Implications of early urbanization for modern planning' (in Swedish *Den tidiga urbaniseringsprocessens konsekvenser för nutida planering / Medeltidsstaden*; see e.g. Andersson 1976; 1990). The project's reports represent a description of planning history, environmental changes and the archaeological research history of the towns. The sketches of medieval town areas as well as areas with most probably destroyed cultural layers are shown on the modern plan maps. The only medieval town left out of the survey is Ulvila, which was revoked during 16th century. At present, the former town area of Ulvila is in a farmed area without any visible marks of the once existed town

aboveground (see Pihlman 1982; 1984). This survey project is still continuing in Finland, and a printed report on Viipuri (Swe. Viborg, R. Vyborg), located currently in Russia, is under preparation (Suhonen 2005, 180).

During the late 1980s, the first surveys were also made of post-medieval towns. In 1989 an archaeological survey report of 16th-century Helsinki, located some 5.5 km NE from the current centre of Helsinki, was published (Heikkinen 1989). In principle, this work follows the method already seen in the medieval town project *Medeltidsstaden* but also some new methods were employed in the work. In his survey, Heikkinen used phosphate analysis in order to locate blocks of the old town and to obtain direct archaeological observations of the cultural layers. In addition, Heikkinen made a reconstruction of the old town area with the help of a 17th-century map showing the blocks of the town. The reconstruction was made by comparing several elements in both the 17th-century map and modern maps (Heikkinen 1989, 206–209). The reconstruction was illustrated on a modern town plan.

In the urban archaeological surveys before the project discussed in this article, the old town maps were not projected onto modern town plan as a whole, Helsinki (Heikkinen 1989) being an exception. The old maps, however, were of prime importance in the urban archaeological surveys, and in some cases, some information of the historical maps was illustrated on the modern maps (see Hiekkänen 1981; 1983; Pihlman & Kostet 1986; Hiekkänen 1988), but in general outlining the old town area on modern maps sufficed.

The survey project in question focused on the use of historical maps with the aid of GIS. The oldest town maps from the 17th century connected to the modern coordinate system, and thus also to the modern existing town plan, created the basis for the whole survey process. In the following, the method applied in the surveys is discussed in more detail.

Surveys in post-medieval towns – Method

The basic questions in the urban archaeological survey carried out during 2000–2003 were on what real-world site, defined as exactly as possible, did the built town area prior to 1721 exist and what is the location and the amount of the undisturbed layers underneath the present surface (Mökkönen & Ikonen 2005; see also Niukkanen 2004, 35–37). The answer to the first question, connected to the production of digital geographic information based on historical town survey maps, defines the research area. The second question is answered by a predictive model showing the areas with most likely preserved layers within the research area. To obtain the answers, a hermeneutic process for understanding the development of a town and

for linking the historical maps to a modern town plan is needed. The core of the survey process is to understand the development of the town, not only in terms of urban area growth and planning history in relation to the current town plan, but also as a process of various land-use activities affecting the preservation of cultural layers.

As consequence of the wooden buildings in Finnish towns the methodology of urban archaeological survey differs from those commonly used in plan analysis in many European towns (first introduced by M. R. G. Conzen in 1960),⁴ in which masonry architecture of a permanent nature existed during the 19th and 20th centuries or still exists as a part of the modern townscape. The first cartographic surveys of towns in most parts of Europe are generally younger than the ones in Finland and Sweden. Despite this, the town plan seen in the oldest town survey maps has been interpreted, for example in England, with maps of the mid-19th century, to inherit a much older plan-form, supposedly dating back to the Middle Ages (Lilley 2000, 11–13).

The town plan analysis works in towns with relatively permanent structures, where plan units with similar morphological characteristics can be defined. According to the ideology of town plan analysis, the streets and plot patterns seen in the oldest survey map form 'the base map' or 'the morphological skeleton' of the town, which can be studied further (Lilley 2000, 11–13; Lilley *et al.* 2005, 5). In this kind of approach the ideas of immobile fossilized streets and static landowning conditions are built-in, and the analyses of town plans are made on morphological grounds (see Bond 1990, 96, 14; Ahlberg 1998a, 72; Lilley 2000, 9; Ahlberg 2005a). The use of 'Conzenian' town-plan analysis has been seen as the most significant means of investigating the origin and growth of the towns, but this is the case only for the time being, when archaeological data is not extensive enough to provide a basis for alternative theories (Bradley 1990, 40; Slater 1990, 61–62). In a situation in which the archaeological data from a certain town is scarce or fragmented, the results of the town-plan analysis – based on cartographic, topographic and written sources alone – give a kind of hypothetical context for the archaeological material.

However, the data achieved by archaeological excavations in English towns support the assumption of the long-term permanence of plot boundaries (Whitehand 1981, 131). Similar observations has been made also in the medieval Swedish town of Vadstena, where the street pattern seen in the earliest map from 1642 reflects late medieval conditions (Broberg 1992, 68), and the plot borders have not changed that much over the centuries (Karlsson 2002, 94). Even though there are also other Swedish towns where the town plan remained unchanged from the Middle Ages to the 17th century and beyond, the permanency of the

morphological characteristics cannot be generalized to be employed in all towns (Ljung 1992). There are also some examples verified by archaeological data. For example, changes in town plan, done already during Middle Age before the beginning of actual town planning in the 17th century, have been recorded in Stockholm where medieval cellars are found underneath late-medieval streets (Hasselmo 1981, 197). After analysing the source value of the town maps from the 17th and 18th centuries in relation to archaeological data, Ljung states as his conclusion that '... there can be no methodological generalizations when dealing with early maps, nor can we draw any general conclusions about medieval towns from the cartographic material alone' (Ljung 1992, 167). According to Ljung, the interpretation of cartographic evidence cannot be done without available archaeological data to support the conclusions (Ljung 1992, 166; see also Andersson & Redin 1980, 47–48; Bradley 1990, 40).

As mentioned above, the early modern Finnish towns have only very few permanent structures dating back to pre-18th century times. Furthermore, the plans of wooden towns are easy to reshape, as seen in various regulations of town plans put into action in complete towns not destroyed by fire (see *e.g.* Lilius 1985, 16; 1988, 65–66; Ahlberg 1998b, 77–78, 82; Lilja 1999, 264–265; Ahlberg 2005a, 247–250). The landowning conditions are relatively permanent, but not unchanging in wooden towns (see Andersson & Redin 1980, 47–48; Tagesson 2002, 127–135). The placement of streets and plots can be relatively stable in well-established towns, but this presumption cannot be self-evident in newly founded small towns of the 16th and early 17th centuries, especially in towns founded before the emergence of the fully regulated grid-plan in the 1640s. These are the reasons for using another methodology than Conzenian town plan analysis of English origin when trying to understand the development of a wooden town. In this case the 'other' methodology goes along with the use of series of urban cartography and GIS methods.

Work with urban cartography in a wooden town requires a different kind of ideology than the one seen in the case of town plan analysis mostly dealing with morphological issues. First of all, the fossilized nature of certain features in a town with numerous medieval stone buildings cannot be transferred to a town with only wooden, easily destroyable and removable houses. In another words, the morphological stability of a wooden town cannot serve as a cornerstone for the study if the standpoint is not supported and verified by archaeological data (see Andersson & Redin 1980, 47–48; Ljung 1992). This difference in the basic assumptions affects the way in which urban cartography is used. For example, the oldest town survey maps from the 17th and 18th centuries are based on surveying carried out on-site. Unfortunately, the maps contain some uneven errors. In this case, someone counting

on the stability of the urban fabric, would interpret the non-uniform location of a street seen in two surveying maps of different age as a trait originating from measurement errors in the mapping process. Those who believe in the transient nature of a town plan, would firstly work out the case by comparing various data, and then come up with the conclusion whether this trait is a historical fact or rather an error in mapping.

The surveys of post-medieval towns made in the project in question did not contain any trial excavations or drillings for direct observations of cultural layers or finds. This is the main difference when comparing urban archaeological surveys in post-medieval towns with typical archaeological surveys, in which the borders of an archaeological site are usually defined through direct observations of finds, structures and cultural layers combined with the general topography of the site. In urban archaeological surveys the location of the archaeological site is usually already known before the fieldwork thanks to cartographic sources. In survey work, the entire research area shown by the old maps as converted into a modern coordinate system and displayed with modern plan, is actually considered as an area with multiple potential archaeological sites. The preservation of layers under the surface is estimated though collected knowledge on land use history in the area. By doing this, the urban archaeological survey actually comes closer to the trial excavation done in order to define the preservation of cultural layers within a large archaeological site.

The results of the surveys are visualized in a predictive model showing the location and probable degree of preservation of the layers within the research area. The state of preservation goes hand in hand with land use activities in the old town area. And so, the final results of the surveys present the volume and the location of 19th–20th century land use and house building activities, and have not itself that much to offer to further urban research dealing with the period prior to 1721. However, the material produced during the survey process, such as town maps of various age transformed into digital maps with modern coordinate system, are the most useful material for various kinds of urban research.

The aims of the survey project were mainly of an administrative nature. The surveys were made in order to gather basic information on the scale of preserved layers in towns and to strengthen the interaction between town planning, building, official protection and research in urban archaeological issues (Niukkanen 2002; 2004, 35). In spite of the administrative goals, the survey method and the ways of using the cartographic sources are relevant topics for scientific discussion.

Next I will give a description of urban cartographic sources, after which the source value of the early

town maps and the method for bringing the old maps within GIS will be discussed. After presenting the cartographic sources, the most important base material used in surveys, the survey process in practice will be described.

Urban cartographic sources

The oldest cartographic sources in Finland made with a plane table, a surveying instrument also called *Mensula Praetoriana*, date from the 1630s (Kostet 1995). The town maps prior to 1721 were made by the same cartographers who mainly carried out large-scale geometric mapping on arable land and meadows in the countryside. The scale of the town maps varies between 1:725 and 1:11 140, with 1:1000–1:5000 scale maps prevailing (Kostet 1995, 134; 2000, 43).

Urban cartographic sources prior to 1721 can be divided into three categories, namely town surveys, town plans, and fortification maps. With a few exceptions, all these maps are based on actual surveying made on the site. The first category, town surveys, includes maps showing the existing town plan. The second category, town plans, includes both plans for new towns and regulations for renewing the plans of existing towns with a new orderly grid plan. The last category includes surveys of existing fortifications as well as plans for new ones (*e.g.* Kostet 1995, 180; 2000, 38; Ahlberg 2005a).

Town maps dating from the 17th and early 18th centuries present simplified information on their subject. Blocks, customs boundaries, bridges and public buildings, such as churches, town halls and castles, are marked on them. More detailed information showing storehouses onshore was occasionally drawn and the borders of the existing plots were marked in maps since instructions issued in the 1696 (Örback 1990, 129–130; Kostet 1995, 26–30, 172–173; Ahlberg 2005, 25). Maps with all the buildings of the town area were not introduced until the 18th century. Mapmaking was directed by administrative commands, which in turn affected the accuracy and the content of the maps (for more on this subject, see Örback 1990; Kostet 1995).

The accuracy of the 17th-century geometric maps varies from map to map, from cartographer to cartographer, and also within a map from one area to another (Johnsson 1965; Ene & Bengtson 1994). This was presumably also the case with urban cartography since the same cartographers carried out the surveys for the large-scale maps in towns and the countryside. The errors in the maps are mostly connected with directions and distances. The existence of these errors does not originate from the problems in cartographic theory at the time, but merely from the way the theory was put into practice. The main problem was that the linkages

between positions of the plane table used in map-making were not fixed beforehand. Thus, the positions of the plane table, which should be the backbone of the whole surveying, were defined while measuring and caused already a potential source of error. Furthermore, the essential requirement of mapmaking, placing a measured point on the map by line-of-sights from two known ground points was often neglected. Hence, a single error in distance or in direction repeated in all the later measurements of the same surveying process (Gustafsson 1933, 62–63, 65–66; Örback 1990, 134). In addition, the general topography and the structure of the town plan also affected the accuracy of the maps. In simple terms, the more considerable changes in the elevations there were and the more disordered the urban fabric in the urban area was, the more probable it was for the surveying process to contain errors that were also transferred to the finished map.

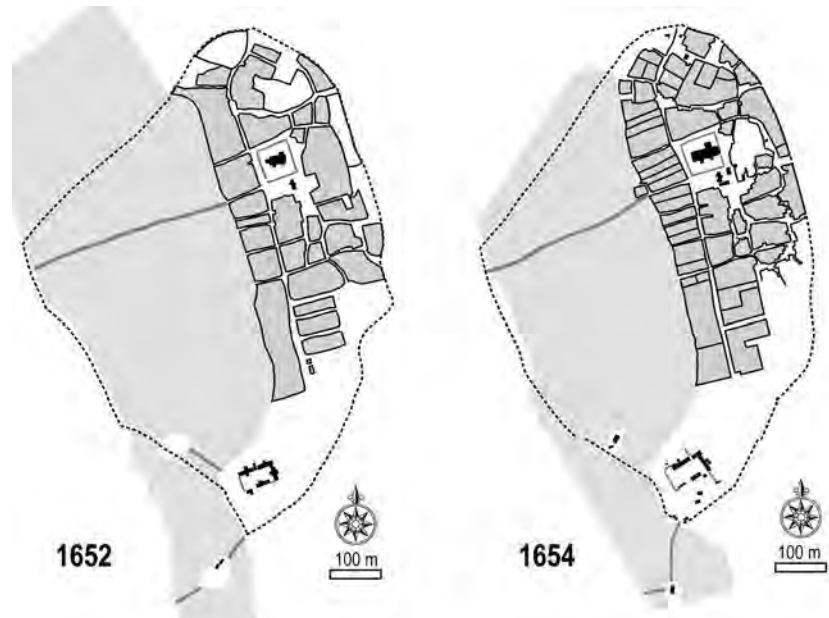
Different disciplines have their own ways of utilizing 17th-century urban cartography. In historical research town maps are seen as one type of document within historical documentation as a whole. In this tradition, maps are classified according to their original functions and placed in their historical context. Understanding the scale of the map is regarded as sufficient for making the map a source of milieu-historical research (Kostet 2000). In art history the maps are regarded as drawings to scale, showing the plan structures of the towns. The maps are used in order to study the development of architectural ideas and architectural reality as seen in different kinds of town maps (see Lilius 1985; 1987; 1988; Ahlberg 1998a; Kostet 2000; Ahlberg 2005). The lack of geographical studies dealing with the 17th-century urban cartography of Finnish towns might correlate with the minimum information of the maps giving an opportunity to study changes in physical space.

Archaeologists look for the concrete remains of past human activities. In this respect the use of urban cartography in archaeological research is focused on connecting the maps with present-day reality. A historical map is a noteworthy source of information for the archaeologist only when it has been sufficiently connected with the same place in the real world as depicted on the original map. Historical surveying maps need to be used as maps, and a map should have a connection with the real world. In this way archaeology differs from other historical disciplines. For the archaeologist it is not enough to understand just the scale of the map and the approximate area depicted on it. The main question for the archaeologist is to locate geographically the context seen in historical maps.

The source value of early town maps

There is one fundamental question, *viz.* how reliable the 17th-century town surveying maps and plans are? In urban archaeological survey, the maps were

Fig. 2. The question of the reliability of the early surveying maps as illustrated by maps from Vaasa. The 1652 map is based on survey work by Claess Claesson and the 1654 map on Mikael Bång's survey (dated according to Kostet 1995, 113–114). The maps show the residential blocks (grey areas), other restricted areas, public buildings and the customs fence marking the border of the town area. The building complex in the southern part of the map is Korsholma Castle (founded during the 14th century). Despite close temporal relations, these two maps give quite a different idea of the blocks located at the outer margin of the town.



seen as historical documents showing the real town as it existed. Is this really so? In most of the cases the temporal distance between two town plans based on actual surveying on-site and prepared by separate cartographers is so long, that the cartographer's personal effect is difficult to estimate. Fortunately there are exceptions. The town of Vaasa (Swe. Vasa) founded in 1606 provides a good example for exploring this question.

There are two maps of Vaasa dating from the 17th century, one by Claes Claesson in 1652 and another most likely made by Mikael Bång in 1654 (Kostet 1995, 113–114; Ahlberg 2005a, 649–650; 2005b, 126–127; cf. Lilius 1988, 65–66) (Fig. 2). Both cartographers made their maps on the basis of their own surveying. The differences in the town structure seen in these two maps are considerable. The blocks in the most central part of the town are convergent, but there is great variation in the shape of the blocks at the outer margin of the built town area. As a hypothesis it can be assumed that the urban fabric at the outer margin of the town area was so fragile and vague that the two cartographers had many choices of how to interpret and illustrate it on a map.

In the case of Vaasa the temporal distance between two town survey maps is only a couple of years.⁵ Therefore the two maps clearly show that the decision-making of the individual cartographer has a significant impact on the way the urban fabric is illustrated on a map. Some hints for understanding the variation seen on the maps can be found in the area east of the church. In Claesson's map there is only one large block, while in Bång's map the same area is marked as two smaller separate residential plots and one large unbuilt stony area. The reasons for this variation could probably be found in the cartographers' different ways of understanding and defining a residential block. Claesson marked a larger area as a residential block, even though only a small part of the area was actually built.⁶ Since Bång

marked the borders of the blocks on his map, this difference becomes understandable. At any rate, this clarifies only some of the differences.

In principle, the 17th-century town maps are based on actual surveying on-site. However, the scarce information concerning the urban fabric, plots and buildings available through maps and the effect of the cartographer's individual decisions on map-making set limits on interpretation based on the maps alone. It cannot be said that some of the maps are false – the maps really illustrated the town area as it existed – but instead one must understand the limitations of basic information when using the map.

Old town maps and GIS in practice

By the late 1990s light desktop GIS programs enabled more extensive use and production of digital maps. In the archaeological survey project of 2000–2003 of the towns founded during the Vasa period and the Sweden's Age of Empire (Swe. *stormaktstiden*), the focus was on making use of old town maps with GIS methods (see Niukkanen 2002; Mökkönen 2005). The development of a town as seen in cartographic sources was first converted into digital form and then fitted into a modern geographic coordinate system and illustrated with modern digital planning maps. In this way the development of the town was connected directly to the existing urban space.

Because of the almost total absence of existing houses and other permanent structures from the 17th century and the environmental changes caused by isostatic land uplift, the orientation of old maps in respect to modern town plans is problematic. The difficulty, of course, depends on several factors, the most notable of which is the general development of the town plan. The easy cases are of course towns where the plan has not changed (e.g. Tammisaari, Swe. Ekenäs) or ones with several maps of good quality showing the town's development (e.g.

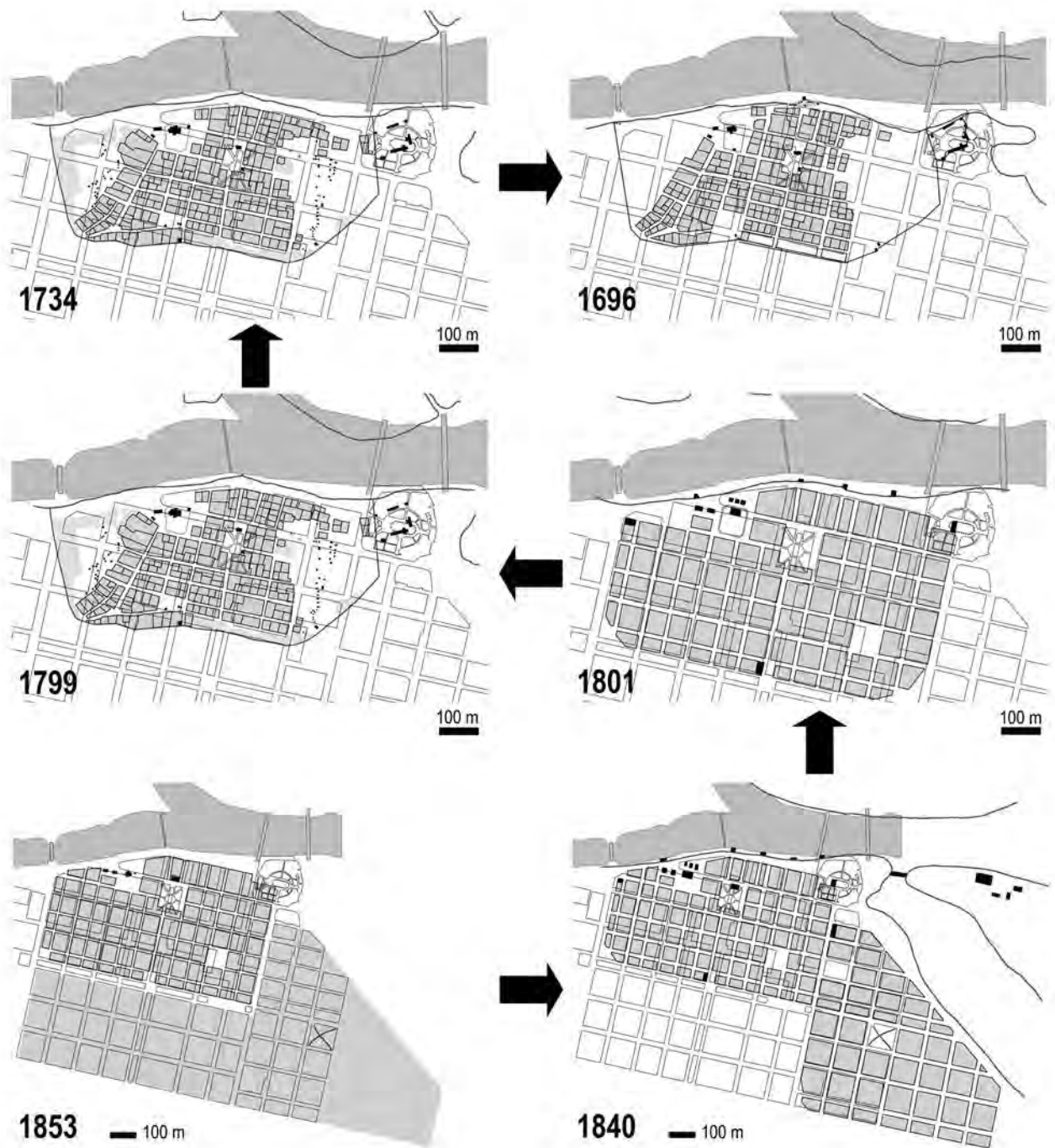


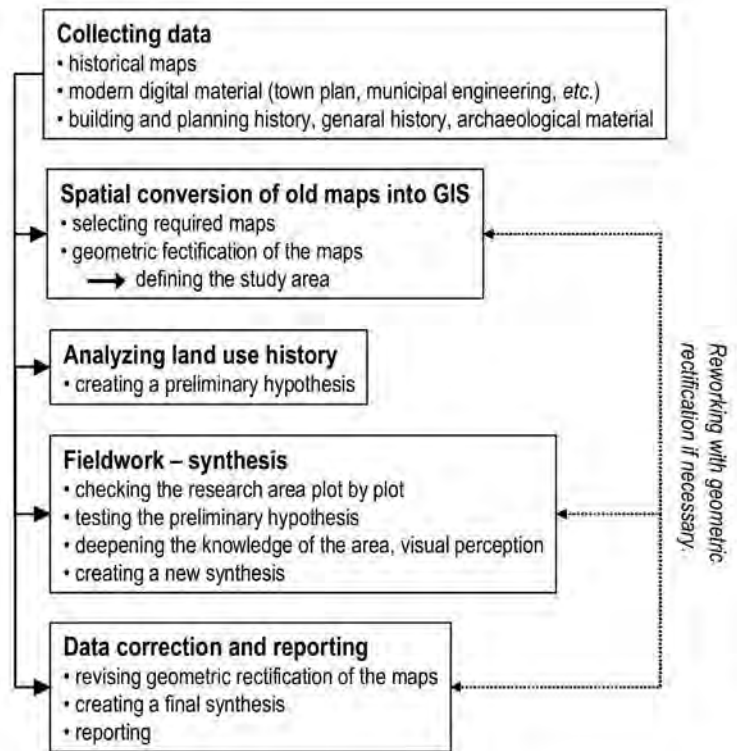
Fig. 3. Series of maps showing the evolution of the town plan in Pori. The geometric rectification is done backwards in time, step by step starting from the 1853 plan. The process is easy with the three youngest maps, presenting both the old and the new plan on the same map. The weakest point in this process is between maps from 1801 and 1799, since the only reference points marked on both maps are on piers on the shore and in the wall of the churchyard. In town area there is not a single continuum of the town plan structure between the pre-19th century situation and the present day. The reliability of the maps from 1734 and 1696 depends on the success of geometric rectification of the 1799 map.

Kokkola, Swe. Karleby, with five maps dating from the 18th century). In the most difficult cases there are no surveying maps that show the town plan as it existed in the 17th century and in the first surveying maps from the 18th century the plan had been totally changed (e.g. the town of Hamina, known as Vehkalahti [Swe. Veckelax] during the 18th century).

The spatial conversion of old town maps into the modern coordinate system was done by linking the maps of different ages to each other (Ene &

Bengtsson 1994; Mökkönen 2005; 2006, 23–27; see also Ahlberg 1998a, 74–82; cf. Lindgren-Hertz 2002, 62). This work, which can be called geometric rectification, geocoding or georeferencing, was done backwards in time. The reason for this procedure is the aforementioned lack of long-standing permanent elements in the townscape that could be used for connecting the maps of various dates. Only occasionally were some available reference points achieved through archaeological excavations. For example in Lappeenranta (Swe. Villmanstrand) the excavated foundations of the 18th-century town

Fig. 4. The survey process in archaeological surveys of post-medieval towns.



hall were utilized in the geometric rectification of the maps.

The lack of suitable reference points in geometric rectification can be solved by starting the geometric rectification from the latest maps, and then using them as a reference when rectifying the older ones (Bengtsson & Ene 1995; Lehtinen 2003, 106; Mökkönen 2006, 23–28).⁷ This is a simple solution, since the closer the two maps are in time, the larger the number of common elements that can be used as reference points. In most cases this is the only way to achieve a sufficient number of reference points seen in a rectified map as well as in a reference map (Fig. 3).

There are several advantages to following the above-mentioned procedure in geometrical rectification. First, by carrying out the rectification of the old maps in chronological order, the maps create a more or less comprehensive continuum showing the development of the town in respect to the modern plan. The second advantage is that, at the same time, the continuum of maps also works as a historical series displaying the cognitive, ideological and technical evolution of cartography (see Mökkönen 2006, 24–25).

Since the older maps are predominantly of poorer quality than the more recent ones, the linking of maps in chronological order gives an opportunity to perceive the measuring errors in older maps (see also Ahlberg 1998a, 69). If there are sufficient reliable reference points it is possible to refine the geometric accuracy of the old maps. However, the most important thing is that the potential errors are observed, irrespective of success in fixing the errors.

Geometric rectification made by linking the maps of various ages also has failings. The chain of georeferenced historical maps is only as accurate as the weakest link in the chain. This means that there might be some difficulties in geometric rectification at some point, *e.g.* the number of reliable reference points is too small or all the available reference points are located on a small area on the map. The problems originating from these difficulties are repeated in all maps that are georeferenced later on.

The cartographic quality of the most recent maps, at the earliest *c.* mid-18th century, is usually so good that presenting of these maps as raster images with a modern vector based digital plan is possible. Yet, most of the 17th and 18th-century maps need to be vectorized for displaying the data with a modern plan.⁸ The vectorizing of the maps is done by on-screen digitizing, in which the map elements are digitized as lines, points and areas. Changing the raster based data to the vector format requires a thematic interpretation of the original map.

In the creation of digital geographic information from historical maps the producer has major responsibility in transmitting the data. This covers the processes of geometric rectification and thematic interpretation in particular. The producer of historical geographic information creates a new interpretation of the old map. The leading role, concerning the quality of the data, naturally lies with the cartographer who made the original map, but with regard to transmitting the data, the role of the producer of digital data is also essential (Frisk 2000, 12–13; Aarnio 2001, 120; Mökkönen 2006, 30).

How reliable is the geographic information retrieved from the 17th-century town survey maps?

This is a question to which there is no simple or straightforward answer. Everything depends on the planning history and the quality of available data. In cases where the changes in town plan are poorly presented in cartographic sources and the number of reference points used in geographic orientation is low or spatially unrepresentative, the geographic validity of the produced historical geographic information can be tested only through archaeological excavations (e.g. Ahlberg 1998a, 74). It is usually possible to speculate regarding the accuracy of the produced data, but the actual testing can be done only in relation to archaeological data. The reliability of the geometric rectification of historical maps made in the surveys can, and must, be tested later when archaeological data attained through excavations provides such opportunities.

Urban archaeological survey in practice

The urban archaeological survey can be divided into five steps following each other (Fig. 4). The process starts with *collecting data* including historical maps, modern digital maps and historical and archaeological data. The modern digital geographical information that is used includes the present plan and various data of modern municipal engineering, such different kind of pipelines and cables dug into ground. The understanding of the town's historical development from the present to the past is in special focus in reconstructing the land use history of the area. The surveys of existing buildings are a good source of information. Even though the subject of the study predates 1721, it is necessary to understand the whole historical trajectory of a town. The assembling and active utilization of this information is needed in every step of the survey.

Bringing old maps into GIS is the first step employing the knowledge of the planning history of a town. The oldest plans and other maps representing the development of the town are converted into a modern coordinate system by using the modern digital plan as a reference map. This work is done by starting the conversion from the latest plans and continuing the work step by step to the older plans and maps (see previous section). The research area, or the built town area prior to 1721, is delimited with the help of the oldest urban maps from the 17th and 18th centuries.

The next step in a survey process is *the creation of a preliminary hypothesis* regarding land use history. This is the first attempt to understand the historical development of the research area. This preliminary view is later tested and modified during the fieldwork. The role of the fieldwork in the town's archaeological survey, in which the purpose is not to obtain any direct observations of the cultural layers or finds, might sound peculiar. As a matter of fact, fieldwork in this kind of survey is a critical aspect, during which all the information gathered beforehand and the data

obtained by visual perception on the site should be combined. The *fieldwork* is an interaction of data collected from various sources, and the synthesis of the data must be done at the site itself. The use of GIS and digital maps cannot replace direct observations at the site during fieldwork. A real and genuine understanding of a specific place can be gained only through immediate personal perception, which attaches a phenomenological aspect into the survey process. The observations obtained during fieldwork either confirm or challenge the preliminary views. In the latter case, the field observations affect the interpretation of the town's development and the reliability of the produced geometric rectification of historical maps. As an example of this, the manner how the rocky areas affect the way the blocks were built or planned is difficult to understand only through maps, but the effect of such obstacles on building a town is easy to understand at the site. To sum up, the more problematic the situations faced when converting the old town maps into the modern coordinate system, the more emphasized will be the role of direct observation in the survey process.

The last step in survey is, of course, *reporting*. The synthesis formed in the field might have indicated some new information, whereupon rethinking and possibly some changes must be done to the spatial conversion of the maps into GIS. In general, most work in reporting is to write down all the observations and conclusions. This work was done by describing the general development of the town, the basics of the geometric rectification of historical maps as well as writing down site descriptions of all present plots with probable preserved layers. The results of the survey are represented in comparison with modern town plan as a predictive model showing the estimated state of preservation of the underlying layers in the town area built before 1721. In the predictive model the research area has been divided into three categories following the presumed state of preservation of cultural layers: 1) well preserved areas, 2) partly destroyed and probably partly preserved areas of special interest to research, and 3) destroyed areas.

In the second year of the survey project the reports were refined by adding a vision of near future needs for archaeological rescue excavations in surveyed towns. The estimation was done by analysing the survey results with conserved buildings, known future building projects and permitted building volume based on the present town plan. In this way it was possible to foresee the volume of future building activities on the town's areas of archaeological interest.

Concluding remarks

The urban archaeological survey process described here is a relatively fast and cost-efficient way to acquire basic information on the state of

preservation of cultural layers within urban areas. However, at the moment it is not sufficiently known how well this method works in practice.⁹ In future the functioning of this survey method must be tested by going through the survey results and the archaeological data gathered after the surveys.

During the survey process series of historical town maps and plans are converted into digital form and connected to the real world by geometric rectification. The digital maps are the most useful material for future research of various disciplines that deal with urban areas. In any case, depending on the development of a specific town and the available data, the geometric rectification of historical maps is not undoubtedly correct. A critical approach to the original town surveying maps is also needed – the information of early town maps is not standardized and two maps of different age are not necessarily completely comparable.

Also the survey process and the geometric rectification of maps rely highly on the surveyor's personal capabilities – it is not just a technical process. Therefore the geometrically rectified maps produced in surveys must be seen as suggestive interpretations of the historical town maps. The correctness of the geometrically rectified maps must be tested whenever new data it is at hand. Presumably in most cases the testing will be done with new archaeological data obtained through excavations.

The method used in the archaeological surveys of early modern Finnish towns can be employed also in other areas where historical large-scale maps based on actual surveying are available. Despite the hypothetical nature of the predictive model showing the presumed preservation of the cultural layers, the survey results give a good basis for understanding the location and amount of potentially preserved layers.

Acknowledgements

The geometric rectification of the old maps of Vaasa, which was left out of the survey project carried out by Finnish National Board of Antiquities, was done with financial support by the Finnish Cultural Foundation (Southern Ostrobothnia). I wish to thank also the anonymous referees for valuable comments on the first draft of this article.

Notes

1. Altogether 15 towns were surveyed in the project. Fourteen of the survey reports are published on the internet in PDF format (see [http://www.nba.fi/fi/kaupunkiarkeologia]). The report of Brahea is available only as an archive copy. Three towns founded during the 16th and 17th century were left out of the survey, namely Old Helsinki, Old Vaasa and Uusikaarlepyy. Old Helsinki was surveyed and excavated before the project (Heikkinen 1989; 1994). A survey of the remains of Old Vaasa was also made during the 1980s (Spoof 1987), though not from an archaeological point of view. Hence, Uusikaarlepyy is the only 17th-century town in Finland where basic archaeological research has not been carried. There was an intention to prepare a closing publication in order to record the methodological conclusions and summarize the results of the surveys. However, this was never realized because of the lack of financing at the National Board of Antiquities. In this article I do not cite the original survey reports.

2. This article deals only with the towns located in the current territory of Finland. Traditionally Viipuri (Swe. Viborg, Russian Vyborg) has been counted as the sixth Finnish medieval town, even though it had been in Russian territory since 1944.

3. Included in this number are only the towns within the current borders of Finland. In some other sources the towns founded during the 17th century in the area of Ceded Karelia, an area which has been Russian territory since 1944, have been counted as Finnish towns. This is the primary reason for the variation on the number of Finnish towns in comparison with some other sources.

4. There are three schools of urban morphology, namely English ('Conzenian'), Italian ('Mutorian') and French ('Versailles'), all of which have their own theoretical emphases (e.g. Moundon 1997).

5. The cartographer's name is not marked in the map dated to 1654 (KA, kartor o. ritn. nr. 231 [kartavd. m. form.], Riksarkivet, Stockholm). The name of the cartographer responsible for making the map was received from historical documents. According to acquired information the map was made in 1653, but Kostet (1995, 113–114) assumes that it actually dates from the year 1654.

6. There are two handmade maps (one from Raahe and one from Kajaani) dating from the late 1650s, in which the buildings are marked as perspective drawings. In the map of Kajaani a situation similar to Vaasa can be observed – in some blocks there are only a few houses while most of the area

inside of the blocks is unbuilt. I wish to thank docent Georg Haggren for this remark.

7. In the survey project this method was invented independently as a solution to practical problems. Later on it turned out, that this method has already been launched by Bengtson and Ene in Sweden in the 1990s.

8. This is the case when light desktop GIS programs, such as MapInfo, are used.

9. After the surveys, intensive archaeological excavations and documentation in towns founded during 16th and 17th centuries have been conducted especially in Oulu (Kallio & Lipponen 2005; 2006) and Tornio (Herva & Ylimaunu 2004; Ylimaunu 2005; 2006; 2007). Archaeological work has been done after surveys also in the old town areas of Helsinki, Hämeenlinna, Kajaani, Lappeenranta, Raahe, Tammisaari and Uusikaupunki (Hymylä 2004; Niukkanen pers. comm. 14.12.2006). In principle the present accumulation of archaeological data is enough to enable the testing of the survey method as used. This, however, is not within the scope of the paper.

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ARCHAEOLOGY OF RITUAL AND RELIGION

HARE'S FEET UNDER A HEARTH – Discussing 'ritual' deposits in buildings

Introduction

Excavations the Turku city library site in 2004 revealed the remains of a hearth dated to the 16th or 17th century. In both the north and south corners of the construction, bones from a hare's foot were found (Tuovinen & research team 2006, 34–35, Map 2.289). The find aroused my interest in deposits found in buildings, which cannot be explained in modern-day functionalist terms, and led me to do my MA thesis on the subject (Hukantaival 2006).

Ritualistic building deposits have been studied in Europe with growing intensity for some twenty years, but the terms used for the phenomenon are varied. Some scholars use the term 'building sacrifice/offering', while others criticize the term for giving the phenomenon a too specific interpretation (e.g. Carlie 2004, 18). The terms used have also included the word 'foundation', for instance, in the description 'a foundation sacrifice'. This, in turn, has been criticized for excluding building deposits that are not placed in foundations (e.g. Herva 2005, 215).

Like many other researchers, I have chosen to use the more neutral term 'building deposit'. Building deposits are defined as artefacts and remains of animals or plants that are deliberately placed in the structures of a house. Deposits of a ritualistic nature are usually placed in the vicinity of entrances (for example under the threshold), walls, or the hearth (e.g. Merrifield 1987, 128; Carlie 2004, 19). They may also be placed under the floor or in the ceiling structures, in the latter case mostly in the middle of the room.

In this article, I will first briefly introduce the Finnish building deposits I have worked with, and then move on to discussing the problems of recognizing and interpreting deposits. Another focus of the article is on possible meanings, which the phenomenon could reveal. Finally, I will present some further questions for future research.

My study focuses on historical times even though the phenomenon is also identifiable in prehistoric contexts. One reason for choosing this time-span is to make the use of folkloristic and ethnological

analogies from the 19th and early 20th centuries more reliable (see e.g. Gazin-Schwartz & Holtorf 1999, 13). Magic practices and beliefs from the time period that can be connected with the phenomenon of ritualistic building deposits have been reasonably well published in Finland (Rantasalo 1912; 1933a; 1933b; 1934).

Because possible building deposits have been poorly documented in excavation reports, I have chosen a point of view on the subject which does not rely so much on individual finds, but on the beliefs and meanings that may lie behind the phenomenon. I have tried to reach these meanings with the help of the above-mentioned analogies as well as studies on beliefs and worldview by folklorists and historians (Nenonen & Kervinen 1994; Virtanen 1999; Eilola 2003; Issakainen 2005).

Scraping the surface – Finds of building deposits in Finland

In Finland, the historical period begins in Southwest Finland during the 12th century. From this time onwards, the present research material comprises 21 finds (excluding the 'document deposits'), fourteen of which are archaeological finds. Although some of these finds are more questionable than others due to insufficient documentation, I present all of them briefly. The study has a special focus on Turku and its neighbouring areas, and thus only a few finds are from other regions. In future studies, I will continue collecting data from the entire country in order to correct this obvious bias.

The oldest find in the study material is the whole skeleton of a sheep, which was found under a stone in the foundation of the eastern wall of a log building. The find was discovered in 1996 during an archaeological excavation at the dwelling site of Mulli in Raisio. The building has been dated to 980–1220 (Pietikäinen 1996, 82–83). Sirkkä Pihlman (2005, 209) has interpreted the finds as most likely being a deliberate deposit.

There are two other finds involving bones in the research material. The first of them was found at the archaeological excavations near Turku Cathedral in 2005. Small leg bones of an animal were placed

alongside a log possibly belonging to the foundation of a hearth (Saloranta pers. comm. 3.10.2006). The construction was only partly in the excavated area, and its function is thus uncertain. Another find comprising animal bones was made during archaeological excavations at the Åbo Akademi site in Turku in 1998. A pit filled with bones and horns of domesticated animals was found under the floor in the middle of a room. One foundation log of this building was dated dendrochronologically to have been felled after the summer 1441 (Saloranta & Seppänen 2000, 52).

The hare's feet mentioned above is yet another find involving animal bones. A more puzzling one was found in 2005 during excavation in Oulu. The hind legs of a pig were found next to the cornerstone of an 18th-century building, but they were *on* a plank floor, not under it. The bones seemed to be an anatomically correct order (Lipponen 2005, 13–14). It is more plausible to interpret this find as a deposition, but there seems to be some amount of deliberateness involved. Another find of bones is also only plausible because of the poor quality of its documentation. In 1902 a human skull was found under the floor of a woodshed in Turku. The documentation of the find only states that it was most likely not a grave, since no other bones were found. No information on the age of the woodshed or the house to which it belonged is given (Folder 13:22).

Many of objects found in building deposits are of very ordinary nature. A two-forked iron candlestick had been deposited in an upright position inside the hearth of a building from late 16th to early 17th centuries excavated in Naantali (Uotila & Lehtonen 2002, 7–8). In Helsinki thirteen unmarked copper coins used for calculation and four pistol balls were found during archaeological excavation in 1999 under the cornerstone of a building that has been dendrochronologically dated to after 1650 (Niukkanen 2002a, 24; 2002b, 33).

Three of the known deposits in Turku include whetstones. Two whetstones and the blade of a knife were found under a floor excavated in 1976 (TPM inv. no 17996:251, 304, 305; Brusila & Lepokorpi 1976, 6) and in 2004 at another site a whetstone was found in a post-hole and three additional pieces of whetstone material at the end of one floor plank belonging to the same construction (Ainasoja 2004, 11, Kartta 20). The first floor had burnt in the late 17th century and the second could not be accurately dated, but is from a time span from the 17th to the 19th century. Also in 2004 the remains of a building dating to the 17th or 18th century were unearthed in Turku. Under a cornerstone was a very carefully laid deposition. A piece of whetstone material had been laid between the posts supporting the stone and a bronze fibula had been laid on the piece (Ainasoja 2004, 8, 10). This deposition differs from many others since the fibula, dating to the Iron Age,

is considerably older than the building (Pihlman pers. comm. 11.10.2005).

Another everyday object is the blade of a sickle that was found between the stones of a foundation belonging to a 19th century house in Turku with a stone cellar (TPM inv. no 18703:19; Brusila 1981, 7). A type of deposition that is probably very common (but suffers from poor documentation) has been recorded in Rovaniemi. When demolishing a log building in 1978, three coins were found under the ridge beam. The coins were minted in 1722, 1802 and 1810 (Sarvas 1982, 180–181). An everyday object as well, a woman's boot made about 1910 was found in the roof of a building in Helsinki in 1985 (Constable email 8.4.2005). This find has been documented in the concealed shoe index of Northampton Museum, but is the only one of its kind known from Finland.

Some of the deposited objects are less mundane because of their significant religious or magical meanings. In addition to the pit with bones, another interesting find was unearthed during the Åbo Akademi excavation. A small, decorated T-shaped object made of bone was found among the birch bark filling of a floor in a building dated to the late 14th century. The object was identified as a 'shaman's hammer' used by Sámi shamans as a drumstick (Saloranta & Seppänen 2000, 62–63). During restoration work of Turku Cathedral in 1925 an interesting deposition was found. A miniature wooden coffin containing pieces of cloth and the bones of a frog had been hidden in the Cathedral sometime in the 1680s (Nenonen & Kervinen 1994, 66–67). This type of deposition is known in folklore as part of a magical spell, which could be malignant (a curse) or benignant (curing magic) depending on the situation (Sirelius 1921, 558–559; Manninen 1933, 243).

There are many examples from folklore about depositing Stone Age tools, such as axes, in buildings (Huurre 2003, 168). These tools were believed to be lightning bolts and they were appreciated as powerful magical objects (Sirelius 1921, 555). One such a tool had been found in Sonkajärvi and was deposited in the stone foundation of a new cowshed at some time in the 1920s or 1930s (Soininen email 11.7.2005). Another possible example of this practice is a shaped stone object found in 2002 in a 17th or 18th-century hearth in an excavation at Pernaja (Palm & Pellinen 2002, 43). There is, however, some uncertainty regarding the interpretation of the object; it may as well be a whetstone (Pellinen email 11.7.2005).

The following types of deposits are well known in folklore as well (*e.g.* Rantasalo 1933a, 31–37, 42–43). Two small glass bottles containing mercury were found in 1998 in the fill of an attic floor in Turku. The building had been built in 1908 (Tuovinen email 2.22.2006). It is possible that a small broken glass

Table 1. Finnish building deposits of the historical period.

Object(s)	Context	Dating	Location
Whole sheep	Under a wall	980–1220	Raisio
Animal bones	Next to a log in a hearth?	14th century?	Turku
'Shaman's hammer'	Under a floor	Late 14th century	Turku
Animal bones	In a pit under a floor	After summer 1441	Turku
Candlestick	Hearth	16th–17th centuries	Naantali
Hare's feet	Hearth	16th–17th centuries	Turku
'Coins', pistol balls	Under a cornerstone	After 1650	Helsinki
Frog in a coffin	Inside the cathedral	Late 17th century	Turku
Knife, whetstones	Under a floor	Late 17th century	Turku
Bronze fibula	Under a cornerstone	17th–18th centuries	Turku
Stone object	Hearth	17th–18th centuries	Pernaja
Whetstones	In a floor construct	17th–19th centuries	Turku
Small glass bottle	Stone foundation	18th century?	Turku
Hind legs of a pig	Next to a cornerstone	Late 18th century	Oulu
Coins	Under a ridge beam	18th–19th centuries	Rovaniemi
Sickle	Stone foundation	19th century	Turku
Human skull	Under a floor	Early 20th century?	Turku
Mercury in bottles	In fillings of an attic floor	Early 20th century	Turku
Bibles	In fillings of an attic floor	Early 20th century	Turku
Stone Age axe	Stone foundation	Early 20th century	Sonkajärvi
Woman's boot	In a roof	Early 20th century	Helsinki

bottle found in the foundation of an 18th-century building during excavations in 1982 (TPM inv. no 18831:184; Pihlman & Ikäheimo 1982, 14), may also have contained mercury, but there is no longer any way to be sure. The last find to be introduced here contains two Holy Bibles. The Bibles were found during renovation among the fill of the attic floor of a building in Turku. The older had been printed in 1906, which is the year the building had been constructed, and the other in 1921, possibly the year when a new room had been added to the building (Gradistanac email 11.7.2005).

As seen above I have here introduced the finds in rough order by type of deposited object, from bones, through every-day objects and ending with objects of amore easily recognized religious or magical meaning. In the table below (Table 1) I have chosen a rough chronological order instead, since it might serve readers interested in different periods a little better.

The finds introduced here are naturally but a very small proportion of the actually deposited objects. Many have not survived to be discovered in the first

place and many of those that have been discovered have not been reported. This type of find has been quite unknown to researchers and deposits may thus be difficult or impossible to recognize in reports. Knowledge seems to increase rapidly, though. Several additional finds have already come to my attention, but since the excavation reports are still being written I will return to them in future studies.

Problems of recognition and interpretation

There are many problems concerning the interpretation of building deposits. Firstly, the deposits are likely to be missed in excavation if the archaeologists working there are unfamiliar with the phenomenon in question. Secondly, even if it has been noted during excavating that an object seems deliberately placed in the structures of a building, it may still be forgotten when writing the excavation report and is thus lost to researchers who were not at the site.

The third problem concerns the interpretation of finds that have been reported. According to Ilse

Fingerlin (2005), objects found in the structures of a building may have been lost, they may belong to the fillings of walls, ceilings and floors, or they may be valuables hidden from potential thieves. The deposits that do not fit into these categories are given a ritualistic interpretation. One problem with the categories is that they presume that a find should be given a functionalist, rational interpretation. Only if such is not possible, can the find be interpreted as ritualistic in nature. Another problem is how to distinguish between 'functionalistic' and 'ritualistic' deposits. One way is to pay attention to the spatial context of the find. This may still be misleading, for the above mentioned 'functionalistic' types of building finds may very well be found in the same contexts as 'ritualistic' finds.

This leads to the fact that every potential 'ritualistic' deposit has to be interpreted individually. The interpreting archaeologist must, depending on the existing evidence, judge to which group of building finds the deposit most probably belong. Small objects under the floor may easily have fallen through the cracks, a worn out shoe that is found together with textiles and leather-cutting remains among the fillings of a wall is likely to be part of that filling. A valuable object that is placed in an accessible place (the owner might need to use it someday) would probably be a 'bank deposit'. The researcher should test the find against all possible interpretations and choose the strongest one.

A further problem is the interpretation of coin finds under floors. Coins can very easily fall through cracks in the floor and thus be placed there unintentionally. But we also know from folkloristic and ethnological analogies that coins were placed under floors as deliberate deposits. If coins are found under cornerstones or thresholds or other places where they could not have easily been lost, they can be interpreted as deliberate deposits. Otherwise one cannot be sure.

Another additional problem concerning the interpretation of finds is easily illustrated with an example from Finnish folklore that has been published by A. V. Rantasalo (1933a, 9). It tells us that in the vicinity of Kiiminki in northern Finland people used to place a small horse figure made of alder under the stable floor. This horse was placed in a small box (which had been made to resemble a stable) and it was covered with a piece of cloth (as a blanket) that was cut from the skirt of a woman who had recently given birth. The blood of such a woman was also used to paint eyes on the horse. Barley and mercury were placed in a little basket and put in front of the horse. This alder horse was placed under the floor of a new stable before the horses were introduced and it was thought that it would provide good fortune for them.

If such a wooden horse in its small stable would be found for example during an excavation, it might

not be given a ritualistic interpretation. As Ralph Merrifield (1987, 189–190) has pointed out, objects with representational imagery are familiar to us today as ornaments and children's toys, and are often interpreted as such when found. Representational imagery, however, plays an important part in magical and religious ritual, as shown above.

It may seem easier and safer for us to interpret the find as the first practical thing that comes to mind. By doing so, we are assuming that in the past people thought just as we do now and we are blinded to the possible layers of meanings that the find may bear. Similarly, if we cannot find a rational explanation we may simply interpret the find as ritual and leave it at that. Again we will lose the possible complexity of meanings.

Joanna Brück (1999) has pointed out that the imposition of the dichotomy of ritual-secular on the past has resulted in particular interpretation dilemmas for archaeologists. This means that archaeologists implicitly define ritual and non-ritual practices as mutually exclusive, a point that also has been criticized by others, for example Richard Bradley (2005, 16, 19, 34–35). I suggest that the above-mentioned dilemma of distinguishing between the 'functional' and 'ritual' deposits is an example of this.

Brück argues that the category 'ritual' as opposed to rational, functional action is a product of post-Enlightenment rationalism. Ritual is something that does not meet modern western criteria for practicality and is thus frequently described as non-functional, irrational action. Brück also points out that there are many societies that do not draw such a distinction between the sacred and the profane. In these societies ritual action may not be spatially or temporally distinguished from more 'mundane' activities.

In my opinion this means that a deposit may simultaneously have both 'functional' and 'ritual' meanings (if we choose to still use these terms). Brück (1999, 332) gives an excellent example of this in discussing 'odd' deposits at Middle Bronze Age settlements in southern England. She noticed that refuse deposits are frequently located at critical points in space, which suggests that refuse may also have played an active role in marking out significant places. This indicates that it cannot be assumed that items that would seem like rubbish to us, were perceived as useless, dirty or worthless in the Middle Bronze Age.

As a consequence, the placing for example of worn out shoes and clothes among the filling of a wall may well be both 'practical' and bear meanings that may seem irrational to us. The same can be said of so-called 'bank' deposits. The question that remains is the truly important one of whether the deposit was deliberate or whether the items had simply

been lost, or (in case of whole animals) accidentally trapped? When a deposit is interpreted as deliberate, the researcher may try to find the possible meanings of the particular find.

As an example of interpreting a building deposit we may take a closer look at the hare's feet in the foundation of the hearth mentioned above. In this case we can rule out the possibility of a trapped animal, since the find consists of the left hind leg of two different hares. More so, the situation of the feet in the hearth indicates an intentional act of deposition. Now that we have determined that this is indeed a deliberate deposition we may move on to consider its possible meanings.

An important point that Brück makes is that ritual actions are perfectly rational given a particular understanding of how the world works. They may seem irrational only to those who cannot follow the historically specific logic, which produced them. It is this logic behind the seemingly irrational deposits that I will try to trace in the following section.

Beliefs and meanings – The rationality of the deposits

As pointed out by Brück, there are societies where no distinct line is drawn between sacred and profane, ritual and ordinary life. In my studies I came to realize that the Finnish rural society of the past was most likely such a society. This can be seen especially in the use of magic practices (*taikuus* in Finnish). Leea Virtanen (1999, 248) tells us that the practices that are nowadays called magic used to be a natural part of ordinary life. Everyone used magic, even the most religious persons. This was possible because the practices were not seen as the illegal magic that the church opposed, a point that can be seen in witchcraft trial records of the 17th century. Magic was used in all aspects of human life, and I suggest that these people did not make a very distinct difference between for example locking a door with an iron lock and 'locking' a house with a magic practice.

This can be seen in the folkloristic record. Many of the notes that have been made on magic practices include a short explanation given by the person concerned telling about the practice to the collector. Even though most explanations tell us that the practice is to prevent (from our point of view) supernatural harm, many also include such natural harm as for example thieves and wolves. The objects used for these means are most commonly everyday tools and other objects that also indicate the relationship between ritual and ordinary life (see also Gazin-Schwartz 2001).

The meanings of building deposits have probably changed through time. One meaning could be that of a sacrifice or offering to an ancestor or supernatural

being. Depositions may also be connected to fertility magic. Another possible meaning is the magical protection of the building against lightning and evil powers or simply to bring luck. The meaning that seem to be prominent even today has to do with documentation of the time when the building was erected.

All these meanings can be found in the analogies that I have used. Sacrifice to supernatural beings is sometimes mentioned as the motivation for coin deposits, while depositions of fertile animals, such as hares or rodents, are supposed to bring fertility to the dwellers of the building. Still, magic protection seems to have been the most important at the time when the analogies were collected. In particular, deposits involving sharp metallic objects, mercury and snakes (vipers) have been regarded as powerful means against evil powers.

According to my analogies, people were concerned about harm such as lightning and fire, illness and general bad luck. Even though some of this may seem quite natural to us, it was believed that they were caused by powers that from a modern point of view are supernatural. Such powers could be sent by ill-willing neighbours, unintentionally in the form of the evil eye or intentionally as sorcery and witchcraft (Nenonen & Kervinen 1994, 39–41, 60–61; Virtanen 1999, 240). The need for magical protection is connected with this belief in harmful powers. This is not a new idea, for example Brian Hoggard (2004) has connected building deposits with witchcraft and especially counter-witchcraft in England from the early modern period until the twentieth century.

The deposits are placed on the borderlines of the building or in connection with the fireplace. The borders prevent outside threats from entering the house and the fireplace is a source of light and warmth but also the potential beginning of a devastating fire. Researchers who have studied the pre-modern Finnish worldview have noticed that the borders of the household were considered weak and constantly threatened by outside powers (Eilola 2003, 314; Issakainen 2005, 272). One could not close the borders completely, so they needed to be protected as well as possible. The weakest points of a building were its openings: doors, windows and chimneys.

One interesting point that I noted is that the same objects that are used for magical protection can also be used to cause harm to other people. These ill-willing depositions are placed in very much the same places as the protective ones. The only clear difference is that a protective deposition is placed in one's own house while an ill-willing one is hidden in or under someone else's house.

Jari Eilola (2003, 187, 226), who has studied belief in witchcraft as seen in witchcraft trial records of

the 17th century, points out that protective magic was about strengthening borders while ill-willing magic was about breaking and crossing them. He also mentions that an alien object that came into contact with one's own territory was a possible threat. I believe this is what the ill-willing deposits are about: bringing an alien object into contact with someone's household breaks its borders and allows evil powers to enter.

The worldview reflecting in folklore is similar to the one from the 17th century that Eilola has studied. The same can be seen in for example in Touko Issakainen's (2005) studies on magic in the 19th century. Moreover, Eilola (2003, 16–17, 306) points out that belief in witchcraft in the 17th century seems to reflect the same ideas that have been recorded in the 13th century from the Icelandic tradition. He reminds us that the ideas about the supernatural change very slowly.

This does not mean that there has not been any change in the meanings of the depositions. Beliefs can change or acquire new meanings in new circumstances (Eilola 2003, 16–17). A perfect example of this is the building deposit tradition that continues today. Many official buildings as well as more private houses contain a 'document deposit': coins, newspapers or other documents that tell about the time the building was erected. These deposits are often placed in the very same places as before, but not because people are afraid of witchcraft and evil powers. The contexts are traditional but the meaning has changed; now it is about leaving something of our time to future generations. Still not a very 'functional' purpose, one could say.

A new meaning might not completely displace an old one, at least not immediately. For example in Finland the 'document deposits' started to be popular in official buildings from the 18th century onwards while the magical meanings were still recorded at the beginning of the 20th century. The meaning of offering or sacrifice that is sometimes mentioned in the folklore record could also be a reminder of older layers of meanings.

The problem is that, to an archaeologist, a coin that is placed under the cornerstone of a building looks the same even if it is placed there as an offering, for magical protection or for documentation. The archaeologist can only see that something has been ritualized (see Bell 1992, 74, 88–93). The analogies are important because with their help it may be possible to say something more. Of course without the insight of the person who made the deposit, one can never be certain that the right interpretation is chosen, but possible meanings can be explored. As Amy Gazin-Schwartz and Cornelius Holtorf (1999, 6) point out, the goal of archaeology is to develop rich and sensitive interpretations, not to reconstruct the one true past.

Since, according to the witchcraft trial records, belief in harmful outside powers and witchcraft was strong from at least the 16th century onwards, I suggest that the meaning of magical protection by strengthening the borders of the house was present from at least then onwards. It might have existed already before that, but as there are no written analogies from those older times in Finland this remains speculation.

We may now return to our example of the deposited hare's feet and consider the meanings. The foot of a hare was used in healing magic at the time of Pliny the Elder and is mentioned in his *Historia naturalis* (XXVIII.LXII.220) completed in 77 AD. According to *A Dictionary of Superstitions* (Opie & Tatem 1992, 193–194) a hare's foot was used for curing cramps in the 16th and 17th centuries and rheumatism in the 19th century. The dictionary also tells us that in the 19th century a hare's foot was also thought to ward off evil as well. The lucky hare's foot is known from the 20th century. A hare's foot (usually the left one) is also known in the Finnish tradition, for example to ward against the evil eye in hunting magic (Varonen 1891, 228–229).

As we can see above, a hare's foot, which is commonly known as a good-luck charm even today, has a long history as a magical object. Even though many of the examples given above have to do with healing, it is likely that the object was thought to have more general effects against evil powers as well. It seems obvious that our example can be interpreted as the remains of a magical practice. Since the hare's feet in this example are placed in the opposite corners of the hearth, it is likely that they are placed on the borders of the structure as protection against evil.

Expanding the horizons

There are still many unanswered questions about building deposits. It would be interesting, for example, to know whether the deposition pattern change over time and whether there are regional differences. In order to study these questions archaeologists must first learn to recognize and document the phenomenon. I fear that most of the possible depositions still go unnoticed in excavation. The same goes for the potential deposits in demolished or renovated buildings. At present most of the data is unfortunately lost.

One very interesting question would be if there is a noticeable change in the quantity or pattern of depositions during the time of persecuting witches? In Finland the Lutheran church began to regard magic as sin and a crime against God in the 17th century. Before that only ill-willing magic had been a crime, but now all magic was outlawed (Eilola 2003, 90–92). Marko Nenonen and Timo Kervinen (1994, 198–199) have pointed out that the active effort to root out magic also had an opposite effect.



Fig. 1. A goat skull deposited at a boundary mark near Turku Cathedral. Photo by Sonja Hukantaival.

When preaching against witchcraft and magic the priests unintentionally heightened people's belief in magic. The fact that the church took magic seriously made people think that it really was an effective means of achieving one's goals. People realized that witchcraft was also a threat to the authorities. If this is truly so, there should be an increase in counter-witchcraft practices during that time, which could be seen as an increase in depositions at the borders of buildings.

Then again, if the authorities' efforts to discontinue the use of magic had a desirable effect, it should be seen as an at least temporary decrease in magic practices and thus also depositions. The problem was that people did not see why the authorities accused them, since they used prayers and other Christian material in their rites. They did not see the practices as something contrary to Christianity (Eilola 2003, 92). This is why the authorities' efforts may not have had the expected effect, at least not immediately. A closer study of building deposits could shed light on how the authorities affected the practices of the people. It would also be interesting to know if there are differences in the depositional pattern that could indicate change in religion (pagan → Roman Catholic → Lutheran) or world view. One additional question of interest is whether there are different deposition traditions within Finland.

It should also be noted that building deposits are not the only ritual depositions an archaeologist may encounter. Joanna Brück (1999, 328–335) has pointed out that in Middle Bronze Age England deposits are found not only inside buildings but also in pits and ditches outside them. The deposits are often located at critical points in space suggesting that they acted as a means of marking out or drawing attention to significant locations. Ralph Merrifield (1987, 37–48) writes about ritual depositions in ditches, wells and shafts as well.

Among folklore collected from Finland there are also examples of depositing (mostly animal bones or whole animals) outside the building. These deposits were located, for example, in the middle of a road, in a well or a ditch (Rantasalo 1933b, 1214, 1217–1218). At least one example of a deposition outside the house has been discovered in this country. In 2006, excavations next to Turku Cathedral revealed a log that was placed on the ground between two ditches and held in place by posts. This log was interpreted as a boundary mark between building plots. A goat skull had been placed upside down next to the post that was at the end of the log (see Fig. 1). The skull was secured in place with two small stones. The find dates from the 14th or 15th century.

The idea of borders needing protection against outside powers may well underlie this deposition, but it may also simply be a means of marking the location as significant. There is actually a reference from 1442 to deposited bones as a characteristic of a boundary mark in the law code of King Christopher of the union of the Nordic realms (Ulkuniemi 1978, 88, 180).

Deposits connected, for example, to boundary marks, ditches, roads and wells are even less known to researchers than those in connection with buildings. It would be interesting to study deposits on a larger scale, not only concentrating on building finds, but I am afraid there is not sufficient data for such a study yet. I hope that when archaeologists learn to recognize these finds and start to document them in excavation reports the data will accumulate rapidly.

Concluding remarks

In this paper I have discussed the problems of the research of ritual building deposits and the possible meanings attached to this phenomenon. I have briefly introduced known deposits from historical times, and I have used the find that started my interest in ritual deposits, the hare's feet in the hearth, as a repeated example. I have also explored some further questions for future research.

There are quite a few points to bear in mind when interpreting building deposits. First one should determine if the deposit is truly deliberate, and then explore its possible meanings. Researchers should not be overly preoccupied with questions of functionality versus ritual, and should instead remember that such meanings may be simultaneous. We should also remember that a ritualistic interpretation is not the same as an irrational one. Ritual is rational and functional in its own way.

Even though it may feel easier and safer to interpret the find as something familiar to us (as in the case

of the alder horse), we should bear in mind that people did not necessarily share our modern world view. We must try to grasp the worldview of the people being studied in order to give more plausible interpretations. As Joanna Brück (1999, 327) points out, all activities, both 'ritual' and 'secular', were shaped by a different sense of rationality and a different understanding of causation than those common in our own culture. If we archaeologists learn to understand this, we may actually be able to abandon the term 'ritual' as Brück suggests we should do.

Possible meanings of the depositions may, for example, be that of offering/sacrifice, fertility magic or magical protection. In the case of my analogies, the latter seems most popular. This meaning was connected with the belief in harmful powers that may have been sent by ill-willing neighbours. These powers from outside the household were often considered a threat to it. Because of these threats, the borders of a house needed to be strengthened. And that is, in my opinion, what the deposits were for in this case.

Basing on studies of beliefs and witchcraft trials I have tried to trace this meaning back in time. It seems likely that it existed from at least the 16th century onwards. Protective magic has probably existed even before that, but there are no available written analogies from earlier times in Finland to confirm this.

If archaeologists learn to recognize and report possible deposits here in Finland as they have started to do in other parts of Europe, it will become possible to pose a wider range of questions with regard to the material. For example, it would be interesting to see if there is spatial and chronological variation in the depositions. It would also be fascinating to expand the study on depositions by including the ones outside buildings.

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Abbreviations

TPM Turku Provincial Museum, Turku

PRO SACRA EUCHARISTA CONSERUANDA – Finnish medieval ciboria and the temporality of artefacts

Ciboria as temporal objects

Liturgical artefacts were highly meaningful anchors in the medieval mass securing its enactment and rhythm. One of these artefacts was the ciborium or receptacle for the preservation of the Eucharist. A ciborium comprises a small, lidded container standing on a stem and flat foot. It is one of the so-called *vasa sacra* or sacred vessels, the others being the chalice, the paten, the Eucharistic reed (*fistula*) for drinking the wine, and the monstrance for displaying the host in a transparent container. In Finland, eight medieval ciboria have survived the Reformation and the confiscations of King Gustavus Vasa during the 16th century, along with more recent perils.

Like any other artefacts, ciboria can be considered, on the one hand, as instruments used for creating certain effects in the world, and on the other hand, as symbols resonating within the field of cultural meanings. Thirdly, as Susan M. Pearce (1994) has asserted, objects can be seen as documents embodying and signifying experience of the past. From the perspective of semiotics, objects function as message-bearing entities, which act in relationship with the past as material traces as well as metaphorical symbols of it. Hence, objects directly relate to the process in which the past is created from its remnants in the present.

Historical objects are not simply of a moment, but also products of many traces of past uses and reuses. This temporality is created in an artefact's relationships with people, and it also affects the artefact's instrumental and symbolic dimensions. In the current article, the temporality of the Finnish ciboria is exposed through the analysis on the ebb and flow of their appearance and appreciation. Temporality is understood as the object's duration from past to present and cycles of use and meaning phasing this duration. It comprises 1) traces and symbols of the past in the object, 2) daily routines and cycles of the object's use, and finally 3) the ways in which value is created and ascribed to it, whether pushing the artefact into the flow of commodities or drawing it away from it. This process for creating value is directly dependent

on the ways in which the past is present in the object.

The analysis of the temporality of ciboria relies to a large extent on reconstructing their social history as a group of artefacts. The anthropologist Arjun Appadurai ([1986] 2005, 34) has distinguished the social history of objects from their cultural biography. The latter refers to specific things and their movement through different hands, contexts and uses, whereas the social history of artefacts denotes long-term shifts and large-scale dynamics, the history of a type or class of artefacts transcending particular and individual biographies. Because knowledge of the biographies of individual ciboria is very fragmentary, whether during the Middle Ages or later, the concept of social history is more applicable in reconstructing their temporality. Here, temporality is understood as the chronology of contexts of users and uses in which ciboria took part.

Ciboria are drawn into temporality with the help of the craftsmen who made them. The techniques of production constitute the first instance of temporality: routines of production and the duration of different production phases leave the object as their traces. Also the ways and duration of putting ciboria on the market and purchasing them cling to temporality. However, techniques of production and the distribution of ciboria are not discussed in detail here as these issues should be addressed in connection with all other silver products as a whole. The focus will be on the use of ciboria after their acquisition in the Middle Ages.

Although individual Finnish ciboria have received attention in a number of historical studies, they have not been given any thorough treatment and publication as a group, although the archaeologist Carl Axel Nordman (1980, 54–55) reserves some pages for Finnish ciboria in his seminal yet brief study on medieval craftsmanship in Finland. The scarcity of publications demands first a detailed analysis of history and appearance of each object. The medieval phase of the use of ciboria is studied at length, because they were produced for the needs of the medieval period, and perceptions on ciboria in

the post-medieval period are directly linked to their medieval past. Finally, different phases of the social history of ciboria are identified. In phasing their history, the issue of values is especially important in order to understand how the eight ciboria have survived to the present day.

The total number of ciboria in Finland or rather in the area of the Diocese of Turku during the Middle Ages is unknown. An estimate of their number can be based on the fact that every altar needed at least one ciborium and each church and chapel needed at least one main altar and two side altars (Hiekkänen 2007, 42, 48). The first parish system was established in Finland in the early 13th century (Pirinen 1962, 72–74, 88–89, 218–220). Markus Hiekkänen (2004, 163) estimates the number of parishes to have been approximately 40 around 1230. The number of parishes grew constantly during the Middle Ages, and on the eve of the Reformation in the earlier part of the 16th century, their number was, according to Kauko Pirinen (1991, 155–156), 101 with 30 chapels, and according to Ari-Pekka Palola (1996, 101) 103 with 44–52 chapels. Also Hiekkänen (2003, 251) has counted 155 churches in the Diocese at this time, but the number does not include smaller chapels in the archipelago. This would give one to three times 155 as the minimum number of ciboria in the Finnish churches during the Late Middle Ages. The estimate is very conservative since medieval churches often had many side altars and more than one set of communion vessels, and thus also probably several ciboria. However, the number of side altars even be estimated on the basis of current research. In Turku Cathedral where the number of side altars must have been the highest, it was at least 30 (Rinne 1948, 2–3; Hiekkänen 2003, 91). In any case, these estimates reveal that the eight objects in question surviving from the medieval period in Finland constitute only a fraction of the total.

Terminology related to ciboria and changes in the late medieval mass

The terminology used for containers of Eucharistic bread has a diffuse history and their etymologies are rather dubious. The term *ciborium* was not used to denote a small vessel for consecrated bread before the 14th century. Instead, the word referred to an arched vault or canopy raised over the high altar, or a small baldachin placed on the altar during the Early Christianity (Klauser 1961). An older concept for the container of the Eucharist was a pyx, or Latin *pyxis*, deriving from the Greek word *πυξίς* meaning a small boxwood container. In classical Greek the word meant a round vessel for the storage of cosmetics, and even in Late Antiquity it does not seem to have had sacral connotations: in inventories it sometimes refers to such vessels as containers of relics, incense and so on. It was not until the 9th century that the first signs of the pyx as a special

container for consecrated wafers appear (Anderson 1965, col. 619; Kaufmann 1975, 66–67). Besides pyxes, there are also many other artefacts, such as textiles, which were adopted from more or less profane uses into the Christian liturgy during Late Antiquity (Hiekkänen 2003, 137–139).

Although containers of some kind for wafers were used throughout the Middle Ages, the emergence and establishment of ciboria are connected with changes in Christian liturgy during the Late Middle Ages. The fourth Lateran Council held in 1215 affirmed the dogma of transubstantiation or the real presence of Christ in the Eucharist. This dogma emphasized the conversion of bread and wine into the body and blood of Christ, and the importance of handling them correctly as well as preserving them safely in closable containers. Moreover, it stated that both sexes were to receive communion at least once a year during Easter. This meant that more wafers and consequently larger vessels for their safe-keeping were needed (Kolba 1975, 284).

The etymology of the term ciborium is complex. One suggested source is the Latin word *cibus*, ‘food’, indicating the bread it protected. The word has also been traced to the Greek *kiborion*, the term for the seed-pod of the Egyptian lotus. The shape of seed-vessel is thought to have led to the use of the word to mean ‘cup’, ‘tomb’, and the Eucharistic receptacle (Liddell & Scott 1996, *s.v.* *kiborion*; McLachlan 2005, 360). Another etymology considers the word as deriving from the name of the architectural canopy or ciborium, from which pyxes were suspended and which thus gave a name for the vessel (Kaufmann 1975, 68). The Hebrew word for the architectural ciborium was a ‘house of bread’ or *betlehem* (Lindgren 1998, 167).

The use of wafers in Finnish medieval ceremonies is a largely unstudied subject, but some outlines can be sketched on the basis of Markus Hiekkänen’s (2003, 148–159) work. Wafers had to be baked, perhaps in the parsonage, before the main mass on Sunday and carried to the church sacristy in a container, or wrapped in a cloth. It is possible, although not certain, that churches had a special vessel for these breads that were not yet consecrated (Källström 1939, 102–103). At the beginning of the mass, a priest took the bread to the altar perhaps placed on a paten. One of the wafers might have been larger than the others, and it was reserved for the priest, who received the communion during the Eucharistic meal. Other smaller wafers were also consecrated. One wafer might have been placed into a lunette, which was used for holding the wafer in an upright position when exposed in the monstrance, and the rest in a ciborium. From there, wafers could be distributed to the parishioners during the mass. Furthermore, when making his weekly visits to the sick at the beginning of the week, a priest needed to take wafers with him. The bread was possibly taken from the ciborium and placed into another container

Table 1. Dimensions of the ciboria mentioned in the text.

Church	Material	Shape of the container	Height	Height of the container	Diameter of the container	Diameter of the foot	Dating
Porvoo/Viipuri	gilt silver	cylinder	9.3 cm	9.3 cm	9.3 cm	–	early 15th c.
Somero	gilt brass	hexagon	33.3 cm	18.8 cm	8.4 cm	13.3 cm	15th c.
Lammi	gilt brass	hexagon	34.7 cm	17.8 cm	8.5 cm	15.6 cm	15th c.
Tuulos	tinned brass	cylinder	30.4 cm	5.1 cm	9.2 cm	10.3 cm	15th c.
Turku	gilt copper	sphere	32.5 cm	7.2 cm	11.7 cm	13.1 cm	14th c.
Turku	gilt silver	sphere	35.0 cm	14.8 cm	11.5 cm	15.5 cm	c. 1500
Turku	coconut, gilt copper	sphere	40.5 cm	16.5 cm	12.4 cm	15.1 cm	14th c.
Turku	wood, gilt copper	pear	27.8 cm	13.0 cm	12.4 cm	15.2 cm	14th c.

intended for travel use. This vessel could be referred as a *viaticum*. It is not known what was done to the rest of the wafers after the week had passed and a new mass was approaching, but Bishop Hemmingus of Finland (in office 1338–1366) ordered in 1352 that consecrated wafers should not be held in a pyx for more than two weeks (FMU 624).

In Swedish written sources the term *ciborium* is unusual even during the 16th-century confiscations, and the terminology used is rather irregular. In the confiscation documents, according to Olle Källström (1939, 102–103), instead of *ciborium*, the term *pyxis* is more commonly applied as well as the words *sakramentskar*, *öffletskar* or even *viaticum*. Also the word *helgedomakar* seems to have been used sometimes for ciboria when mentioned in association with chalices and patens, but in other contexts the word most likely refers to monstrances or reliquaries. The central European term *calix viaticus*, ‘visitation chalice’, is not used in Swedish documents, but *viaticum* is rather common. Although in many cases *viaticum* refers to a special container, it may also denote the whole phenomenon of visiting the sick as such, or collectively all three vessels, chalice, paten and pyx, taken on these visits. Källström concludes that in sources documenting the confiscations executed in Finland in 1558, the terms *pyxis* and *ciborium* appear in combinations of two or three other Eucharistic vessels with differing names. It is very difficult to deduce the form of these vessels.

Design and types of ciboria

The German term for ciboria, *Speisekelch* or ‘food chalice’, reveals the connection between ciboria and chalices. The *ciborium* could be seen as a covered chalice, and Joseph Braun (1932, 281) considers it possible that the form of the ciboria developed from chalices. They are analogical in function, the other being a container for bread and the other for wine. This analogy is also apparent in their overall design. In medieval chalices, the front of the object, or the side which the person drinking from the vessel saw, was marked with a *signaculum*, or a small figure of Christ on the cross. Usually this differentiation of the front from the back affected the whole visual design of the chalice and the placing of its decorations and inscriptions. In ciboria, the differentiation of the sides is further emphasized by the lid and its

hinge in the back and the locking device in the front. The two-sidedness differs from, for instance, monstrances and ostensoria, which were meant to be equally approachable from many sides.

The chalice in Kempele Church, transferred there from Liminka Church during the early 18th century, has a stem which dates from the medieval period. Lars Pettersson and Heikki Hyvönen (1991, 97) have pointed out that originally the stem probably belonged to a monstrance, ostensorium, or ciborium. This is indicated primarily by the widening of the stem towards the bowl, which is unusual in chalices. The object was most likely transformed into a chalice after the Reformation. The six-partite foot and the stem are made of gilt silver and have rich engraved and open work decorations with vegetative motifs. Four cast figures are attached symmetrically around the foot, two depicting Christ on the cross and two faces of an angel. Stylistically they point to the end of the 15th century or the beginning of the 16th. In addition to the symmetrical positioning of the figures, which indicates that the object was viewed from two sides, Late Medieval ciboria were usually less ornate and lacked separately cast figures of Christ on the foot. Hence the object of Kempele Church was not a ciborium, but a monstrance or ostensorium, more likely the former.

In contrast to *vasa non sacra*, ciboria as *vasa sacra* were in direct contact with the body of Christ, and thus the surfaces that were touched by these elements had to be of gold (Lindgren 1987, 93–94). Many of the ciboria were indeed made of silver and gold, but very often medieval ciboria, at least those that survived confiscation, were made of gilt copper. The nearly fifty ciboria mentioned in the Swedish confiscation documents were probably made of silver since the confiscators had no interest in vessels of gilt copper (Källström 1939, 104).

Usually covered containers of consecrated wafers are divided by modern scholars into two basic types, although it is unclear how distinct these categories were during the Middle Ages. One type is called the pyx, and it is a small circular container without a stem, while the other type, the *ciborium*, stands on a foot and a stem which has a nodus or circular expansion to permit a firmer grip when the object was carried. The surviving Finnish ciboria all have or had a foot and a stem and can thus be called ciboria. Furthermore, Nordman (1980, 55) has



Fig. 1. The ciborium of Somero Church. Photo by Visa Immonen.

divided the Finnish ciboria of base metals into two main groups according to the shape of the bottom of the container. The first type of flat-bottomed containers comprises three objects from the churches of Somero, Lammi and Tuulos, and the other type of circular containers consists of the four ciboria in Turku Cathedral. The ciborium of silver in Porvoo Cathedral can be placed into the first group.

Ciboria with flat-bottomed containers

The oldest artefact in the first group is the silver item currently deposited in Porvoo Cathedral (Table 1) (Hausen 1887, 255, Pl. X, figs. 23, 24; Allardt 1925, 76; Hiekkänen 2003, 126). The ciborium has a partially gilded cylindrical container. The conical lid lacks a cross which an inventory made in 1735 mentions, while a record from 1711 states that the object was a 'tall oblate box' meaning that it must



Fig. 2. The ciborium of Lammi Church. Photo by Visa Immonen.

have had a stem (Neovius 1893, 17; Munck 1977, 8–9). An engraved hexametrical inscription made in Gothic majuscules runs around the surface: *Hostia sacra Ihesus animae fit hic optimus esus*. The phrase can be translated as 'the Sacred Host, Jesus, becomes here the best nourishment for the soul' (Pitkäranta 2004, no. 605). The ciborium has been stylistically dated to the 14th century (e.g. Hiekkänen 2003, 126), but similar objects were made as late as the early 15th century (Connolly 1975, 81, 125).

In the Middle Ages, the ciborium belonged to Viipuri Church. The archive of Porvoo Chapter has a record from 1709 of the silver in Viipuri Church having been packed into a chest and transported to Turku (Neovius 1893, 17, 140–141). From there it was taken to Stockholm in 1711 as a precaution against the approaching Great Northern War (1713–1721). In 1723 the silver was relocated to Porvoo Cathedral (Hyvönen 1997, 313). The ciborium is



Fig. 3. The three pictorial scenes on the front side of the Lammi Ciborium. In the middle, the Pietà motif and above it, John the Baptist in his hairy cape, and on the bottom, St John holding a chalice of snakes. Photo by Visa Immonen.



mentioned specifically for the first time in the silver inventory of 1711 (Munck 1977, 8).

The other three ciboria of this type are from the 15th century. The ciborium from Somero Church is made of gilt brass (Fig. 1) (NM Hist. inv. no. 5115; Säihke 1949, 238; Turkki 1999, 25). The foot is six-lobed, with every other lobe decorated with an engraved cross-hatching pattern. The word 'Somero' with '1516 A2' has been incised in a modern manner on the bottom surface of the foot. The stem has a nodus with profiled decorations. The hexagonal container-part has engraved decorations mimicking a brick-wall construct. In the same vein the lid-part resembles a roof with a lantern. The six edges of the container and the lid have attached columns continuing as finials over the roof. The roof of the lid is covered with engraved rhomboid-shaped tiles. The sides of the lantern have engraved Gothic twin windows. The top of the roof with its cross is missing. Nordman (1980, 55) has pointed out that the ciborium has many parallels in the Baltic area, but stylistically it is difficult to date more accurately than the 15th century or identify the place of its production more precisely than Northern Germany or Sweden (Hiekkänen 1999, 37). The object was part of the inventory of Somero Church until it was bought from the local rural police chief L. J. Hallonblad by the 'Antell Delegation' for the National Museum of Finland in 1908.

Also the ciborium from Lammi Church is made of gilt brass (Fig. 2) (NM Hist. inv. no. 4410; Virmala & Ruotsalainen 1972, 181–182; Stenius & Koskue 1990, 15–16). It was donated by Lammi parish to the State Historical Museum (later National Museum of Finland) in 1904. Like the Somero ciborium, its container is hexagonal and the foot six-partite. The ciborium from Lammi has also six attached columns which continue as finials over the roof, which has engraved, rhomboid-shaped tiles. Unlike the Somero ciborium, however, this ciborium has six pictorial representations on the six sides of the container (Figs. 3, 4) (each c. 4.0 x 3.2 cm). The panel on the side of the lock of the lid has an engraved Pietà motif. On the right-hand side of the panel with the Virgin Mary and Christ is John the Baptist in his hairy cape. He carries a book with the *Agnus Dei* on his left hand. On the left-hand side of the Pietà, St John is placed holding a chalice of snakes. On the opposite side of the Pietà, or on the side with the hinge of the lid, the panel depicts St Peter with a key on his right and a book on his left. On his right side is St Andrew with his cross and on the left is St Paul with his sword. Nordman (1980, 55) has dated the ciborium stylistically to the 15th

Fig. 4. The three pictorial scenes on the back side of the Lammi Ciborium. In the middle, St Peter with a key, above it St Andrew with his cross, and on the bottom St Paul with his sword. Photo by Visa Immonen.

century. He considers it impossible to identify its place of production.

The images on the side panels of the Lammi ciborium can be assumed to have a meaningful and intentional order (cf. e.g. Sundmark 2006). From the differentiation of the front from the back by the locking device and on its opposite, the hinge, it could be deduced that also the pictorial panels should be divided into two groups: three images on the front and three images on the back. On the lock side the Pietà motif is in the centre surrounded by persons important to Christ's life and body: John the Baptist and St John. On the hinge side, St Peter, symbolising the unity of the Church, has the central position and is surrounded by his brother St Andreas and St Paul. According to the Gospels, Christ called St Peter and St Andrew as his disciples, fishers of men (Mt 4:19; Mk 1:17). Moreover, St Paul was the most notable of Early Christian missionaries together with St Peter. In contrast to the historical body of Christ as the unifying theme of the front panels, the church body of Christ could be seen as the connecting idea of the panels in the back (cf. Härdelin 2005, 283). The Lammi ciborium with its picture panels is of the rather common type in the Baltic Sea region, but in spite of the current interpretation fitting well with this particular ciborium, one should be wary of seeing it as applicable to items of the same type. The order of the panelling, and the set of scenes represented seem to vary greatly from one ciborium to another (e.g. the 15th-century ciborium of Ramme Church in Denmark; Nationalmuseet inv. no. D1406; Sundmark 2005), but the matter requires further enquiries in order to be resolved adequately.

The ciborium from the church of Tuulos is an exception among the ciboria of silver or gilt brass. It is made of tinned brass (Fig. 5) (NM Hist. inv. no. 3303:5; Heikel 1878, 119, fig. 24). The ciborium has its cross left on the conical lid. The roof of the container has a separately made strip of metal imitating a castle wall with its crenellated parapet. The ciborium has no engraved decorations except a marker's mark on the inner bottom of the container. It is made with serrated line and is triangular in shape. Compared to other Finnish ciboria, the artefact is more roughly made and the technique of its production is easily read from the clearly visible seams. Due to its roughness, Nordman (1980, 54–55) has considered the ciborium to be of local production. The Tuulos ciborium shows that the church's strict orders to use precious metals for *vasa sacra* were not always followed at the local level. The National Museum acquired the ciborium from Tuulos parish in 1896.





Fig. 5. The ciborium of Tuulos Church. Photo by Visa Immonen.

Ciboria with spherical containers

The four ciboria of gilded bronze from Turku Cathedral represent Nordman's other group. Two of them are completely of metal and two have bowls of organic material. One of the metallic ones is of gilt copper (Fig. 6) (Rinne 1948, 161–162; Pylkkänen 1976, no. 34; Nordman 1980, 55–56; Kanerva & Welin 1987, 121). It has rounded shapes and an engraved inscription on its foot. The inscription in Gothic majuscules reads *Ave Maria gracia plena Dominus t(ecum)*, or the angelic salutation (Lk 1:28; Pitkäranta 2004, no. 791; cf. Billow *et al.* 1930, 142). The beginning and ending of the text are marked with a cross. The cross is placed directly in



Fig. 6. The ciborium of gilt copper in Turku Cathedral. Photo by Visa Immonen.

line with the locking device. Since the ciborium has no other decorations, its stylistic dating is difficult, but Juhani Rinne (1948, 161–162; Nordman 1980, 55–56; cf. Sundmark 2004, 46–47) has considered the object to be a product of the 14th century based on the letters of the inscription and perhaps also on the circular shape of the foot. Other scholars have concurred, although there are some 15th-century Swedish ciboria with spherical containers, circular feet and angelic salutations such as the one from Torsång Church in Dalecarlia dated to the latter part of the 15th century (Boëthius 1932, 504–505).

The other spherical ciborium made of gilt silver has more extensive decoration (Fig. 7) (Pylkkänen 1976, no. 20; Fagerström 2000, 306–307). It has a six-partite foot with a skirting decorated with quatrefoils and triangles. The foot has arch and trifoliate decoration. The stem is hexagonal and has a twelve-angular nodus. The spherical container has



Fig. 7. The ciborium of gilt silver in Turku Cathedral.
Photo by Visa Immonen.

a semi-circular lid ending in a cone with a missing cross. Both the container and its lid have elliptically embossed recesses which repeat the ornamentation of the foot. A cross mark was incised on the bottom of the foot in the part which is directly in line with the locking device. Moreover, the marking 'N186P₀' was engraved on the bottom rim of the foot, and also the text '872 srk' (abbr. for 'parish') has been painted in red on the bottom surface. Rinne dated the object to the end of the Middle Ages, but Riitta Pylkkänen (1976, no. 20) has defined the date of its production more precisely to around the year 1500. Similarly shaped and embossed ciboria with more precise dating seem to reinforce Pylkkänen's estimate (e.g. the ciborium made by Étienne Blanc in Toulouse in 1509; Aliquot 2005, 23).

Turku Cathedral owns two ciboria with containers made of organic material (Figs. 8, 9) (Pylkkänen 1976, nos. 35–36; Nordman 1980, 55–56). The

containers, one of coconut shell and the other of wood, are attached to a stem and a foot of gilt brass with four bands of the same metal. The bands have hinges and thus the wooden containers can be removed from the metal casing. The lid of both ciboria is also gilt brass. The two ciboria present yet more similar features as their feet were decorated with eight embossed leaves and small engraved flowers between their tips. The six-pedalled flowers are placed on a cross-hatched surface. Rinne (1948, 162) concludes that the two ciboria form a pair, although in some later phase the wooden one has broken and its container has been amended by attaching two smaller wooden vessels together into a pear-shape. In fact the current bowl resembles medieval Hanseatic jugs. The ciborium has also lost its cross and the small Christ figure, which are still intact on the other ciborium. Moreover, it lacks a part of its stem between the foot and nodus. The coconut shell of the unbroken ciborium is painted red, but the colour remains on the amended vessel present more shades. Its background colour is brownish white while strokes of a brush have been made in black, but they are too damaged to be identified precisely. Among some vertical and horizontal lines, there might be some kind of floral and vegetative motifs. Both ciboria have inventory numbers painted in red on their bottom surfaces. Rinne (1948, 162) has not dated the two ciboria, but both Nordman and Pylkkänen (1976, nos. 35–36) consider their type to place their production in the 14th century.

The ciborium as an artefact of the liturgy

The ciborium was one of the *vasa sacra* or containers of Christ's body and thus had to be consecrated or blessed before use (Lindgren 1987, 93–94). After that the ciborium took its place among the other vessels and artefacts of the church. All the objects had a meaning for the liturgy, and the acquisition and disposal of ecclesiastical artefacts had a connection with the religious, political and economic circumstances of the church in question. Timothy Husband compares medieval church treasuries to living organisms as each of their items had a purpose in the maintenance of the spiritual life as a whole. Liturgical artefacts had a central place in ordering and framing the ecclesiastical calendar and the spiritual heartbeat of a church (Husband 2001, 32; see also Chapuis 2001, 13, 17–19). The church and its treasury, relics most importantly, had the role of maintaining material traces of the collective memory and the distinctive identity of the church or even the surrounding community (Pearce 1995, 102–108; Netzer 2000, 19). Liturgical artefacts were often donated by members of the elite, which was marked on the surfaces of the objects themselves. Especially chalices and patens, central in the realization of the Mass, bear the names and arms of their donors. They were objects intended to be shown and seen, contemplated and venerated,



Fig. 8. The ciborium with a coconut container in Turku Cathedral. Photo by Visa Immonen.

although the aesthetic value of liturgical artefacts could be considered less important than their spiritual function in approaching God.

None of the Finnish ciboria reveal their donors or origins through inscriptions or other easily identifiable signs, as in some of the Finnish chalices or patens. This seems to have been the general tendency in medieval Europe. Furthermore, references to ciboria or pyxes are rare in Finnish written sources prior to Gustavus Vasa's confiscations. Nevertheless, in his will dated 22 February 1285, King Magnus Ladulås (reigned 1275–1290) donated four gold marks to the Finnish church for making a chalice for



Fig. 9. The ciborium with a wooden container in Turku Cathedral. Photo by Visa Immonen.

the main altar, and a pyx for the 'conservation of the Holy Eucharist' (FMU 183). In 1404 the priest of Porvoo Church with two church wardens acquired a pyx of 40 marks for the church, but this was not a donation, as the object was paid by selling some land owned by the Church (FMU 1191). In 16th-century confiscation documents it is stated that Laitila Church had a gilt pyx donated by M(agister) Siffrid in his will (Källström 1939, 316–317). No full church inventories survive from the medieval period in Finland, but in the inventory of the altar of St George in Turku Cathedral, a container for oblates is mentioned (REA 720). Possibly a similar container was part of the inventory of the altar of St Laurence in the Cathedral, although its precise function is not stated (REA 723; Rinne 1948, 162–163).

The Mass was the core of late medieval ecclesiastical life, but it was only the priest who received Eucharist at each and every Mass. If the dogma of the Church was followed carefully, parishioners were required to receive the Eucharist at least once a year at Easter. Despite this ideal, it seems that receiving the

Eucharist was rare and considered to be a thing of the churchmen, although there was a late medieval movement propagating the importance of the Eucharist for parishioners. In lay piety, however, the miracle of transubstantiation and its visual enjoyment had a marked emphasis. Because of the precious nature of the Eucharist wine and the danger of spilling it, a practice formed whereby parishioners received only the holy bread. The practice could be theologically justified by the dogma of the totality of the real presence of Christ, which stated that under the appearance of bread alone parishioners receive Christ whole and entire.

Consecrated bread left over from the Eucharist was put into a ciborium. Some of the consecrated wafers were reserved for the sick and as Mass offerings (Sundmark 2004, 42–43). According to the ecclesiastical section of the Uppsala law, the priest had an obligation to visit the sick and the poor and give them Eucharist and extreme unction if necessary. The penalty for breaking the obligation was set at 3 marks (Ferm 1986, 233). The law also stated that every farmer had an obligation to inform the priest if someone in his household was ill. There are no written sources or studies made on priests' visits to their parishioners in the Middle Ages in Finland, but some thoughts may be gathered from Swedish studies. When the priest set out to visit a parishioner, he needed liturgical clothes, *manuale* and vessels with him. He was probably aided by a verger. If the place of visit was close, a procession might have taken place (Härdelin 2005, 148–158). In the procession, the central place was given to the vessel containing the consecrated wafers, the ciborium.

Riitta Pylkkänen has named the four ciboria of Turku Cathedral 'relic ciboria' (Pylkkänen 1976, nos 34–36), and indeed during the Middle Ages, ciborium-like vessels were used also for preserving relics. Especially the two vessels made of coconut shell have parallels with relic ciboria known from Central Europe (Braun 1940, 136–137, Tafel 56–57). This interpretation is hindered by the fact that neither one of the two objects display any signs, whether constructional or ornamental, referring to the relics they assumedly contained. In the Middle Ages coconut shells were used in a range of sumptuous artefacts such as profane goblets, chalices, reliquaries and ciboria. Since there is no reason for seeing the two items in Turku Cathedral as reliquaries, it is simpler to interpret them as ciboria. The case of the two metallic vessels is even clearer, since there are a number of similar vessels interpreted to be nothing else than ciboria.

The Fourth Lateran Council and many provincial synods required that the Host should be kept in a secure, well-fastened receptacle. In the diocese of Turku, the oldest surviving instructions for the care of the ecclesiastical vessels were given by Bishop Hemmingus in 1352 (FMU 624). In addition to Hemmingus's order that the maximum length of

keeping the wafers in a pyx is two weeks, in the statute collection of the Archbishop of Uppsala Nicolaus Ragvaldi (in office 1438–1448) it is stated that the Host should be preserved in a clean linen or silk cloth placed into a pyx of ivory, silver or copper. The vessels should be kept in a secure, locked place and the priest should have the key (von Celse 1841, 151–152). Following these requirements, liturgical vessels were stored in a cabinet in the sacristy or in a cupboard in the wall of the choir. These cupboards were distinguishable from other cabinets by their richer decorations (Lindgren 1987, 95; 1998, 169). According to Hiekkänen, there have survived approximately 270 niches of this kind in Finnish medieval churches whereas separate cupboards made of wood are more rare and known only from three churches (Hiekkänen 1994, 69–81, 369–371; 2003, 94–95, 113; the difference between cabinets for hosts and their containers [*sacramentarium*] and tabernacles or cabinets for displaying monstrances should be noted).

Iconography associated with ciboria

The ciborium from Somero Church clearly refers to a stone tower with its brick-wall-like sides and roof with a lantern. The Tuulos ciborium has a crenelated parapet, and the columns and roof tiles of the Lammi ciborium refer to architectural features. Also the scale-like engravings on the lid of the Porvoo ciborium resemble roofing. In the spherical ciboria architectural features are more difficult to detect, but their semi-circular lids with crosses can be seen imitating a church dome. The clear association between ciboria and buildings can be understood in two ways which, in fact, are complementary. Firstly, the ciborium as a church points to the Church of the Holy Sepulchre in Jerusalem. Like this church, the ciborium was a container of the Body of Christ (Hiekkänen 1999, 37). Secondly in the Early Christian basilica church, the altar was protected by a tower-like construction, the ciborium (Lindgren 1998, 167). Hence, the other way of approaching the symbolism of the ciborium is to consider it as a castle or rather a tower, which is a reference to the tower of David, *turris Davidi*. The tower of David was a symbol of the Virgin Mary who, like an impenetrable fortification, preserved the Body of Christ in her womb (Lindgren 1987, 104; Härdelin 1998, 175). The association is reinforced by the inscriptions on ciboria, which often quote the angelic salutation *Ave Maria* like the 14th-century ciborium in Turku Cathedral.

In medieval art, the ciborium is often a sign of missionary work since it was used to protect and transport holy bread (Lindgren 1987, 105). The medieval signets of the Åland Islands represent St Olaf, the missionary saint, with a hatchet in his one hand and a ciborium in the other. Wooden sculptures of St Olof in churches of Hollola and Pertteli also hold a ciborium in their hands (Knuutila 1997; 2006).

The Reformation and the modern period

The transubstantiation that took place at the *elevation sacramenti* or the elevation of the Eucharist, lost its legitimacy in the synod of Uppsala in 1593. The consecrated wafer did not have the real presence of Christ anymore and thus the ciborium was no longer a vessel for the Body of Christ but merely a container of oblates. Although the ciborium had forfeited its status as a *vasa sacrum*, it did not lose its place in the altar equipment, as Martin Luther still accepted the use of the pyx and ciborium as containers (Källström 1939, 102, 104).

The eight Finnish ciboria constitute only a small part of all ciboria used in the medieval period. One overriding factor in their disappearance has been the Reformation and the accompanying confiscations machinated by King Gustavus Vasa during the 16th century. In Olle Källström's study on the confiscation documents, eleven ciboria, ten pyxes and three viatica are mentioned in the parishes of the Diocese of Turku (Källström 1939; cf. Källström 1940, 211 where he mentions nine pyxes; one pyx missing from Källström's calculations is from the nunnery church of Naantali, where the pyxes had been lost already before the actual confiscation; Källström 1939, 318–319). The scarce administrative documentation of artefacts was intended to serve estimation of metallic value, not to give accurate, scholarly descriptions. One has to be careful in interpreting the information given. In only two cases the metal of the artefact has been specified to be copper. In nine cases it is said that the artefacts are not gilt and in seven cases that they are. In one case it is said that a gilt ciborium had also blue enamelling (Vanaja/Mäskälä parish; Källström 1939, 317). The ciborium of Siuntio Church might have been given as a gift to confiscators (Källström 1939, 322).

Even when all artefacts named as ciboria, pyxes, and viatica in the confiscation records are counted together, their number still stays small, 24, compared to number of monstrances mentioned, 72. Källström has also pointed out this high number of monstrances. He considers possible that the number of monstrances is a symptom of the time period of their confiscation in 1557–1558, when the most systematic execution of confiscations took place (Källström 1940, 212). Also the distribution of confiscated ciboria differs from monstrances. Whereas the monstrances are very evenly spread out among the medieval churches in Finland, the ciboria are from South-Western Finland between the Rivers Uskela and Kokemäki with some pieces from the province of Häme. No ciboria were confiscated from the Åland Islands. Ciboria seem, furthermore, to have been more often made of copper or other base metals than monstrances (Hiekkänen 2003, 127).

After the fervour of the Reformation during the 16th century, a long silence was cast upon

surviving ciboria. In written sources, ciboria and pyxes appear as items in church inventories, like 'the oblate casket of silver with an angulated lid' mentioned in the 1730 inventory of Pohja Church (af Hällström 1959, 177). The object might have been medieval, but it has not survived to the present day. Not until the antiquarian interest of the late 19th century ciboria seem to have attracted scholarly interest. Medieval patens and chalices with inscriptions indicating dates and persons were taken into academic discussions earlier. The paten of Naantali Church with its historical inscriptions drew the interest of the early antiquarian Henrik Gabriel Porthan (1739–1804), who published its image with a commentary (Porthan 1783, 159). The description of the parish of Somero, written in 1760–1772 by Gustav Adolph Bökman mentions the now-lost corn ear of silver as the only 'ancient monument' in the parish church (Alanen 1986, 29). No note of the ciborium is made.

Although the eight ciboria represent only a small fraction of all ciboria, it can be asked why they have survived at all. Why were they not melted and reused? One reason is juridical. All artefacts in a church are part of its property, which cannot be removed without the proper process of authorization. Another aspect of the survival of ciboria is perhaps their value as ancient artefacts and traditions belonging to the church and its chests and cupboards, although no historical value seems to have been given to medieval metal artefacts as such. If old communion vessels were in need of repair, their parts could easily be replaced or the items could be melted altogether and recast to follow contemporary taste. Old medieval chalices could even be sent to more peripheral, poorer parishes as signs of goodwill, like the chalice in Kempele Church. A third aspect contributing to their endurance is the value of exoticism which medieval ciboria could signal after the Reformation. Moreover, the two ciboria made originally of coconut shells were of material rare in northern Europe. They might have been kept as curios long after the Middle Ages.

The first evidence of medieval artefacts having historical value and potential to produce emotional reaction in contemporaries is from the late 19th century. These emotions could be scornful, when medieval artefacts were seen as signs of Catholic ideology foreign to the Finnish people as in the booklet *Kirkolta Kirkolle* intended for a general readership and published in 1897. It describes some Finnish churches and bluntly states: 'Among the medieval Catholic mementoes, which to a large extent are foreign to our people, it is refreshing sometimes to meet *Finnish* mementoes from the Lutheran Age' (italics in the original). Usually medieval artefacts are treated in a more positive manner, however. Ciboria are seen as valuable fragments of the past and new sources for scholarly work.

First images of Finnish ciboria were published in the late 19th-century antiquarian surveys of parishes and their monuments. Antiquarians Axel Olai Heikel (1878, 119, fig. 24) published a drawing of the Tuulos ciborium, and Reinhold Hausen (1887, 255, Pl. X, figs. 23, 24) of the Porvoo ciborium. After the first antiquarian wave, images and descriptions of ciboria have appeared in histories of churches, parishes and municipalities throughout the 20th century. The Lammi ciborium has been described in the history of the municipality as well as in the history of the church. In the former, a photograph of the ciborium is accompanied by a few lines of text on its appearance (Virmala & Ruotsalainen 1972, 181–182). In the latter, the contents of its engraved panels are also listed (Stenius & Koskue 1990, 15–16). The research history of the Somero ciborium is rather similar (Säihke 1949, 238; Turkki 1999, 25; Hiekkänen 1999, 3). The ciboria of Turku Cathedral are described and discussed in medieval archaeologist Juhani Rinne's (1948) extensive work on the Cathedral during the Middle Ages. They were a part of a special exhibition on the sacred art and ornaments of Turku Cathedral in 1976–1977 (Pylkkänen 1976), and mentioned in several works on the history of Turku Cathedral.

Since ciboria do not have any apparent use in the contemporary ecclesiastical life unlike chalices, all of them except the one in Porvoo Cathedral have been deposited to museums. Inventory numbers painted with red on the bottoms of ciboria are very concrete traces of this process. The four ciboria from Turku are exhibited at the permanent display of Turku Cathedral Museum. The musealization of ciboria is in stark contrast with medieval patens and chalices, which to a large extent remain in parishes. They have been used in post-medieval communions, which is the case in some parishes even today. For instance, in Honkilahti church the medieval chalice was used in Confirmation ceremonies until it was deposited to Turku Cathedral Museum in 2006. In special occasions old chalices and patens have also been used, among others, in Pernaja and Saltvik. In Nastola, ancient communion vessels are used when communions are served outside the church. Medieval chalices and patens have even inspired folktales of the modern period (e.g. the folktale of the chalice in Rusko Church; Aspelin 1887, 205–206), but no such phenomenon can be associated with ciboria.

Phases of social history as modes of temporality

The social history of Finnish ciboria display the instability of value ascribed to artefacts, which is directly linked with their temporality. Following fluctuations in value and subsequently temporality, attitudes towards Finnish ciboria can be divided into four phases which constitute their social history. The first phase is their medieval liturgical use. Ciboria present complex associations with liturgy and other ecclesiastical vessels in their forms as well as in the

inscriptions and iconography. The surviving Finnish ciboria date from the 14th to the early 16th century, and they share common decorations and types with ciboria known from Northern Europe. Not only their appearance but also their liturgical meaning created a connection with churches and masses in a large community of Christians. This liturgical use has even left its mark on the surfaces of ciboria like Stina Fallberg Sundmark (2004, 43) has pointed out: The wearing of the gilt on ciboria concentrates to the nodus and foot, because they were held with one hand on the foot and the other on the nodus.

In addition to commonalities in forms and uses, the idea of a community is also present in the symbolism of ciboria. By their form ciboria refer to the Church of the Holy Sepulchre in Jerusalem and to the tower of David, the symbol of the Virgin Mary as protector of Christ and the church. Furthermore, ciboria as containers of the Body of Christ involved a certain shared conception of Christian time. On the one hand, Christ and his Passion were historical, unique events, but on the other hand, they were present daily, as his body, through the mysteries of the church. This temporal dualism between the uniqueness of historical events and their constant presence through the church is visible even in the pictorial programme of the Lammi ciborium.

The importance of the function of ciboria, to protect the Body of Christ, dictated the materials of their production. The value of ciboria was in their role in the liturgical practice and the weekly cycle of the church, but consequently also in their metal content. In spite of resembling chalices in many ways, inscriptions or decorations on ciboria do not reveal their donors or the time of their making, although written evidence suggests that also ciboria could be given to the church like chalices and patens. In this sense, ciboria were not fixed into a certain time or persons, but had a more anonymous or atemporal nature.

The Reformation with changes in the dogma as well as the social position of the church brought the second phase in the social history of ciboria. As the old liturgy and the meanings it gave to the liturgical implements were disrupted, also the meaning of ciboria changed. Since the Eucharist was no more the actual body of Christ, there was no longer need to give them such a visible place among the church's vessels. Although ciboria still had uses in the Reformed church, they lost their status as *vasa sacra* and were now revalued as objects of the past. Ciboria with containers standing on a long stem and foot were replaced by small wafer capsules. More importantly, the ciboria of precious metals became the focus of the state and confiscations: the value of liturgical vessels was reduced purely into their metal content, at least in the eyes of the officials.

After the 16th-century confiscations began the third phase and its long muteness before the 19th century.

Ciboria had neither use-value nor metal-value if made of base metals, but their survival was secured by their juridical status as artefacts belonging to the church and its traditions, or as curios. During the 19th century, ciboria were inscribed with new meanings, and the fourth phase or the period of the antiquarian revaluation of medieval artefacts started treating ciboria as signifiers of historical value. Ciboria denote continuity from the medieval period, traditions of the local past, or effects of foreign influences. Ciboria are heirlooms testifying to the long past of local churches and Christianity. To protect and exhibit ciboria as such objects of historical value, they have been moved into museum contexts, which has also left marks on their surfaces as painted inventory numbers. Their temporality has been connected with the cycles of museum use.

Ciboria provoke reactions and expectations, partly suggested by the museum setting, in museum visitors, whether laymen or academic researchers.

To apply Susan M. Pearce's (1994, 23) terminology, ciboria as *signs* are an intrinsic part of the whole of the medieval liturgy. Their relationship to this whole as parts is metonymic. After the Reformation, ciboria have operated more as *symbols* or entities brought into an association with elements to which they do not have intrinsic relation. Their relations are metaphoric. Ciboria are metaphors of the medieval past, or as single entities, the past of the churches which own them. They operate as signifiers of conception of the medieval past. As symbols of the past, ciboria have been made signs of another kind, signs for a certain understanding of temporality.

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Abbreviations

FMU	Finlands Medeltidsurkunder samlade och i tryck utg. af Finlands statsarkiv genom Rein. Hausen I–VIII. 1910, 1915, 1921, 1924, 1928, 1930, 1933, 1935. Helsingfors: Statsarkivet.
NM Hist.	National Museum of Finland, Unit of History.
REA	Registrum ecclesiae Aboensis eller Åbo domkyrkas svartbok med tillägg ur Skoklosters codex Aboensis i tryck utg. af Finlands Statsarkiv genom Reinh. Hausen. 1890. Helsingfors: Starsarkivet.

RURAL SPACES

RECONSTRUCTION AND ARCHAEOLOGY – A case study of a village from historically recorded times

Introduction

Landscape analysis by archaeologists or multidisciplinary research groups has recently become a rapidly growing field in Finland. One of the most extensive studies was the *Rapola* project in Valkeakoski in Häme (see Haggrén 2001; Jussila 2002; Alanen & Lehtinen 2003; Lempiäinen *et al.* 2003; Seppälä *et al.* 2003). In many cases, landscape studies are now also connected to reconstructing sites along with their natural and cultural environment and to develop more realistic three-dimensional computer models (see *e.g.* Uotila *et al.* 2002; 2003; Pukkila & Uotila 2005).

The purpose of this article is also to outline the basic features for a reconstruction of the medieval (1150/1200–1525) and Early Modern (1525–1700) village of Pernaja (Swe. Pernå). Pernaja parish is situated on the south coast of Finland, in Eastern Uusimaa (Swe. Östra Nyland), approximately 80 km east of Helsinki (Fig. 1). The reconstruction concerns visible aspects of the physical environment, such as terrain, vegetation, traffic routes, buildings and their function and other natural or man-made phenomena in the landscape.

The aim of this study is not to create an impressive computer model. Rather, it is an attempt to describe and analyse how archaeology could benefit from obtaining new information from this particular site type, a Southern Finnish village from historically recorded times that is still inhabited – a site traditionally researched with the means history, ethnology, onomastics and cultural geography. The reconstruction process is seen as a tool of analysis although it also serves as equipment of teaching and visualizing the past to the general public.

This article does not discuss village studies in other countries, because in many areas as in Sweden the questions brought up here are already well known, researched and published. In the 20th century, Finnish historical rural archaeology concentrated mainly on building archaeology and commonly on more spectacular sites such as churches and castles, and recently manors (see *e.g.* Taavitsainen 1999; Rosendahl 2003a with references; a good review on rural medieval artefact finds is Haggrén 2002). It was not until after the 1990s that surveys

and excavations of deserted medieval villages have become more common. Research of rural villages has still been scarce and attempts to find datable material have often failed. Some exceptions are the Åland Islands, especially excavations in the Hamnö Kökar Franciscan convent area (Gustavsson 1994 with references) and Jomala Church village (latest review by Ahl 2006) but also studies made in Häme, such as the above-mentioned Rapola and Retulansaari Island (Taivainen 2004). Villages for the historical period have also been excavated in Northern Finland, but that is beyond the scope of this article. Western Uusimaa has been under research quite recently (the *Our Maritime Heritage* project) and this will be shortly discussed later.

There are certain initial limitations of this research. First is the low preservation level of any organic material in Finnish acidic soil, particularly in dry sandy areas. The continuity of inhabitation in the Pernaja Church village – at least *c.* 700 years – makes it less probable that older structures would have been preserved or that they could be found. In a still inhabited village the area available for examination is quite limited, not only because of the existing buildings but also because of the restrictions imposed by landowners. Certain methods widely used in other countries such as aerial photography and ground-penetrating radar have been noticed to be relatively poorly suited to the Finnish environment because of its thick vegetation (especially large forest areas) and very stony sand areas (moraine).

A review of settlement history

The history of settlement in Uusimaa could start from the Mesolithic Stone Age (*c.* 8500–5200 BC)¹ via relatively rich Neolithic (5200–1500 BC) sites to Bronze Age (1500–500 BC) burial cairns followed by Iron Age (500 BC–1150 AD) cemeteries, hoards and stray finds. Since we are discussing the Pernaja area it can be briefly mentioned that this particular parish is not very rich in prehistoric material from any period. Less than 20 Stone Age sites, mainly from the Late Neolithic period, are known from the whole present-day parish and no certain prehistoric burial cairn has yet been excavated. The most famous local find is a hoard dated to 100 AD – a group of sickles, axes and spearheads found in the hamlet of



Fig. 1. Location of Pernaja and some other places mentioned in the text. Base map Google Earth in <http://maps.google.com/>

Malmsby in southern Pernaja. These artefact types point to both Baltic and Scandinavian contacts. Also a Roman coin from the time of Emperor Nero and a small number other Iron Age stray finds have been found (Salmo 1953; Cleve 1956; National Board of Antiquities, Register of Protected Remains, Autumn 2006). Finds from the Late Iron Age (Viking Period 800–1050 and Crusade Period 1050–1150/1200) are rare in Uusimaa province as a whole.

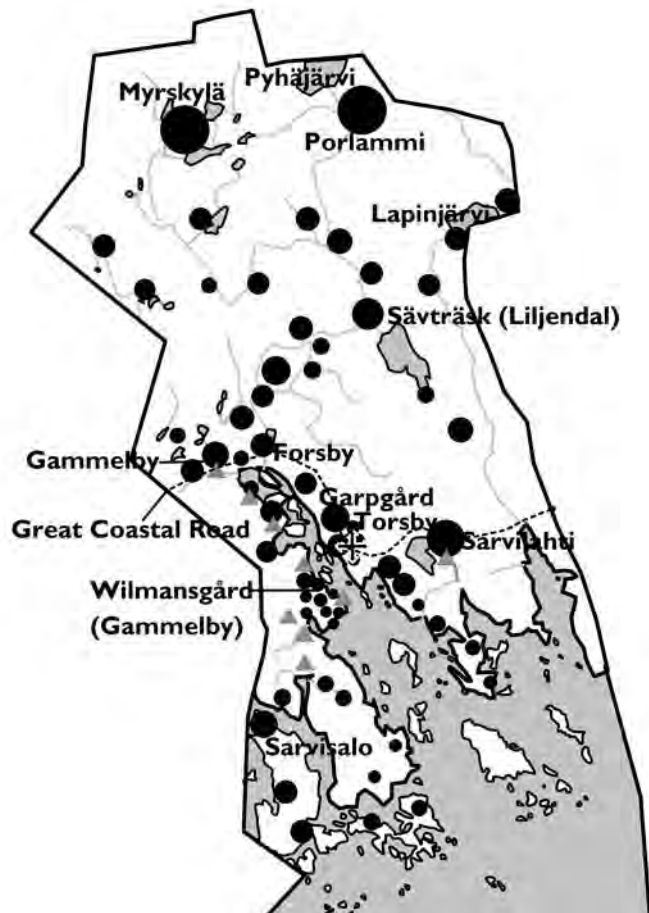
It is necessary here to refer to the discussion on depopulation theories or more correctly theories on the lack of archaeological sites in Late Iron Age Uusimaa. Anna Wickholm (2005 with references) has divided those theories into four groups: 1) catastrophe theories suggesting attacks of Vikings, pirates *etc.* causing unsettled times, 2) Uusimaa was used only as a resource area, 3) a new burial system appeared that is hard to locate and 4) a re-organization of settled.

The recent *Our Maritime Heritage* project of the University of Helsinki has brought promising results on the part of Western Uusimaa. Aki Pihlman (2005) has shown how the ceramic material in Karjaa (Swe. Karis) continues from the Iron Age to medieval times. Also new sites dating from the findless period have recently been found (Haggrén *et al.* 2003; Jansson 2004) According to onomastics, the

Uusimaa area was inhabited or in the use of Finnish-speaking people before Swedish immigrants arrived in the Middle Ages (Pitkänen 1986; 1990; Itkonen 1992; Huldén 2001; Kepsu 2005). Paleobotanical evidence such as pollen analysis and studies of soil types and climate suitable for early cultivation have brought light – though also dispute in interpretation – to the question of habitation in this area (Tolonen *et al.* 1979; Orrman 1987; Solantie 1988; Orrman 1991; Vuorela & Hiekkänen 1991; Wickholm 2005 with references).

In 1996 the University of Turku launched an archaeological project (*The Agricola project*)² in the main or church village of Pernaja and its surroundings to study medieval and Early Modern inhabitation in rural villages (Palm 1997; 1998; 2001; 2002; Lahtinen & Pellinen 2002; Pellinen 2003; 2004; 2005; 2007). The University of Helsinki carried out a similar project called *MARK* in Pernaja in 2002–2003. As a by-product in both projects there were some finds of ceramics of Iron Age type. At Tomtākern, Gammelby in Pernaja ceramics were found in a deserted medieval village plot (Haggrén & Hakanpää 2002; Anttila, Ahl & Hämäläinen 2003; Anttila, Hämäläinen & Rosendahl 2003; Rosendahl 2004). The problem of this ceramic type, however is that it seems to have been used to some amount still in the Middle Ages (Enqvist

Fig. 2. Pernaja parish in the 16th century. Black circles marks villages, triangles represent manors. Map drawn by Hanna-Maria Pellinen.



2005 with references). Roughly two kilometres northwest of Pernaja Church, a fragment of Iron Age fine ware with cord impression was found at the Sigfrids farm in the village of Torsby (Pellinen 2003). According to present ceramic research in Finland cord ornament never dates from the medieval period, but most likely from the 8th–11th centuries (Pihlman 2005). This type of pottery is also commonly found on the North Estonian coast in Viking Age and Late Iron Age contexts (Tvauri 2005; Vedru 2005, 7). This ceramic piece is the first certain Late Iron Age find in Pernaja. However no clear continuation of settlement from the Iron Age to the Middle Ages can be proved on the basis of present finds.

The value of both the *Agricola* and *MARK* projects has also been in finds of datable medieval artefacts, mainly imported stoneware, which are rare in the rural context. In particular, the finds of the *Agricola* project are discussed.

Pernaja in historical sources

At present, historians generally maintain that the Eastern Uusimaa area was not inhabited by Swedish immigrants until after the so-called second crusade in 1238/1239 (or 1249). At that time migration from Central Sweden, mainly the Lake Mälaren area, had spread north and probably the immigrants arriving in Eastern Uusimaa came from the regions of

Gästrikland, Hälsingland and Dalecarlia (Gardberg & Edgren 1996, 137; Orrman 2003a, 82).

In the Middle Ages, Pernaja was first part of the parish, or congregation, of Porvoo (Swe. Borgå). In the mid-14th century Porvoo with its chapels of Pernaja and Sipoo was transferred under the authority of the monastery of Padis monastery (in North Estonia). In 1428 the patronage of Porvoo was sold to the diocesan chapter of Turku. In the mid-16th century the chapter of Viipuri (Swe. Viborg) was founded and Pernaja among other areas of Eastern Uusimaa was placed under its authority. From a governmental point of view, Pernaja was under the authority of the castle of Viipuri at least from the mid-14th century onwards. After war with Russia and the drawing of a new eastern border of Sweden-Finland in 1743 Pernaja was made part of the Province of Kymi Manor (Swe. Kymmene) (Antell 1956, 378–412; Sirén 1965, 65; Gardberg & Edgren 1996, 143–147).

Pernaja is first mentioned in written sources in 1352. Already at that time settlement might have begun to spread from the oldest centre of habitation.³ Most of the villages are mentioned in 15th-century sources, and at the latest around 1540. The total number of farms at this time was approximately 300. In addition to tax paying peasant households there were ten manors predating the year 1600 and several dozen freehold estates (Rosendahl 2003b, 91–107; Sirén 2003, 23, 27–28). The diminishing

of Pernaja parish began already in 1380 and after the 18th century it had shrunk to roughly half of its original area (Sirén 2003, 18).

For a long while, the Pernaja church or main village (Swe. Kappelby) was counted together with two other villages on its northern side, Torsby and Garpgård. For instance, in 1560 Garpgård consisted of 18 farms, Torsby of six farms but no tax-paying farms are marked in the church village. According to a silver tax list from 1571 there were over 30 farms in the whole Garpgård – church village area if we included ‘deserted’ farms, *i.e.* being either really deserted or unable to pay taxes. However, at least one of the farms (Svidja, later Hemmings) is located in the area now belonging to the church village. In the late 16th century two farms (Baijars and Svarvars) are known to have been located next to the church (Antell 1956, 100).

Elements of reconstruction

From the ground to the sea

Geographically the most characteristic feature of Pernaja is the large Pernaja Bay from around which the first Swedish settlement spread out. Our research and reconstruction area, the Pernaja Church village, is on the eastern side of the bay, where a narrow ridge running NW–SE from the inland to the peninsula comes to its end. On the east side of the ridge is a ditch that was probably a small river in the Middle Ages. The oldest farmyards are situated in sandy areas but often surrounded by clay and/or rock (Fig. 2).

Pernaja has long been an area covered by deciduous forests; and this was the case also in the Middle Ages and Early Modern Era. In macrofossil analysis also traces of late medieval or Early Modern spruce have been found. Other plant remains found from the excavations of the vicarage of Pernaja include red-berried elder (*Sambucus racemosa*), lambs quarters (*Chenopodium album*), white clover (*Trifolium repens*), nettle (*Urtica dioica*) and field pansy (*Viola arvensis*). All these plants are common in settlement areas, gardens, fields, road verges and compost heaps (Lempiäinen 1999).

Land uplift, which began after the last Ice Age around the Baltic Sea, has been relatively slow in the Uusimaa area compared to western parts of Finland. In the nearest reference area, Loviisa (a town adjacent to Pernaja) land rises today circa 2 mm / year (Miettinen, Eronen & Hyvärinen 1999, 8, 17, 21). According to this, sea level would have been two metres higher than in the 11th century and one metre higher in the 16th century than today. However the question is more complicated owing to large variations in sea level during historically recorded times. It has been suggested that the shore displacement was faster in the Middle Ages and



Fig. 3. A Swedish military map from the late 18th century (Alanen & Kepsu 1989).

began to slow down or even that the sea rose in the 16th century (Uotila 1998, 79–82; Uotila 2003, 35–37). In the low clayey lands around Pernaja Bay the sea being one or two metres higher means sometimes a distance of 200–300 metres from the modern coastline. When comparing 20th-century maps with 18th-century military maps it seems that the areas that are flooded today were open bays. Flooded areas of 200 hundred years ago are also marked in the latter maps (Figs. 2–4) (Alanen & Kepsu 1989).

A survey of coastal areas during periods of major flooding can provide specific information on historical circumstances. For example in Pernaja the approximate sea level of the 16th century should have come visible in 2004 when the sea rose roughly one metre because of storms. However, it came near a 19th-century boat shed and the historically known 19th-century shoreline. This would mean that the shorelines of the 16th and 19th centuries were approximately similar in this area.

Traffic routes

Immediately after the organization of church and government in Uusimaa it became inevitable to have a waterway established and in the thaw season also some kind of land path between parish churches. One important element in the cultural landscape of Pernaja parish is the so-called Great Coastal Road or King's Road between the castles of Viipuri and Turku. The first mentions concerning this road date back to the 15th and 16th century and the first mention of Pernaja is from the year

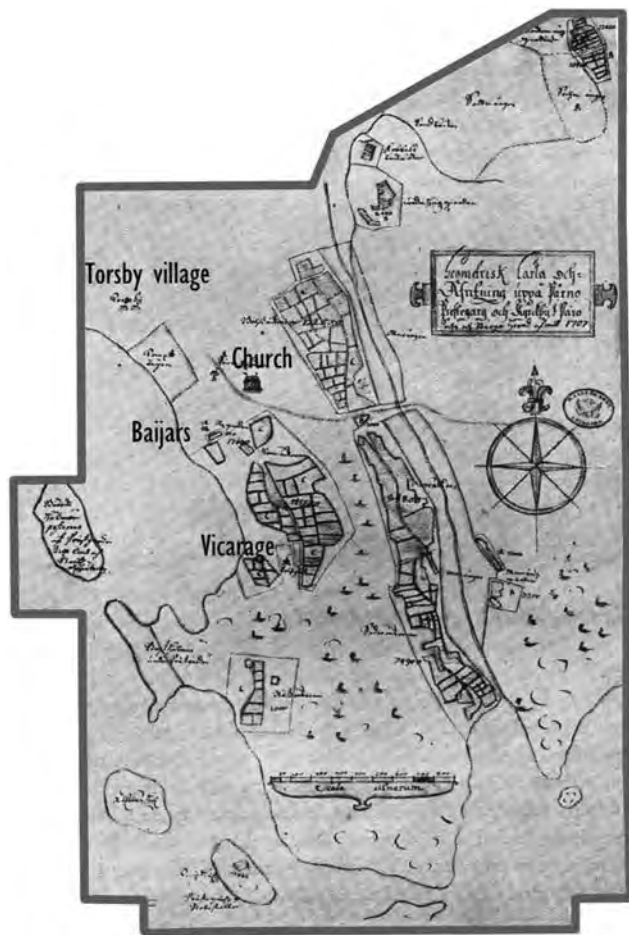


Fig. 4. The oldest map from Pernaja Church village area is from year 1707 (Antell 1956).

1564. An archaeological survey of the Great Coastal Road was made here already in the 1980s and part of this road was archaeologically excavated in 1985 and 1986. The researcher came to the conclusion that considering the location of the road, aerial photographs and excavation results as a whole it can be said that the road had been in the same place already at least in the 18th century (Salminen 1992; 1993). Earlier datings of the same road has been received from Espoo where a road cairn was dated according to plant remains to as early as 1260–1430 AD. One of the best-preserved parts of this road passes through Pernaja church village. Only some minor changes such as moving the road southward when the church cemetery was enlarged in the 20th century have been confirmed (Salminen 1992; 1993; Hiekkänen 1998b).

There is relatively little information on historical bridges in Pernaja. The first references to two long bridges at Forsby (51.7 m) and Krogbro (13 m) are from the 19th century but long bridges are known to have been built already in the 16th century. There are yet only a few bridges studied archaeologically in Finland but it is known that the earliest bridges were wooden constructions based on wooden bridge supports. There must have been bridges or ferries from the beginning of settlement in Pernaja, also to the north and east of the church village. The northern site is the above-mentioned Krogbro in

Table 1. Table of animal bone analysis from Pernaja vicarage by Auli Tourunen (2002). Weight of the bones and amount of fragments. Small ungulate = sheep, goat or pig; large ungulate = elk, bovine or horse; small animal = hare or smaller.

SPECIES	WEIGHT (g)	FRAGMENTS
Bovine	520,6	25
Sheep/goat	95,6	7
Sheep	15,7	1
Pig	59,6	6
Hare	1,1	1
Bird	5,9	8
Fish	0,1	1
Small animal	0,1	1
Small ungulate	67,8	19
Large ungulate	292,7	34
<not identified>	84,3	86
TOTAL	1143,5	189

the village of Garpgård. On the eastern side there was bridge on the route to Särklax manor (Salminen 1993, 101–106, 256). The last mentioned bridge is only 1.5 m above present sea level, which means that its *terminus post quem* at that particular place is the 14th century or rather slightly later so that the bridge was not prone to floods. Tapio Salminen (1993, 261) has noticed that typically the bridge sites are located somewhat deeper inland than the road, on harder ground.

Harbours or ballast sites?

At the end of the Middle Ages and the beginning of the Modern Era there were several harbours in the coast of Uusimaa. Pernaja, however, is not mentioned among these places.

In an archaeological survey in 1996 a site was found some kilometres south from the vicarage that included traces of ballast. One sign was common buglos (*Anchusa officinalis*) regarded as an indicator of ballast locations. There also seems to be oral tradition connected to the place (Palm 1997; Palm & Pellinen 2002). However, a ballast place does not have to mean that there would be a harbour at the same site – at least no stone constructions were found.

Fields, meadows and cattle

Before the open-field system Swedish medieval land laws presumed each village to have defined its boundaries. A village formed a community that owned its common forest and meadow areas. The fields of individual farms were located around the village plot and each house had its own fenced fields. In the open-field system, which was applied in Eastern Uusimaa in the Late Middle Ages, all the fields inside a village were fenced into two separate

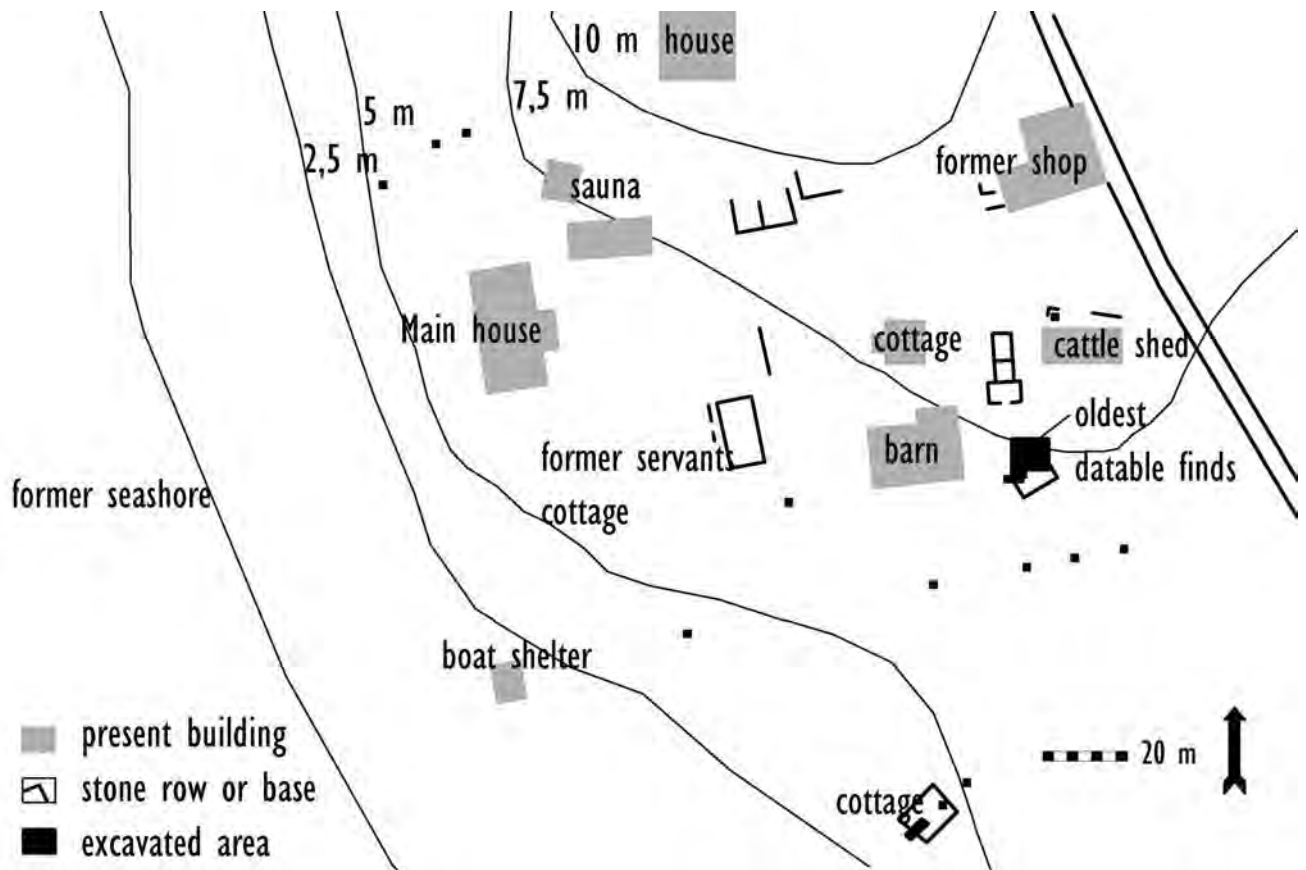


Fig. 5. The Baijars yard with its present buildings (grey), stone basis (black lines) and excavation areas (black areas).

areas. Each farm cultivated a long and narrow field row (Orrman 2003b, 93–97).

The first written sources on cultivation and field areas in Finland are taxation records from the 16th century and the first maps showing the location of fields from the 17th and 18th centuries. It seems that commonly many fields presented in the 18th or early 19th century maps are areas that are marked as meadows in the earliest maps from the late 17th or early 18th century (Pukkila pers. comm. 2006). In the earlier stage the meadows were in natural open areas along rivers and the seashore. Only fields were separately cleared. The relationship between the area of fields and meadows was roughly one to two. Cultivation at least in the Late Middle Ages and Early Modern Era was crop rotation between two fields (Nummela 2003; Sirén 2003, 100–106). On the basis of taxation records from 1565 rye was dominant but also barley and oats were commonly cultivated. Wheat played a minor role at this time (Sirén 2003, 102, Table 1).

The nearest pollen analysis of cereal types is from the city of Porvoo next to Pernaja. All the above-mentioned cereals are also known from macrofossil samples (not detailed as sub-species here). What is different compared to modern cultivation is that crops was smaller and different cereals could have been cultivated in one field at the same time as late as the Middle Ages. Small soil samples analysed from excavations in Porvoo indicate the large potential and range of different plant species. Their better

preservation in wet clay land means that this area will be an important reference area for the whole of Eastern Uusimaa in the future (Lindroos 1999; Lempiäinen pers. comm. 2006).

Excavations of clearance cairns have also come under way in Finland but remains of this kind have not been found in the church village of Pernaja. Trial excavations in the fields of western side of the village revealed a burnt layer (sometimes two separate layers) under the modern field at a depth of roughly 40 cm in a relatively large area. No historical sources include information of wildfire, clearance with fire or slash and burn cultivation in this particular area. According to the elevation of the soot areas (1.5–5 m above sea level) there might have been activity already during 14th century.

Cattle manure was needed for cultivation, as is known already from the Icelandic sagas. But what did the livestock in Pernaja look like? Osteological analysis was carried out after excavations at the vicarage (Table 1). The material originates mainly from the cultural layers of the 15th–18th centuries. The discovered bones were typical of towns in historically recorded town: cattle (c. 105 cm high), pig (only 60.5 cm!) and sheep/goat (no measurable ones). No definite horse bones were found, again a typical feature of medieval towns. However it is known that horse was in fact quite common in Pernaja in the 16th century. The only game were bones of a hare (Tourunen 2002; reference material from Finland see also Tourunen 2003; Tourunen

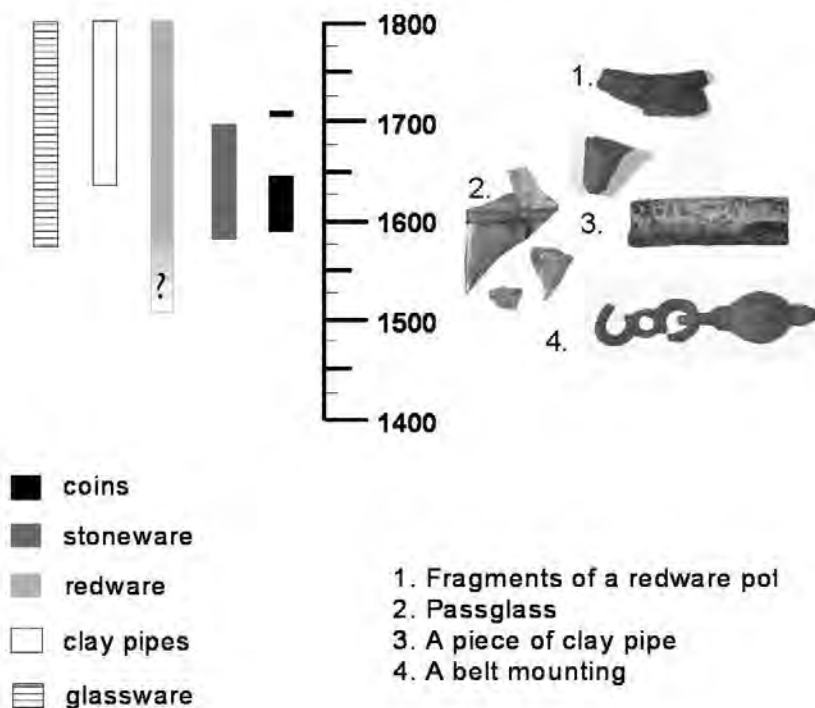


Fig. 6. Dating of find materials from Baijars farm.

in current publication). Fish bones were common in all areas though not occurring in this analysed material. The hunting of elk and seal are also known from historical sources. Fishing covered at least ten different species (Sirén 2003). Here it must be pointed out that the osteological material studied was of a sample nature and therefore no definite conclusions on the frequency of species can be made. The context of bones was a refuse heap on the north side of the vicarage and it included different parts of animals, including both meaty and less fleshy parts.

It can be assumed that each household had its small cabbage plot. Medieval gardening has often been regarded as a work conducted by monasteries, especially Cistercian and Benedictine organizations. Since Pernaja belonged in the 14th and early 15th century under influence of the Padis monastery of Estonia it is possible that it had some effect on the area. The first historically known gardens here were at the manors of Tervik and Sarvsalo in the 17th century (Sirén 2003, 102). For the moment seven soil samples from the Pernaja church village excavations (vicarage) have been researched. Samples were taken from cultural layers dating from the 15th to the 18th century. Traces of raspberry (*Rubus idaeus*) are the only sign of possibly cultivated garden plants (Lempiäinen 1999).

Village structure and buildings

There were several village types in Pernaja. The area around the church consists of scattered settlement while in the northern parts of the parish there are also villages where houses were built in a row next to the village road. The older houses around the church seem to be located on separate sandy mounds,

which has been regarded as a typical feature of new settlement. (Valonen & Korhonen 2006).

The Pernaja church village was the administrative and religious centre of the parish for a long time and therefore its structure of settlement was different from the other villages. The mightiest houses were those of the parish priest, later minister, and the village constable. As far as it is known there was no manor in the church village in the Middle Ages or before the year 1700 (e.g. Rosendahl 2003b). Otherwise the population here consisted mostly of people involved with the church and administration and their relatives and servants. Also cottagers and non-farm owning so-called independent persons gathered around the church to get aid and especially in Catholic times also help from the church. The poor lived mostly in the cottages built by the manor owners or other wealthier people for their visits to church. In addition, the poor often kept their own illegal drinking houses, especially in the church village and took care here of livestock from other villages. The village inn was situated first in the vicarage and from the Early Modern Age in the rural constable's residence of Baijars and at Svidja mentioned above (Sirén 2003, 194–196).

Test excavations were conducted in 2003–2006 especially on the western side of the church village (totalling roughly 50 m² area). The lack of medieval and Early Modern finds in most test pits may reflect the inhabitation area of less wealthy people. When all metal and valuable materials were recycled and usually no organic material – unless burned – is preserved, the archaeologist is often left empty-handed. However, since excavations also at wealthy peasant farms such as Sigfrids at Torsby in Pernaja have produced little results in terms of medieval or Early Modern material (see Palm & Pellinen 2002)



Fig. 7. Pernaja Church today. Photo by Kai Nikulainen.

– not to mention all the other efforts made in villages of historical times in Finland – this probably proves only that there was no exceptionally wealthy farm in the area or at least that the remains of such a farms have not yet been found. Since the houses might have been built directly on the soil, the only construction that may still exist are the remains of the oven. Stone settings connected with an oven construction have been found at the vicarage and Sigfrids in Torsby but their date is uncertain (Pellinen 2003; 2007). One stone-built oven from another village in Pernaja, Tomtåkern in Gammelby, has been dated to the 15th–16th centuries (Knuutinen 2006).

Some of the test pits were made also around Baijars, the residence of the rural chief constable first mentioned in historical sources from the middle of 16th century. The present-day main building is from the early 19th century and the so-called man yard and cattle yard form a four-cornered feature oriented W–E. Several stone foundations around the yard indicate that the farm was in the same place for several centuries. On the south side of the yard there are even two possible stone foundations visible on top of another. However, no datable older material in this area was found until in the 25th test pit where pieces of *passglass* indicated that some older cultural layer might be near. Also a stone foundation was found under the turf and partly

excavated in 2005 and 2006. The construction interpreted as a cattle shed or some kind of work shed could be dated to the 17th–18th centuries on the grounds of a coin minted during the reign of Queen Christina (1632–1654). Remaining somewhat uncertain was the relationship between the construction and the *passglass* with the oldest datable artefact, a Swedish coin from 1590 (King John III). According to the stratigraphy, these finds might predate the building remains. Pieces from several *passglass* items tempt the research to connect the glassware with the known inn in this area. For example in the Old Town of Helsinki excavated locations revealing type of glass concentrated near the market place next to inns and wealthier houses (Figs. 5–6) (Heikkinen 1994, 50).

In describing the appearance of the buildings around the church we are bound to use analogies. Very little was known about medieval wooden constructions in Finland were before large salvage excavations in the centre of Turku town in the late 1990s. It has been verified there that at least in town areas the new main house of a property was almost always built on the top of the older remains in the 14th–16th century. Also the same yards were in use throughout the Middle Age (Seppänen 2002; Kykyri 2003). This seems to be the case also in Pernaja area where stone foundations have been found (Baijars, vicarage and Sigfrids).

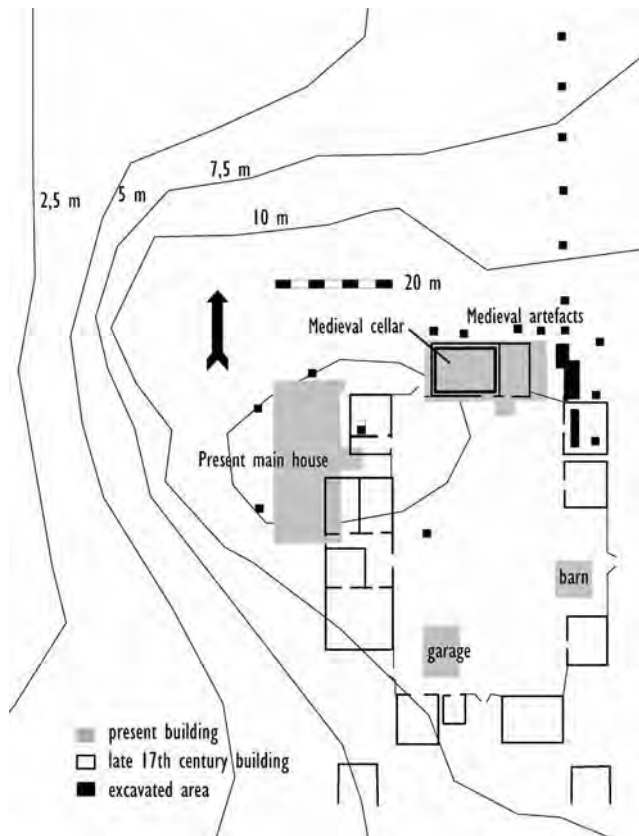


Fig. 8. Location of modern vicarage buildings (grey) and the late 17th century yard (black outlines) and excavation areas (in black).

Most of the buildings were laid directly on ground but sometimes also corner stones or stone rows were used. The main buildings were insulated from the cold with two layers of wood in the floor and birch bark between the wall timbers. Different types of timber blocking were used. The oven was built of tiles or stones and was located either in the middle of the room or in the corner (Seppänen 2002; Kykyri 2003).

According to Niilo Valonen and Teppo Korhonen (2006) four tendencies in Finnish building can be mentioned: 1. The enlargement of the house size from a single-room cottage to a house with two rooms or more. This type of development already began in the Middle Ages but presumably spread wider in the Finnish countryside in the 16th and 17th centuries. 2. Moving from the prehistoric and medieval single-house yard to a yard where almost every activity had a separate structure. The yard also consisted of a large number of buildings from different times, the oldest being already very dilapidated 3. This course development changed again later in the Modern Times to the opposite direction when the number of buildings at a farm became smaller and one house could again have several functions. This especially concerned the buildings for eating, sleeping and cooking. 4. No later than from the Modern Era onwards also the social status of the house owners became more visible when wealthier people started to use, for example, more stones and bricks as building material. In the

beginning of the Modern Era houses with glass windows and chimneys began to become more common in manors, but in peasant farms this did not take place until the 17th century (Antell 1956, 197).

It is probable that both poor and wealthier medieval rural houses were much like those described in Turku. No evidence of 16th–17th century glass windows or chimneys has yet been found in the area right next to the church. The first ceramic tiles are from the 18th century.

The yards were of closed type in Western Finland and open in Eastern Finland (Valonen & Korhonen 2006, 9). The Swedish-speaking southern coastal area was in many ways connected to the West but also received Eastern and Southern influences. In the church village of Pernaja at least the above-mentioned Baijars farm have had a four-corned (but not closed?) yard with separate areas for the use of the residents and the animals. Also the terrain seems to have influenced the shape of the yard. That is the case of Sigfrids where buildings in the western side of the yard have followed the shape of a hill.

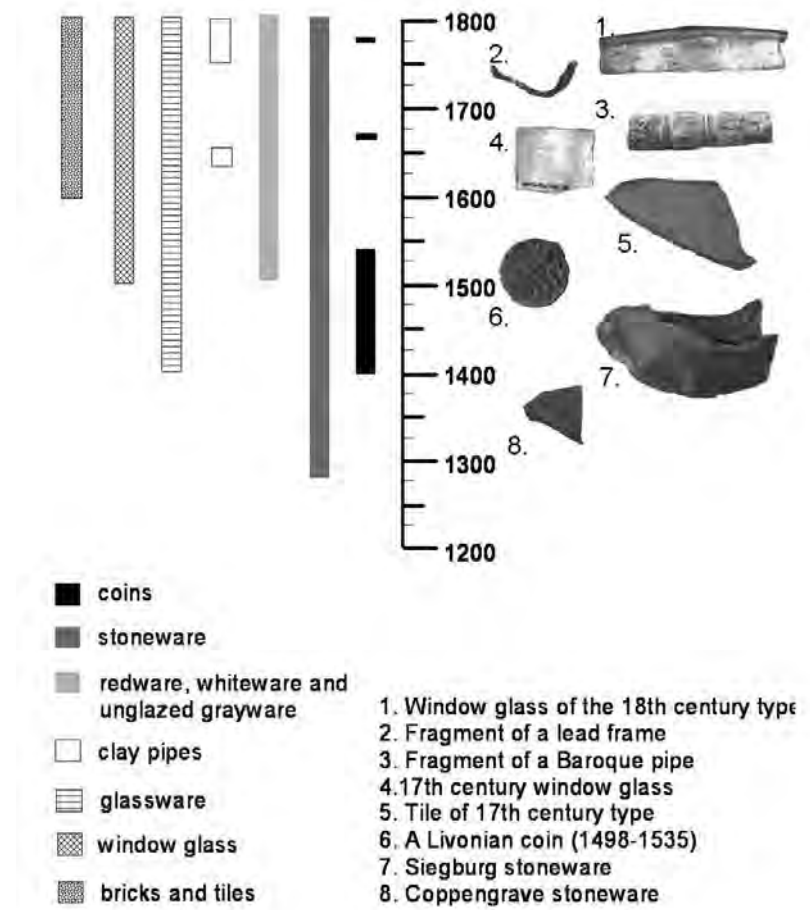
The church and the churchyard

The parish church of Pernaja lies on the face of narrow ridge opposite a small rocky hill. It is mentioned for the first time in historical sources in 1351 when the king of Sweden donated that patronage of Porvoo and two of its chapels, Pernaja and Sipoo, to the monastery of Padis. At that time, there was evidently a small wooden chapel, which has not been located in the excavations earlier or later although a stone row in the sacristy has sometimes been regarded as remains from the previous church (Kartano 1948).

Even today, the church is quite original appearance from the outside; built of grey stone, whitewashed and lacking a tower. Its steep roof is covered with shingles and the gables were decorated with tiles. The nave was divided in three parts: the sacristy is on the NE side and the porch is on the SW side. Although Finnish medieval churches seem to look very similar, Pernaja Church is unique in many details. The number of decorative motifs in the gable and the entrance and sacristy with their north windows is exceptional (Fig. 7) (Hiekkanen 1994, 120, 166, 198).

Two early excavations have been conducted in Pernaja church, by K. K. Meinander in 1900 and Erkki Kartano in 1938. Both concentrated on details of the history of the building. It is known both from a written source and excavation material that there was stained glass in the windows no later than in the Early Modern Era (Hiekkanen 2005a). The architecture of Pernaja Church has later been researched by Markus Hiekkanen in his published

Fig. 9. Dating of find materials from the vicarage.



dissertation and in some smaller publications (Hiekkanen 1994; 1998b; 2000; 2005a; 2005b; 2006a; 2006b).

According to Hiekkanen, Pernaja Church belongs to the so-called second generation (and class A) of Finnish stone churches and was built during the period 1430–1450. The sacristy was built first and after that during a relatively short time the whole church was finished. The dating of the church is based on stylistic analysis and dendrochronological evidence. Also the coat of arms of the Vase family made during the building hints that the church would have been completed as early as 1442 when Kristern Nilsson Vase, commander of the castle of Viipuri, died (Hiekkanen 1994, 218, 250; 1998a; 1998b).

The churchyard was first relatively small and surrounded by a wooden fence. There were two gates, one in the west, one in the east. The bells inside the church were mostly likely made in the Middle Ages. It was not until 1661 that the first known belfry was built on a hillock on the other side of the main road. Other known buildings are the Finnish church of 1689–1841 to the south of the main church and the ‘larger gate house’ on the west side of the churchyard. The Finnish church was sold and moved away at the end of its period of use (Antell 1956, 436–437; Sirén 2003, 321).

The churchyard area and the medieval market place next to the church remain still to be researched

but unfortunately it is probable that the modern cemetery has destroyed signs possibly left by earlier buildings and activity in this location.

The question of the vicarage

The modern vicarage is taken as the last example of archaeological information that can be obtained in our case-study area. Today, the vicarage is situated on a sandy and partly rocky hillock extending from the main ridge of the village. In the Middle Ages the sea was clearly closer to the hill and from the top of the hillock where the yard is situated there was presumably an impressive view over Pernaja Bay. On the other hand the ground is higher in the south, giving shelter from the wind.

The first reference to a parish priest in Pernaja is from the year 1362. The vicarage is noted to have been destroyed by fire twice in the 16th century (1562 and 1571), on the latter occasion by Russian troops. Until the 1680s, however, there is no historical information on the location of the vicarage. The first accurate description places houses on the edges of a four-cornered yard that was built rather densely. On the north side was a residential building, on the west a bakery shed and a residential building with a castle cottage and three separate chambers. On the southern edge were the roast cottage, stable and a storehouse and on the eastern side a sauna, cottage and guesthouse. There was also a livestock yard and further from the other buildings several

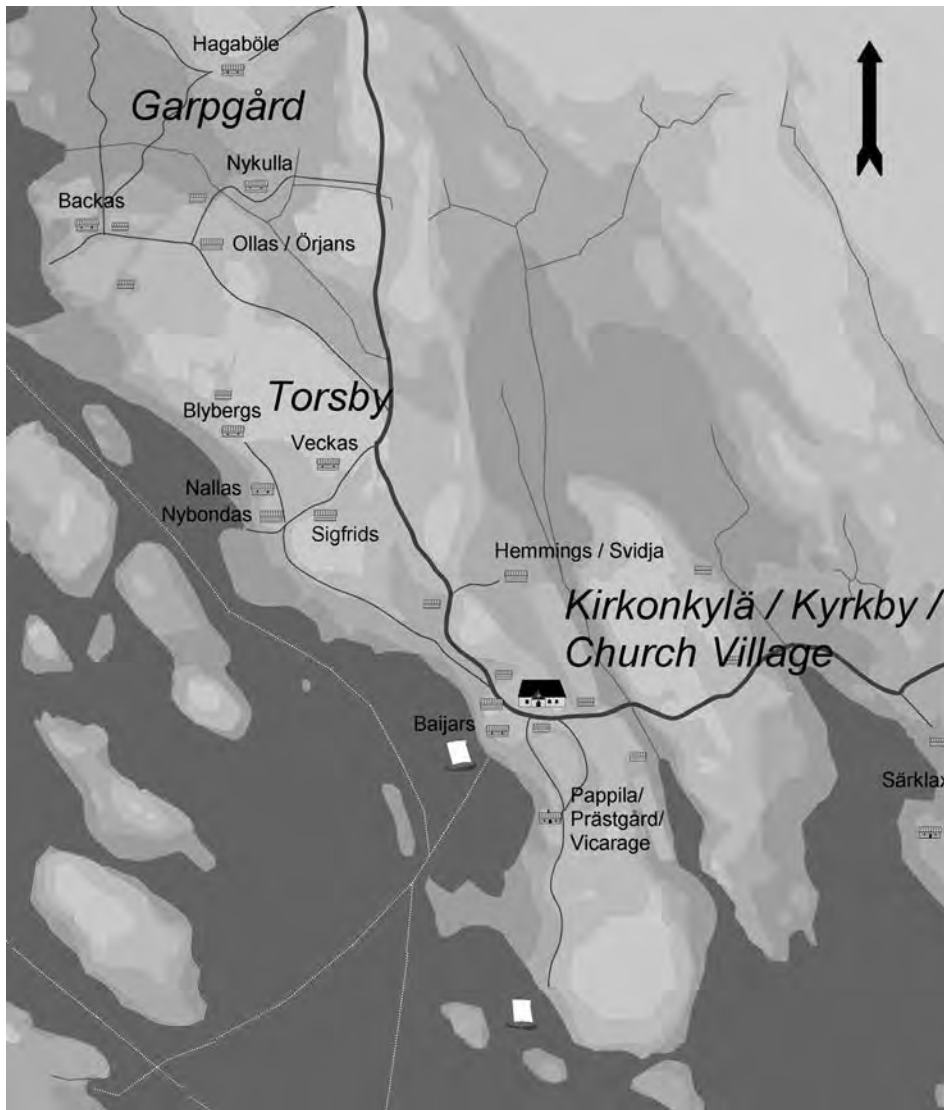


Fig. 10. A reconstruction of the Pernaja Church village in its 16th-century appearance.

storage houses and probably a smithy. In a drawing in Antell (1956, 390–391) the houses are placed as a rather tight yard configuration surrounded by a fence. Placing this picture in the real environment and comparing it with present buildings it seems that the late 17th-century yard has been somewhat narrower in the W–E direction but larger in N–S direction than today. There is, however, a problem either in the size of the houses (too large to fit the hilltop) or they would have formed a total closed yard with buildings immediately next to each other. It is also significant that the ground was lower (partly almost by one metre) and that the edge of the hilltop in the SW direction was less worn by erosion (Fig. 8).

Small excavations, of a total of 30 m², with drillings and test pits were carried out during short periods between 1997 and 2002 concentrating on the empty side of the yard, and east and north sides of the man yard (Palm 1997; 2001; Lahtinen & Pellinen 2002; Pellinen 2003). Under the present-day ‘Bishop’s Cottage’ there is still a medieval cellar (af Hällström & Lindquist 1954). Clearly visible inside the yard next to the cellar is the small stone foundation of an earlier hall or cottage cellar. Suggesting the latter possibility might be a fragment of Estonian

limestone found in the NE corner of the yard. The piece originates either from a door or window frame. Remains from an earlier house are also fragments of wave-shaped tiles from the 16th or 17th century and windowpanes typologically dated to the same time. Also fragments of lead came and 18th-century ceramic tiles have been found (Palm & Pellinen 2002).

The high social status of this house becomes even more evident when analysing the medieval finds. The earliest stoneware is a piece of Coppengrave production possibly dating from as early as the late 13th century. However most of the medieval ceramics (nine certain pieces) originates from the Siegburg area and is dated to the end of the 14th century or the beginning of the 15th century. Aki Pihlman (2005, 3) has presented a comparison between stoneware ceramics in the towns of Turku and Ulvila – the only towns with a larger body of medieval material in Finland. He states that the variation in imported ceramics is clearly larger in Turku than in the small town of Ulvila where Siegburg ceramics predominated. The Pernaja vicarage material is no doubt more comparable with Ulvila than Turku. A phenomenon connecting the vicarage of Pernaja with the urban material is

also an almost total lack of local pottery. On the other hand, not much material of this kind has been found in any of the other excavation areas (Fig. 9).

Regarding the nature of the vicarage excavation material, it can also be mentioned that it is quite diverse, although wooden artefacts are missing and only a few bone artefacts have been preserved. Medieval imported ceramics seem to be more common than imported glass vessels. On the contrary, in Early Modern times there are more pieces of drinking glass (*passglass*) than stoneware. Most of the Modern stoneware does not date from not until the 18th century (and these fragments are mostly from the same mineral water bottle). Of other artefacts can be mentioned beads probably belonging to a rosary. It would be tempting to see here a church connection but similar beads have been found for example from Tomtåkern at Gammelby in Pernaja with no known religious connection (Rosendahl 2003a). All medieval and Early Modern coins (four examples) are Livonian dating mainly from the 15th century. Otherwise the material is quite similar to that from other excavated areas in the village with iron artefacts such as knives, nails and horseshoes from various (mostly undated) periods. Younger redware becomes predominant from no later than the 16th century.

As mentioned at the beginning, there is very little comparative rural material for the Pernaja finds in Finland. This is particularly the case regarding the medieval artefacts from the vicarage. One such site is the bishop's castle of Kuusisto near Turku and also some other smaller castles (Liinmaa in Eurajoki, Junkarsborg in Karjaa, Husholmen in Porvoo, Vanhalinna in Lieto and Hakoinen in Janakkala). Of the manors, we may mention Vanhakartano in Perniö, Laukko in Vesilahti and Jutikkala in Sääksmäki, which are among the few manors where medieval material has been found (see Haggren 2002 for a general description of the material). Evidently there would be good comparative material in other countries, especially in Sweden and Estonia, but this comparison will be left to another situation in the future.

According to the Finnish rural material we no doubt can leave peasant houses out in defining the function of the house situated earlier at the vicarage site. Instead, the material could in theory indicate a vicarage as well as a manor. However if the inhabitants of Pernaja had built a vicarage for their parish priest – as they should have according to law – there is for the moment no other candidate for such a task to be found near the church.

In vicarages there were certain regulations about the buildings villagers ought to build for their priest. It seems probable that the medieval main house might first have been located above the stone cellar. The Law of Seven Rooms was interpreted as seven different houses or building groups, each one situated under a

separate roof. However these laws were not followed very strictly. Many buildings mentioned in the law were missing but often a brewery hut was built though it was not obligatory. Buildings that may be regarded as necessary were cottages for guests and servants and a cooking shed. At least in the Early Modern Era the number of buildings belonging to the house could already have been ranged from 20 to 40 (Sappinen 2002, 76, 82). In the future this law could be taken as one of the starting points at the excavations of Pernaja vicarage.

Discussion

The purpose of this reconstruction of a small South Finnish medieval and Early Modern village has been an attempt to discuss the possibility to connect archaeological research with the study of different natural and physical elements in a rural historical context (Fig. 10). This discussion, an effort to present the possibilities and weaknesses of this particular site type, has an urgent need in Finland now when historical rural archaeology is finally gaining attention.

Archaeological research in the Pernaja Church village has shown that also in a rural area inhabited for a long period it is still possible to find constructions, cultural layers and datable medieval and Early Modern artefacts. More specific archaeological research could be done in the excavation of roads, fields and underwater sites. Locating medieval and Early Modern features might require similar methods as at Finnish Bronze Age and Iron Age settlement sites: high density prospecting. Historical documents or preserved stone foundations and cellars may help in locating old yards or their composts.

According to archaeological research conducted at the church village of Pernaja, it seems that the activity areas in the Middle Ages and Early Modern era were very restricted in comparison with find areas of more recent centuries. Datable medieval artefacts were found in the case study area only from the north side of the vicarage yard. Thus may partly reflect the rarity of preserved older artefacts, a smaller population and more effective recycling, but presumably the built area, the yard itself or the activity area has been smaller. If there was a definite closed compost place, it would also have restricted the area of artefact finds.

Some features can be mentioned regarding the largest material presented in this article, the vicarage excavations. In addition to wealthy manors and for example Kökar convent in the Åland Islands the material has similarities also with urban artefacts. The lack of horse bones and local rural ceramics have earlier been regarded as an urban phenomenon in Southern Finland. On the other hand neither has local pottery been found at other farms. It seems that we are dealing here with the common phenomenon

of the non-ceramic phase of the Middle Ages and Early Modern times

It is evident that the answers a site can give depend on the location and social status of its original settlement. Artefact material is more homogenous and less datable at a peasant farm than in houses of higher status. Also the location on the South Coast of Finland, near Hanseatic trade routes is probably reflected in the material of the Pernaja church village. Another feature worth mentioning is the growing number of artefacts at the turn of the 17th century, which has also been noted in excavations of sites from historically recorded times. It was then at the latest that also the average Southern Finnish peasant farm became archaeologically visible.

If no constructions have been preserved even a compost heap can answer many questions. Although wooden material is poorly preserved in dry and acid

soils, animal bones have fared better. Cultural layers may also include charred plant remains suitable for macrofossil analysis. Building fragments from destruction layers may include typologically datable remains. Imported stoneware, in addition to coin finds and some other well datable artefacts, gives us the possibility to create a typological series from a settlement site, while it may also reflect its contacts and trade. Southern Finnish farms that are still inhabited are worth surveying, protecting and excavating.

In a more holistic view there are two special house types still lacking a research tradition in Finnish archaeology. This article has shed a little light on both of them: the study of inns and the archaeology of vicarages. Both institutions have had an important role in Finnish cultural history and it seems that is possible to study both with archaeological methods.

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Notes

1. The earliest settlement in Finland is dated to c. 8500 calBC but the nearest site to Pernaja is in Askola, a parish on the north side of Pernaja. The Askola finds are dated circa 9000 BP (8272–8003 calBC). It seems unlikely that there would have been settlement in Pernaja before 8000 BC (Takala 2004, 160–164).

2. In spite of the name ‘Agricola’ it is not a project specifically concentrated on agriculture – instead the name comes from the Finnish Reformation Bishop Mikael Agricola who was born in Pernaja in Torsby village, in a farm nowadays known as Sigfrids which is one of project’s research targets.

3. According to Olle Sirén (2003, 10–22), these were Gammelby in the west (later Willmansgård), Gammelby in North and Garpgård village on the eastern shore of Pernaja Bay. The church village would have received its inhabitants from Garpgård. However this idea is based on indirect written sources and no archaeological evidence of this has yet been found.

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WHO REQUIRES A STONE MANOR? – Manifestation of power among the 16th-century nobility in Southern Finland

Introduction

In 1581 Count Per Brahe wrote a sentence that unveiled an aspect of the ideology that lay behind the manor-building of the early modern nobility: 'A noble person requires a handsome and beautiful building, in order to be regarded as what he is'¹ (Brahe 1971, 72). The material with which the nobility surrounded itself was supposed to reflect their place in society and issue clear signals of the status of the owner, to the lower classes and other members of the nobility alike. Without these material surroundings, noble identity was weakened, and acknowledgement of its power could, in the worse case, fail to arise.

At this time Southern Finland was an integrated part of the kingdom of Sweden. During the Middle Ages, a nobility of knights released from taxes in exchange for military efforts, had developed in the area. However, it was not until the 16th century that, in larger extent, the nobility began to express their position by erecting stone manor houses at their private estates in the rural area. The great majority of the nobility resided in

wooden buildings, even at this time. The stone manors represented only *c.* 10 % of the manors in the area. The Finnish stone manors were few, in comparison with the material in other areas of Sweden, but their number increased remarkably in the 16th century, a phenomenon that was typical for Finland alone (Fig. 1) (Samuelson 1993, 308ff).

The material and the problem

In this article, the 16th century stone manors of the historical provinces² of Raasepori and Porvoo in Southern Finland are examined as symbols of power and lordship in the early modern landscape. The 16th century was a period of change in Swedish society. Royal power became increasingly centralized, and the level of the organization of the state escalated. In this context, it is interesting to observe how the nobility adapted to this situation, and how their presence was manifested in material culture.

The area contained six stone manors from this time, Gennäs, Grabbacka, Haapaniemi, Sjunby, Svidja and Tjusterby

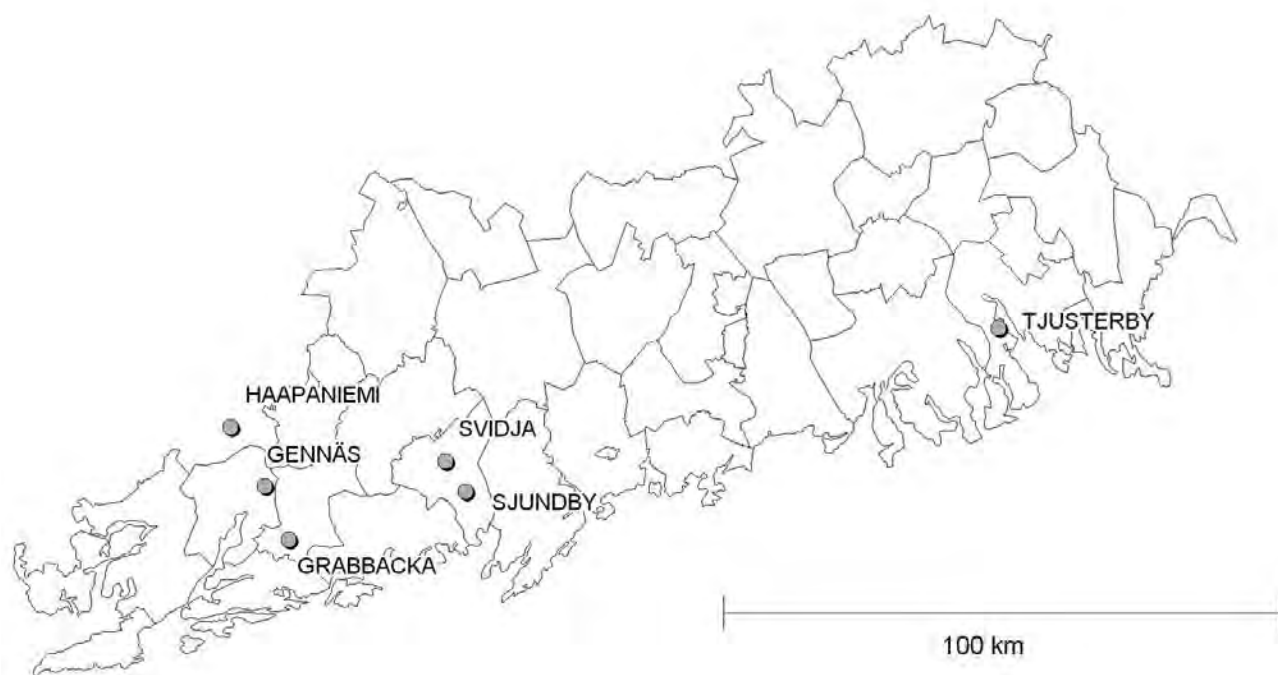


Fig. 1. The stone manors of the provinces of Raasepori and Porvoo. Haapaniemi, Sjunby and Svidja situated in the western Raasepori region, and Tjusterby in the eastern region of Porvoo.

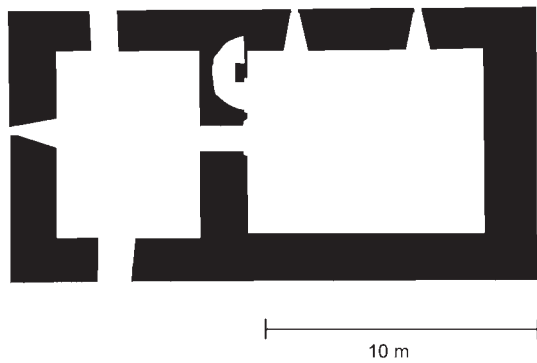


Fig. 2. The cellars of Gennäs. Source Kari Uotila/National Board of Antiquities.

and Svidja in the western Raasepori region, and Tjusterby, the only one in the eastern region of Porvoo. The examined area can be regarded as an eastern frontier of Swedish stone manor building of this time, as most of the Finnish stone manors were erected in the southwest region.

The reason behind the phenomenon of increased stone manor building has not been sufficiently examined. The manors have been seen as small castles, and examined mainly as military units. As a rule, the less functioning fortifications a manor could present, the less interest it has gained from scholars (*e.g.* Lovén 1996). In this article I attempt to look at the manors from a different angle, analysing their existence as a meaningful element in the social landscape of 16th-century Finland.

Landscape and architectural space have been examined in many ways by historical archaeologists, mainly from the 1950s onwards (Pauls 2006). Beginning with structuralists such as Deetz ([1977] 1996), it became clear that the spatial organization of the built environment reflected elements of society that served archaeologists with insight into the past. Since the 1980s, however, analyses have deepened and become more nuanced through Marxist, feminist, global and critical archaeological approaches (*e.g.* Leone 1984; Johnson 1996; Funari, Jones & Hall 1999; Gilchrist 1995; 2000). As a result, this discussion has shown that multiple parallel realities can exist simultaneously in a society, and different social groups can make use of the surrounding material culture in their own way according to their ideology (Rosén 2003, 16–19; Pauls 2006). This viewpoint not only made formerly forgotten groups of people visible, but it also made the study of the elites more versatile. The spatial ideology of the aristocracy, discussed by Martin Hansson (2006), and Matthew Johnson's (2002) analyses of castle architecture are good examples of this.

In this article I will focus on the position of the nobles in a hierarchic, stratified society, and how the



Fig. 3. The cellars of Grabbacka. Source National Board of Antiquities.

ideology of the nobles' superiority was manifested in it. One of the fundamental problems is to discuss on the one hand how landscape and architecture was used to reflect the power and position of the nobles, and on the other hand how it was used to maintain this status. I will also discuss to whom the signals were meant to be sent, and who chose to send these signals. The material unit of a dwelling and its landscape are here regarded as a part of the surroundings a person creates for him/herself, within the limits of circumstances and practice but also with individual agency.

Today, the six manors are only partly preserved. Two of them are still standing, Svidja and Sjudby, but the buildings have undergone major remodelling over the years. The other manors consist at present of merely cellar ruins. Regarding the size of the buildings, they were fairly modest, between 200–560 m²/floor. As a rule, we know very little of the early faces of the buildings from literary sources, and *e.g.* the numbers of floors over the cellar or their relationship with other buildings on the site is hard to define. Some archaeological studies have been carried out in the buildings and near the manors (*e.g.* Suitia by Niukkanen & Seppälä 1996–1997, Gennäs by Uotila 1989 and Tjusterby by Rinne *et al.* 1929, no report available), and the history of the manor houses as local monuments has been noted by *e.g.* Suna (1991), Brenner (1955), and Antell (1956).

The history of the stone house itself is, however, not the main focus in this article, but rather its symbolic value, and its position in the physical and social landscape of 16th-century Southern Finland. The landscape of the manors is regarded as a part of the material culture, even though the landscape in this study is not heavily modified by moats or other man-made manipulation. Nonetheless, these surroundings were *chosen* to contain these manors, and can therefore be regarded as meaningful for the people that chose them and experienced the results of these choices. The historical landscape, that is the basis for this study, has been defined partly by fieldwork at the sites, and partly by examining the

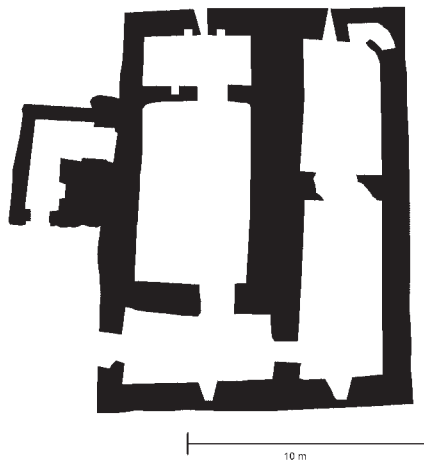


Fig. 4. The cellars of Haapaniemi. Source National Board of Antiquities.

historical maps of the area. These maps are mainly from the late 17th or 18th centuries, but they have shown to reflect also the structure of earlier settlements in the area (Figs. 2–7) (Rosendahl 2006).

In visible isolation – The manor in the landscape

The physical surroundings of medieval manors in the Scandinavian region have been examined by *e.g.* Päivi Hakanpää (2003), Martin Hansson (2001) and the so-called Ystad project at Lund University (Reisnert 1989; Riddersporre 1989). Hakanpää, who has analysed the manors of Nokia in central Finland, has pointed out that the location of the manors in the landscape differed from that of the peasants' dwellings. Unlike the other classes, the nobility chose to reside close to the water, often on an isthmus, and furthermore gaining control over water power. The work of Martin Hansson with the manors of Småland in Central Sweden has shown that manors were placed quite far from cultivated land, thus demonstrating the difference between the farming and the ruling classes. The Ystad project has emphasized the early medieval move of the manors out from the villages to a secluded place of supreme isolation (Reisnert 1989; Riddersporre 1989).

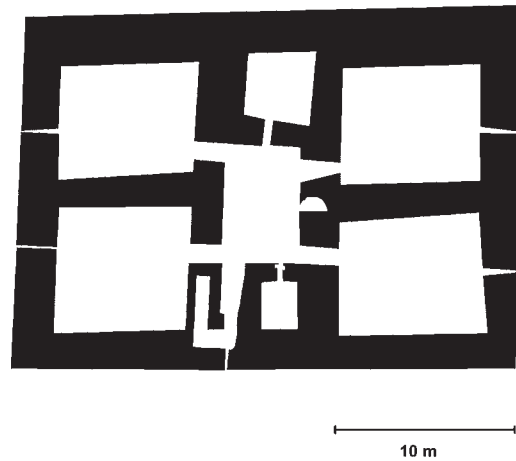


Fig. 5. The cellars of Sjunby. Source National Board of Antiquities.

Moving on to early modern times, how do the manors of the 16th century establish themselves in the landscape? Is it possible to identify the same attributes that occurred in the medieval material?

Some attributes are easily defined; *e.g.* isolation from the peasant villages is a common feature for all the examined manors (Table 1). None of the manors was located within a village, nor were they close to the parish church or other institutions of local society. Unlike the manors in southern Sweden (*cf.* Reisnert 1989; Riddersporre 1989) no move out from the village context is visible; the manors seem to have possessed this feature from the time of their establishment. This is no surprise, for, as a rule, the time of establishment of the manor estates seems to be quite late, and does not greatly precede the building of the stone house.

Accordingly, the stone house manors are to be interpreted as new acquisitions and foundations rather than as removed old manors:³ Grabbacka was probably established at the end of the 15th century, Sjunby became a manor after a short period as a crown estate in 1556–1558. Nils Boije made Gennäs his manor some time after he inherited the estate in 1537. Haapaniemi may have a longer history as a noble residence, as members of the Frille family possibly lived here in the 15th century,

Table 1. Table comparing how the manors are situated in the landscape.

	Gennäs	Grabback	Haapaniemi	Sjunby	Svidja	Tjusterby
Near water	X		X	X		X
Near hydropower				X	X	
Isolated from peasants	X	X	X	X	X	X
High location	X	X	X	X	X	
Visible location	X	X	X	X	X	X
Established, (estimate)	1530-40	1470-90	1460-1470	1558	1540-1550	1500

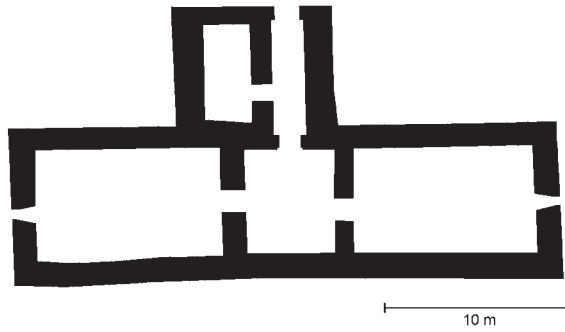


Fig. 6. The cellars of Svidja. Source National Board of Antiquities.

but at the beginning of the 16th century this was, however, not longer the case. Tjusterby is the only manor that shows some signs of movement, or at least a new emphasis in the landscape within the estate, as it became the main residence instead of the older Gammelby. In this case, it is quite possible to identify a preference for a location near the water and further away from the cultivated land.

Several of the other manors seem to draw themselves away from the agrarian landscape. A total isolation from the cultivated areas cannot be confirmed, as in the material from Småland (Hansson 2001, 253), but certainly a strategy of settlement that considers far more elements than a location close to the fields. Gennäs and Haapaniemi are both located on an isthmus with fields on one side, but their remarkable proximity to water makes them differ from the peasants' settlements. This correlates with Hakanpää's observations of the medieval landscape of Nokia (Hakanpää 2003, 91).

Even if the manors can be considered to be isolated from other settlement, they are certainly not hidden. Visibility seems to have been a crucial factor when choosing the locations of manors. Almost all the examined manors had a topographically elevated location. Especially the manors that not were situated near water (Grabbacka and Svidja) had a remarkably high position, while unobstructed visibility from the sea in the other cases seemed to compensate for a somewhat lower location. At Svidja, the manor also dominated the parish landscape with a clear view to the medieval parish church, as the two buildings are located on hills on both sides of a valley.

Producing or collecting?

Control over and proximity to water power, which undoubtedly was important for production, did not prove to be important when the locations of the manors were chosen. Even though Hakanpää (2003) showed that a link between water power and manors was evident in medieval Nokia, and

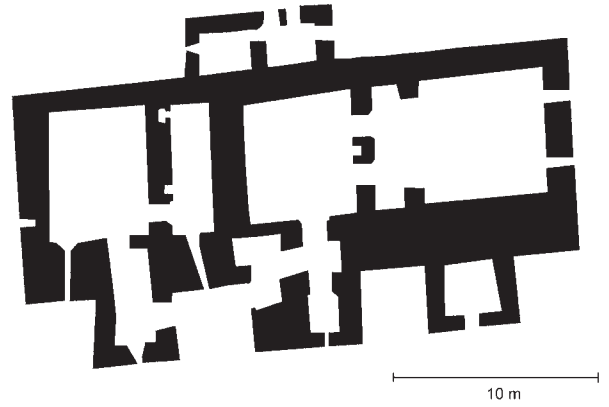


Fig. 7. The cellars of Tjusterby. Source National Board of Antiquities.

a similar result could have been expected in the present material, this was not the case here.

None of the manors that were situated near a lake or bay, *i.e.* Haapaniemi, Gennäs and Tjusterby, showed any signs of proximity to a mill. An interesting fact is that Gammelby, the predecessor of Tjusterby, was situated near a mill. But when the stone manor was erected at Tjusterby, priority was given to a location near the bay. Nor does the location of Grabbacka seem to be close to a mill, if a small brook on the south side of the manor did not serve this purpose. Svidja manor, on the contrary, did have a mill situated in a brook northwest of the manor (Fig. 8).

At Sjunby, however, the picture is completely different. Here, the manor was erected next to the rapids of the Siuntio River, *i.e.* with a clear manifestation of control over water power. This location differs quite a lot from the other manors; none of the other examined manors chose this element for manifesting themselves in the landscape. It appears that Sjunby manor was clearly influenced by its time as a royal demesne. A location similar that of Sjunby can *e.g.* be observed at the Helsinki crown estate, here the manor was situated on an island in middle of the rapids of the Vantaanjoki River (formerly also known as the Helsinki Stream) (see *e.g.* Pehkonen 1994).

The reason for this divergence may be found in the different aims of the nobility and the royal demesnes. The royal demesnes were primary establishments of production, *e.g.* with extensive cattle breeding, while the nobility first and foremost collected their income from the peasants of the area. Whereas the crown willingly displayed its power and wealth through a prosperous production unit, the nobility demonstrated power by creating a distance to the productive classes. The purpose of the nobility as the *bellatores*, the warrior class, was not to produce, but to attend to warfare and the defence of society. The independence of production of one's own was symbolically an important manifestation of the ideology of the nobility, and this was made clear



Fig. 8. Sjunby on a map from 1689. The manor is located close to a waterwheel. Source National Archives, Helsinki.

in the material culture of the landscape. The stone house itself, with large stone cellars for collecting taxes became the materialization of the privileges of the nobility.

Accessibility to the manors can also be examined from this perspective. None of the manors can be considered inaccessible, even though they have chosen isolated locations. The reason can be found in the manors' dependence on transport from the surrounding peasants. Proximity to water, which was given priority at the manors of Gennäs, Tjusterby and Haapaniemi, created accessibility that made the collecting of goods from the peasants possible. Also Sjunby had an accessible location; it was possible to sail up to the manor all the way from the Baltic Sea. Svidja and Grabbacka, however, depended on functioning roads to collect incomes.

The examined manors show a strategy of location that is both different than and isolated from the dwellings of the peasants. The landscape was put to use in a way that was only possible for the section of society that did not depend on production. Accordingly, a relation of power that created and re-created the authority of the nobility was present in the landscape.

The fortified manor?

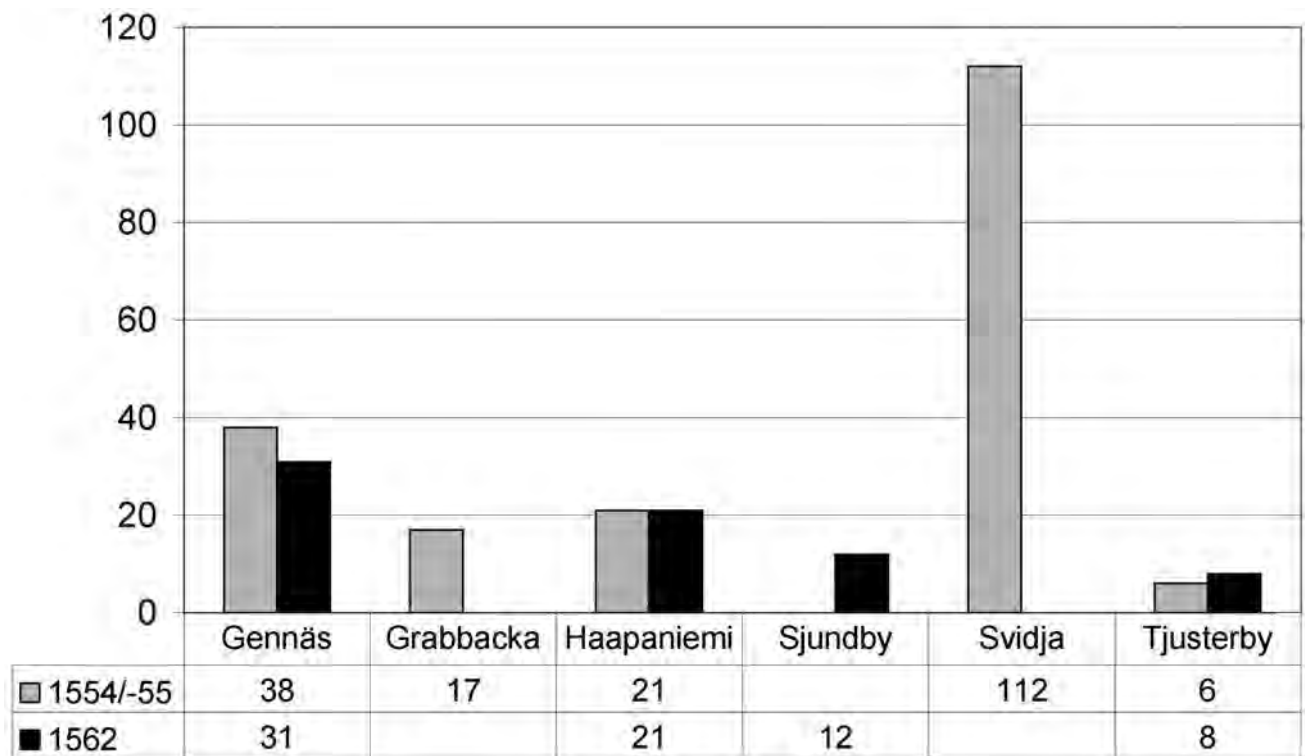
It is not far-fetched to claim that the locations of these manors in the landscape display features resembling those of castles and fortifications. A high topographical location, as well as one surrounded by water, is a typical feature of fortified sites. The link between the stone manors and castles is by no

means a new observation. The stone manors have traditionally been examined with the same approach as the crown castles (e.g. Gardberg 1993, 134–140). Thus, in accordance with this perspective, the explanation for the Finnish stone houses has been a need for fortifications in a border area (e.g. Lovén 1996; Uotila 2000, 143f).

This approach, however, is problematic when looking more closely at the strategic position of the stone manors in the provinces of Raasepori and Porvoo during the 16th century. While the manors use the same elements of the landscape as the castles, some of them are completely unstrategic as constructions of defence. At Grabbacka, for example, a typical fortified element is used as the building is erected on a hillside, dominating the valley below. Yet, the strategic aspect of this location is lost because of a slightly higher hill next to Grabbacka manor, from where the manor could easily have been attacked. Tjusterby displays a similar pattern, the manor is situated near a higher hill. At Haapaniemi, the stone house was erected too far from the water to actually put its location to military use.

Details in the buildings have also been given military explanations, in agreement with the interpretation of the manors as units of defence. Narrow holes in the cellar walls widening towards the inner wall, have been defined as loopholes (see Gennäs fig. 2; Uotila 1989; Suna 1991). This shape, however, is not only useful as an arrow slit; it is also a very practical because of the maximum entrance of light through a small opening (Gardberg 1967, 63ff). In a cellar, it also provides necessary ventilation of arid air without becoming a passage for unnecessary coldness or unwanted visitors. In the examined

Table 2. The economic wealth of the manors, expressed through the amount of subordinate homesteads.



cellars, the use of the holes as loopholes would have been impossible because of their shape or location; the same shape is used. Moreover, a natural location for real loopholes would have been on the higher floors of the building rather than in the cellar.

However, it is of course not impossible to see a link between the castle architecture of the time and the erection of stone manors. At this time a quite extensive amount of building was going on at the crown's castles in Finland, and the stone manor builders were often involved with the building projects at the castles. It is likely that foreign know-how; *i.e.* castle architects and craftsmen who happened to be in the area at the time, was also used at the private manors (Gardberg 1959; Suna 1991, 20).

Nonetheless, we have no reason to believe that the similarity between the castles and the manors is only an unconscious repetition of architectural elements in a routine manner. A castle is even in peaceful times a symbol of power and strength. That a stone building represented superiority should have been clear to the peasants of the area, at least since the castle of Raasepori had been erected in the second half of the 14th century (Gardberg 1993, 83–91).

In other words, the locations of the manors are clearly influenced by the castles, but their actual purpose cannot have been primarily to provide military defence. Questions such as these have been discussed internationally (*e.g.* Johnsson 2002; Hansson 2006), especially regarding the spatial ideology of medieval castles. The discussion has shown that non-functioning military architectural

features are actually not rare in the European castles. The Finnish stone manors of the 16th century seem to adopt these same elements in this outpost of the European world, even though quite a lot later than in other parts of Europe.

Martin Hansson introduced the term social fortification in his critique of a militarily fixated castle research. According to his definition; a fortified manor is one that fortifies the position of its master in the landscape, whether it is a functioning defence unit or only a symbolic one (Hansson 2001, 169ff). The model of the social fortification can be used to explain the peculiarly unstrategic, but still castle-like manors, which are analysed here.

The houses of the Raasepori and Porvoo provinces were given the same elements as the manor houses of Småland. The direct military implications, in combination with unstrategic features have puzzled earlier researchers. But as social demonstration, the situation and shape is not as hard to understand. The stone houses use a known model from medieval buildings. Socially, the buildings are strategic; made of stone with large cellars and military elements, and situated visibly, but alone in the landscape, far from the peasants and the producing classes.

Who built the houses?

Every society has in its material culture symbols that bear meaning, and are used consciously or unconsciously as such in daily life. The construction and maintenance of the structures of power are one

way of using these symbols. Looking at the material culture of the 16th century, the stone manors of the provinces of Raasepori and Porvoo, I have attempted to analyse how material culture was used to create and re-create a structure that posited and retained the high-ranked position of the nobility.

To understand the material culture of the nobility, it is important to understand the heterogeneity of the group. This heterogeneity was a fact, even though the nobility itself advocated an ideology of unity, which saw nobility as a nature-given necessity in the hierarchy of society, and emphasized the difference between itself and the lower classes (Englund 1989, 26–48). The idea of the nobility as a distinctive group, however, was only a normative idea. The norm was impossible to achieve in real life, due to the facts, among other reasons, that society contained parallel ideologies that took an opposite view, and also individual agents that had the possibility to act according to their own choices.

The consumption and house-building of the nobility cannot be judged alike with regard to all the members of the group. It is impossible to mechanically define one pattern of consumption or one way of constructing buildings that can be applied to the nobility as a whole. This does not rule out the possibility that similarities between the analysed objects could be found. Looking at written sources, I have observed that even though social and economic differences between the examined manor-owners were indeed a fact, they were also linked by kin or marriage, and professional assignments. In other words; a foundation for creating a collective identity between the manor-owners surely existed (Rosendahl 2006, 29–43). A similar pattern of kinship has been observed among the stone-house building elite in Southern Sweden (Ödman 2004, 7–14).

My study has also shown that the majority of the builders of stone manors were newcomers to the nobility. The main part of their incomes did not come from inherited land, but from enfeoffments that they had been given in return for personal military achievements. Only the Flemings of Svidja could be, considering the size of their economic resources, regarded as part of the Swedish aristocracy. As a rule, the Finnish stone-house building nobility had much less property than their Swedish counterparts (Table 2) (Rosendahl 2006, 29–43).

Nonetheless, a good many of these fairly unwealthy noblemen – compared with their Swedish peers – chose to erect stone houses at their manors. If one rejects the traditional explanation for this phenomenon; *i.e.* a need for military defence in a violent border area, this appears to be a pattern of very conspicuous consumption in an area heavily dominated by wooden buildings. Why did these noblemen choose to build cold, expensive and unpractical residences for themselves? The logic behind this decision has to be found in a strong

need to demonstrate superiority and belonging to the nobility as a group.

Although the stone-house builders represent quite different economic statuses within the nobility (see Table 2), still, this did not largely influence the exterior of the buildings. In fact, the stone manors are surprisingly alike; for instance, no clear correlation between the economic status of the owner and the size of the manor can be seen. The erection of stone houses thus seems to reflect the social ambitions of the builders rather than their actual economic wealth. By building houses which could compare with those of the aristocracy, these newcomers could compensate for their un-established position within the nobility. The material culture functioned as a tool for reaching a desired position, and therefore provided a different picture than the written sources.

Hence, the stone house is to be regarded as a way of gaining access to the elite, but nevertheless, the lower classes were probably even more exposed to the symbolic manifestation of power that the stone manor provided. The position of the Nobility in 16th-century Finland was by no means secured. Relations between the peasants and the nobility were at this time characterized by hostility, at the end of the century 1596–1597, the peasants revolted in the so-called Club War (Ylikangas [1977] 1999, 401–405).

The peasants were the class that constituted the greatest threat to the nobility, as well as the class that in their daily encounter with the visibly situated stone manor was constantly reminded of the superiority of the nobility. In other words, there is reason to believe that the main target group for the manors' demonstration of authority is to be found among the peasants. Additionally, if the stone manor were to be seen as some kind of defence unit against an external threat, this potential threat would rather have come in the shape of a peasant revolt than an attack from across the border.

The status manifested through artefacts and interior decoration in these manors presented quite a different picture; this material consisted of contemporary objects associated with a refined social life and the early modern European cultural sphere (Rosendahl 2006, 66–80). At the same time, the exterior of the buildings hung on to a medieval type of castle architecture. This could be seen as two different levels of material culture, the inner one for materializing social capital within the elite group, and an outer one to create and maintain this hierarchical position in relation to the lower classes.

Within the inner sphere, everyone was aware of the cultural codes of the modern objects of decoration. Here, the main point was not to be regarded as a homogenous group, but to demonstrate different levels within the nobility through conspicuous consumption and wealth. In the outer sphere,

however, only commonly accepted, clear symbols were used – such as allusions to medieval castles.

Conclusion

The military use of the 16th-century stone manors in the provinces of Raasepori and Porvoo cannot be sufficiently proven. Instead, the stone houses seemed to spring from a need to fortify the power and strength of their owners only at a symbolic level. But nevertheless, even for this purpose, fortifications were used as architectural elements; *e.g.* high location, location near water or on an isthmus – and of course the material itself, the unvarying stone. The location in the landscape and the shape of the buildings put to use attributes borrowed directly from military castles. This conservative form, which at the time was merely a rudiment of a violence-based exercise of control, lived on as a metaphor for strength and power.

The locations of the manors in the landscape show that the nobility had a clear need to cut themselves

off from the peasants. However, the manors were by no means hidden in their distant locations. On the contrary, they were highly visible elements in the landscape. By demonstrating the noble ideology in this manner, the power of the stone house building elite was manifested, and the treat of resistance could be reduced. The manors created a distance not only to the peasants' villages, but also to production as a whole. According to the ideology of the nobility, the warrior class had no need to participate in production units, or live near them. Their role was only to collect goods from the peasants into the cellars of their stone houses.

The 16th-century stone manors can be seen as a materialization of a historical period of transition. At the same time as the increasingly organized state took form, the nobility still clung onto a feudal metaphor to manifest their status in the landscape. Inside the manors, the interior already reflected early modern material culture, and another type of manifestation of status, built on aesthetics and exclusiveness instead of violence and control.

Notes

1. Author's translation from the Swedish original: 'Arttelig och wacker bygning höufues en Adels person, vppå thet sådan må blifue achtedh och hollen thet mann er' (Brahe 1971, 72).
2. The area corresponds to a great extent to the modern province of Uusimaa. Only Haapaniemi is presently located outside the province.
3. There is, however, reason to mention here that written sources on medieval history in Finland are extremely sparse, and we know very little of the early history of these manors. All the dates mentioned here have to be read with that reservation in mind. We know *e.g.* very little about how these estates were influenced by the fact that the crown incorporated land from the nobles in the 15th century.

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THE EARLIEST HISTORY OF THE MANOR AND THE CHAPEL OF NOKIA

– Theories, folklore tradition and new archaeological data

Introduction

The early Middle Ages is one of the most insufficiently studied periods in Finland, especially in its inland areas. According to the traditional chronology, this period begins in the mid-12th century. The main research problem arises from the lack of sources, both written and archaeological. The latter became poor and unrecognisable as Iron Age burial traditions were replaced by Christian rituals, and the lack of archaeological settlement material is often explained as result of the destructive effect of later building and other activity. In the current province of Pirkanmaa, which includes the territory of the historical Ylä-Satakunta province and part of Häme (Tavastia) province, only few known archaeological monuments have yielded finds that can be dated to the early Middle Ages. In this situation, it is necessary to expand the source base through fieldwork, and excavations of some key sites, chosen on the basis of previous research results and their geographical and historical context, may provide material for studying many important aspects of the history of the transition period.

In 2004–2006 the Pirkanmaa Provincial Museum (Tampere, Finland) carried out archaeological investigations in the park area of the manor of Nokia in the City of Nokia, Southwest Finland. The research project was sponsored mainly by the City of Nokia and was also supported by the owner of the manor, the Nokia Corporation.

The main task of the project was to obtain new archaeological data for studying the history and prehistory of Nokia Manor and the Chapel of Nokia. Attention was focused on the function of the chapel site during the Middle Ages, and before and after the period. It was suggested that establishing the earlier functions of the site might help to explain such late medieval phenomena as the rise of the manor and the founding of the chapel. In this article I present some preliminary results of the project and material concerning two of the research problems:

- 1) Is it possible to prove archaeologically any of the theories on the early medieval history of Nokia Manor?
- 2) Does the sacral function of the site have roots in the earlier medieval or Late Iron Age period?

The latter question arises from the fact that medieval stone churches were usually built in the same traditional places where earlier wooden churches were situated (Hiekkänen 1998, 84–85; Hiekkänen 2003, 34). Also remains of Late Iron Age cemeteries have been found in some of them (*e.g.* Hiekkänen 1986; Mikkola 2004, 54–55), and it is known from the bull of Pope Gregory IX issued to the Bishop of Finland in 1229 that the Church could possess pre-Christian sacred sites (FMU 77).

Geographical position and topography of the site

Nokia Manor is located 1 km WNW of the northwest shore of Lake Pyhäjärvi, on the southern bank of the Nokianvirta ('Nokia Stream') River, less than 1 km west of its source. Lake Pyhäjärvi is situated in the central part of the Kokemäenjoki water system and has connections to complex lake and riverine subsystems in the north, east, west and northwest directions. Through Lake Pyhäjärvi and the Nokianvirta River the waters of Lake Näsijärvi and other major lakes of the water system flow westward into the Kokemäenjoki River and the Gulf of Bothnia. Thus, geographically Nokia has been an important junction of water routes connecting the historical provinces of Satakunta, Häme and South Ostrobothnia (Fig. 1).

In accordance with the goals of the project, investigations concentrated on the most topographically significant area near the northern edge of the park of the manor, where the traces of medieval building activity had been found (Fig. 2). The excavations were carried out on a low moraine hill close to the northern border of the park, at an elevation of 17 m above the lake and 94 m above sea level, 200 m from the present bank of the river. The area borders on rapid descent in the north and in the east. In a photograph taken at the site in 1931 a visual connection can be seen between the excavation location and the source of the Nokianvirta River with the historical area of Viik (Vik) Manor on its northern side (Archives of the National Board of Antiquities of Finland). Thus, the place could be used to control the area and the water route, and at the same time its topography made it easy to defend.

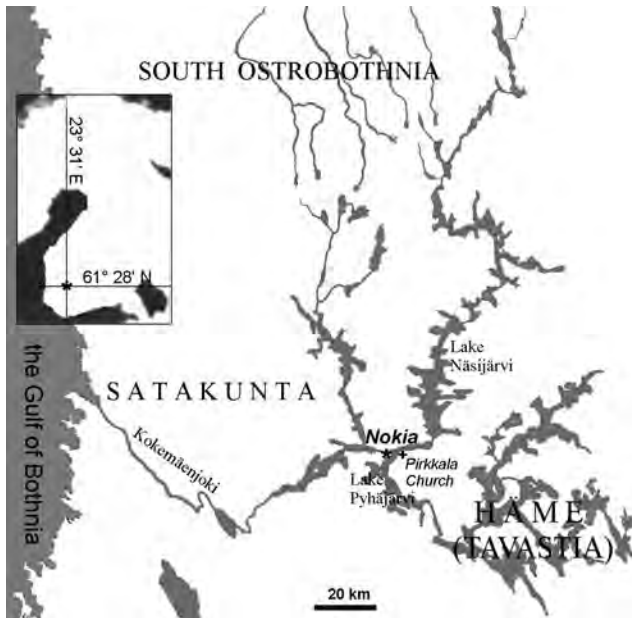


Fig. 1. Geographical position of Nokia Manor. Map by Vadim Adel.

It must be noted that in the Middle Ages places of a similar topographic situation could be used for manifesting secular or religious power (Maaranen 2004). The strategic importance of Nokia Manor is also proved by the fact that Finnish rebels took up residence there in 1596, during the Club or Cudgel War (Finnish *Nuijasota*) (Ylikangas 1996, 197–198), which was probably the biggest military campaign in the whole region until the 18th century.

In the Middle Ages the area belonged to the parish of Pirkkala, which was part of the jurisdictional district of Satakunta and later Ylä-Satakunta ('Upper' Satakunta) (Salminen 2000, 47). The church of Pirkkala is situated 3.2 km ESE of Nokia Manor. In the 16th century and later, Nokia Manor was the most significant manor of the parish, owned by important authorities of Ylä-Satakunta, such as justices and bailiffs. Nokia is mentioned in written sources for the first time in 1505 in a document

concerning a change of ownership at the manor (FMU 5146; Suvanto 1973, 65–66; Saarenheimo 1974, 73–74).

According to a map drawn by Daniel Hall in 1769, the main part of the current area of the park measuring about 100 x 100 m was not in use for some reason while it was surrounded by fields and meadows. The manor buildings were situated on higher ground at an elevation of approximately 100 m a.s.l. 170 m southwest of the excavation site (Archive of the National Land Survey of Finland; Adel 2004, 7). There is no information on the medieval buildings of Nokia Manor in written sources (Hakanpää 2003, 24).

Previous finds and research

The earliest information on the antiquities of Nokia Manor dates from the 1860s and concerns finds made on the hill during the enlargement of the park area at the beginning of the 19th century. The researchers who visited the site were told that, among other things, remains of a tomb-like arched brick construction and a golden cross had been discovered there (Skogman 1864, 132; Carlson 1869, 53). Later, some fragments of a human skull were found in the park (Heikel 1882, 63).

The first archaeological investigations at the site were carried out in 1930 by Helmer Salmo, who found a fragment of a medieval brick there. In the following year Iikka Kronqvist carried out larger excavations at the top of the hill and found the stone foundation of a WNW–ESE-oriented, 8 metre long and 6 metre wide building (Fig. 3). Also stepping and door stones along the west wall of the foundation, remains of brick doorposts and floor pavement, and fragments of destroyed brick vaults and gables were found. On the basis of the architectural details, the monument was interpreted as a stone church building and dated to the end of the Middle Ages.

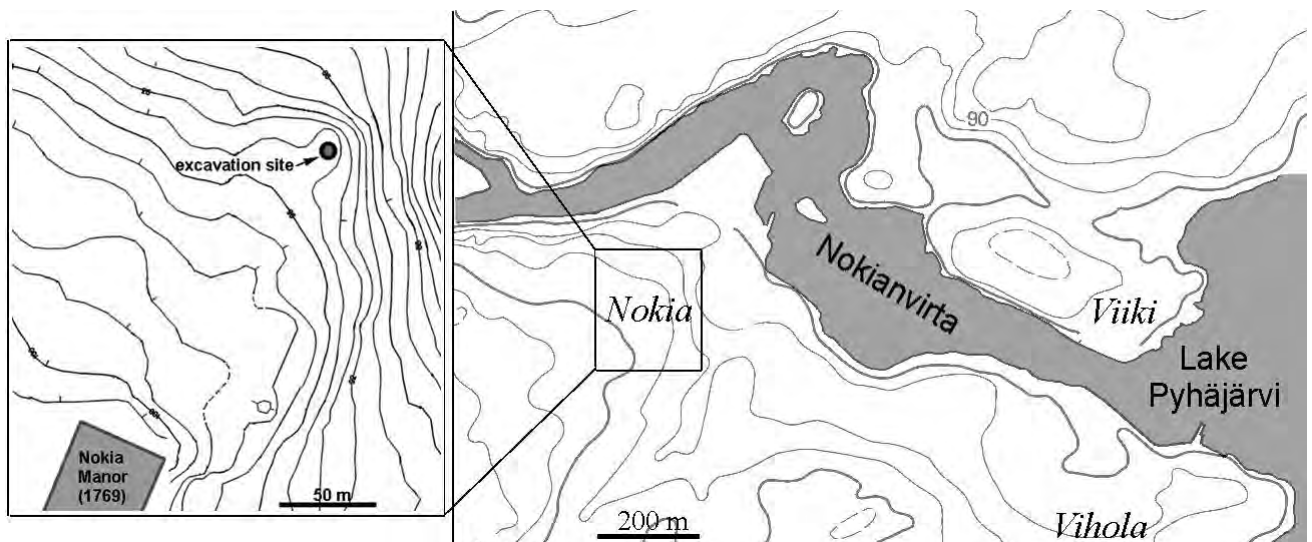


Fig. 2. Topography of the site. Map by the City of Nokia/Vadim Adel.



Fig. 3. Ruins of stone chapel of Nokia. Photo by Vadim Adel/Pirkanmaa Provincial Museum.

Although the area inside the foundation was almost completely excavated, no graves were found. The relatively small size of the construction and the lack of graves inside it proved that the building was a private chapel belonging to the manor (Kronqvist 1932; 1935). According to Markus Hiekkänen, the monument can be dated on the basis of its architectural details to 1500–1550 AD (Hiekkänen 1995, 86). The analysis of written sources shows that the most probable time of construction of the chapel was 1505–1533 (Kaukovalta 1934, 108; Hiekkänen 1995, 86).

Kronqvist found also a sooty layer in the area around the stone chapel and interpreted it as remains of an older, burnt wooden building. He assumed that the stone chapel had been built on in old, traditional chapel location (Kronqvist 1935, 290). However, as the investigations focused only on the late medieval constructions and graves, other features, cultural layers and finds were not documented. Thus there was no detailed information on the earlier function of the place or the wooden building until the new excavations.

The nearest known Iron Age site is situated about 700 m east of our excavation site, in the historical area of Viik Manor, and includes several burial mounds dated to the period from the Late Roman

Iron Age to the Viking Age. The nearest cemetery with inhumation burials from the Crusade Period (mid-11th–mid-12th century) is located at Hakamäki, 1 km SSE of the excavation site (Purhonen 1998, 248; Lähdesmäki & Palokoski 2005, 129–130).

Theories and folklore tradition

Although the documented history of Nokia Manor does not begin until the early 16th century, the archaeological finds of the 1930s, folklore and the name of the place gave historians some material for constructing theories on the role of the place in the early Middle Ages and even in the Late Iron Age.

The name Nokia probably derives from the archaic Finnish word *nois* (pl. *nokia*), which meant a black-furred animal such as dark-furred sable or marten (Voionmaa 1935, 280; Jaakkola 2005). On this basis, it was assumed that Nokia has been an important fur-trading centre. According to Jaakkola, 'Nokia' could also be the name of a fur-hunters' house (Jaakkola 1994, 41; Jaakkola 2005). It is also known that the rapids of Nokianvirta River have been an important fishing place. Thus the area of the manor could originally have been owned by the local community, whose pre-Christian sacral

centre could also have been there (Suvanto 1973, 212; Jaakkola 1994, 41).

In the opinion of Kaukovalta and Voionmaa, the hypothesis of a 'possibly very old' wooden church building, as proposed by Kronqvist, is in agreement with the documents from the 15th and 16th centuries evidencing that in the Middle Ages the Church, led by the Bishop of Turku, owned large possessions in the area around the Nokia Manor. They assumed that the manor with the first church building in the parish had been founded in the Early Middle Ages by the Church as an outpost of Christianity and the diocesan organization in Pirkkala. Later, possibly in the 14th century the manor became the property of secular aristocracy (Kaukovalta 1934, 84, 103–106; Voionmaa 1935). It was assumed that the Church could possess the area as a former pagan community property under the authority granted in the bull of Pope Gregory IX (Jaakkola 1994, 41).

The other theory, proposed by Seppo Suvanto, stresses the connection between Nokia Manor and the medieval Finnish noble family *Kurki*, which may have originally owned Viik Manor as well. He interprets these manors as remains of 'power system strongpoints' that controlled the important water route (Suvanto 1973, 66, 317). According to folklore tradition recorded in the 18th century, in 'pagan times' there lived a 'mighty king' in Nokia Manor, who 'ruled the whole northern part of the land.' It has also been believed that the manor was the residence of Matti Kurki (Mathias Kurck), a legendary Finnish chieftain (Hall 1783 § 41). Matti Kurki was mentioned for the first time by Swedish writers in the 17th century. According to Niurenius and Plantinus, under Kurki's leadership the Tavastians conquered the Lapps, drove them from Ostrobothnia to the far north and started to exact tax from them. Later, he handed over his authority in Lapland to some men of the parish of Pirkkala. Buraeus wrote that the Lapps were subjugated by the *Birkarls* that had come from Pirkkala. This event was dated to *c.* 1277. Schefferus assumed that the information provided by Buraeus concerns the same event, as the former references, and that Matti Kurki was actually a leader of the *Birkarls* (Schefferus [1674] 1963, 93–94, 103, 221–223). They appear in written sources for the first time in 1328 and are interpreted as a group that controlled taxation and trade in part of Lapland (Suvanto 1973, 122–123). Many historians connect the origin of the *Birkarls* with the area of Ylä-Satakunta (*e.g.* Luukko 1954, 52–71; Suvanto 1973, 133–135; Saarenheimo 1974, 113–127). There is also archaeological evidence of the increasing activity of the population of Ylä-Satakunta involved in international fur trade, in Northern Finland in the 10th–12th centuries (Huurre 1983, 416–420).

The folklore tradition connects Matti Kurki also with the manor of Laukko, which is situated in the parish of Vesilähti, on the southwest coast of Lake

Pyhäjärvi, 15 km south of Nokia, as the border of the manor's possessions passed 7 km closer to it. There is a rich complex of monuments from the Iron Age and the Middle Ages at Laukko (Uotila 2000).

At least two persons with the surname *Kurki* mentioned in documents from the 15th and 16th centuries lived in the parish of Pirkkala, one of them in the village of Vihola, which is situated less than 1 km southeast of Nokia Manor (Suvanto 1973, 127).

Research methods

Before the excavations, an archaeological survey of the whole Nokianvirta River area and GPR prospecting in the northern part of the park were carried out. This survey revealed several Stone Age or Early Metal Period sites and historical monuments, in addition to a number of previously known cemeteries and dwelling sites from the Iron Age (Adel 2000; 2001). Several fragments of ceramics, which can be dated typologically to the Middle or Late Iron Age, were found near the northwest border of the park during a short survey carried out in 2006 in the vicinity of the chapel place. The GPR prospecting carried out by Josep Pedret Rodés, MSc., revealed a number of underground anomalies, some of which may be interpreted as possible stone constructions or the results of clearing the area around the chapel (see the map in Adel 2006, 18).

An area of 147 square metres inside and around the chapel foundation was excavated during three fieldwork seasons. All stratigraphic units were documented in plans at least after every 5 or 10 cm of excavation. The stratigraphic position and limits of the layers, structures and scattered stones were documented by levelling and by preparing plans and photographing profiles. Also the context of each find was determined.

During the excavations several soil samples were taken from the cultural layer, mostly from its lower part, and from the sand beneath it. Seventeen of them were analysed for macrofossils by Docent Terttu Lempiäinen at the University of Turku.

The radiocarbon analysis of charcoal and burnt bone samples was done by Dr Högne Jungner at the Dating Laboratory of the University of Helsinki. The dates were calibrated using the program OxCal 3.9 and atmospheric data with IntCal98.

The research methods of the project have included also osteological analysis. The bones found during the 2004 and 2005 field seasons were analysed by Kati Salo, MA, except several burnt bones from the 2004 season, which were studied by Eeva-Kristiina Lahti, MA. The bone material found in 2006 was analysed by Kristiina Mannermaa, MA.

Cultural layer and artefacts

During the excavation of the area east and southeast of the late medieval stone foundation, it was found that the formation of the cultural layer had begun in the early Middle Ages, probably not later than the middle of the 13th century, although it also contains some prehistoric finds. The cultural layer is brown or grey-brown sandy topsoil with some darker, sooty patches in it. Although the oldest layer is not stratigraphically isolated, it is indicated by the predominance of burnt clay and a very small amount of material connected with the stone chapel and later activity (pieces of bricks, mortar, window-pane, ceramics, iron nails *etc.*) at a depth of 40 cm and more.

A total of about 18 kg of burnt clay was found in the excavations. This material can be interpreted as clay daub from some burnt wooden construction, as many of the fragments bear imprints of twigs, sticks or timbers on their surfaces. The form of the pieces and the imprints on them bear evidence that the construction was built mainly of brushwood. In addition to the burnt clay, some other finds may be also interpreted as probably early medieval, *viz.* a bronze spiral, an iron knife, several fragments of a flat oblong bronze artefact, several iron nails, some tens of fragments of bones and few pieces of flint, probably used for striking fire.

The bronze spiral is 13 mm long and 5 mm in diameter, and made of wire 1 mm in diameter (Fig. 4). Similar small bronze spirals were used in Southwest Finland for the ornamentation of clothing since the beginning of the Viking Age. According to Lehtosalo-Hilander, spiral ornamentation was richest in the 11th, 12th and 13th centuries being used mostly in women's garments (Lehtosalo-Hilander 1984a, 2–5, 60–62). The iron knife is very small, only 11 cm long, with a blade part measuring approximately 6.5 x 1.5 cm and a handle part only 4–4.5 cm long (Fig. 5). Owing to its size, the knife can be interpreted as possibly also having belonged to a woman. A total of 12 fragments of an oblong bronze artefact roughly 1 cm wide and 1–2 mm thick were found in the oldest part of the cultural layer. The artefact



Fig. 4. Bronze spiral. Photo by Vadim Adel/Pirkanmaa Provincial Museum.

may be preliminarily interpreted as a possible binding or edging strip of an object probably made of organic material. The largest fragment of the strip is curved and 10 cm long.

Ten fragments of bone from the early medieval layer were identified: 5 fragments of domestic cow (*Bos taurus*) from at least two animal units, 3 fragments of pig (*Sus scrofa domestica*) and 2 fragments of sheep or goat (*Ovis aries/Capra hircus*); 12 bone fragments belonged to unidentified mammalian species, three of them were burnt. Two unidentified burnt bones from northeast part of the excavation area were dated to 820 ± 65 BP (Hela-913) and 705 ± 35 BP (Hela-1224). The calibrated dates of these finds are 1160–1280 AD (68.2 % probability) and 1250–1320 AD (75.6 % probability) respectively. The latter bone fragment was found in the same sooty area and the same layer as the iron knife mentioned above.

The analysis of soil samples taken from the bottom of the cultural layer did not reveal any fossils of cultural plants nor any herbaceous plants at all. Instead, the soil contained a great deal of small

Fig. 5. Iron knife.
Photo by Vadim Adel/Pirkanmaa Provincial Museum.





Fig. 6. Burnt wooden construction. Photo by Vadim Adel/Pirkanmaa Provincial Museum.

charcoal pieces, probably originating from fir (*Picea abies*) and birch (*Betula* sp.) or alder (*Alnus* sp.).

Building remains

At the bottom of the cultural layer in the area southeast of the late medieval stone base, right outside its southeast corner, remains of a burnt wooden structure were found (Fig. 6). The main preserved part of this structure can be interpreted as approximately 4 m long and 50 to 60 cm wide, NW–SE-oriented, possibly cleft timber, laid on the yellow sand subsoil to a depth of about 10 cm. Thus, only the bottom part of the burnt timber, 5–10 cm in thickness was preserved. Some pieces of burnt wood found at the northwest end of the construction were oriented SW–NE, and the zone of sooty soil seemed to continue in the northeast direction, under the late medieval stone base (Fig. 7). The construction may thus be interpreted as base timber of the southwest wall and remains of the west corner of a rectangular wooden building or a room, probably a log cabin with walls built of horizontal timbers with interlocking corner-joints, as no any traces of corner posts have been found and the quantity of burnt clay daub found in the construction is very small, growing in the east and northeast directions.

In the southeast part the burnt timber ended in a SW–NE oriented construction about 5 m long and 1 m wide that consisted of one or two layers of natural stones, having a mean size of about 30 cm across that were placed on the yellow sandy subsoil. The stone construction probably functioned as the base of the southeast wall of the same log cabin.

Constructing this wall on a higher masonry base seems reasonable, as the ground gradually slopes to the southeast here. In addition, a large stone measuring about 60 x 35 cm was found under the west corner of the timber construction. It was SW–NE-oriented thus indicating the direction of another wall. Possible traces of the southeast wall of the log cabin could be seen as a SW–NE-oriented, 50–70 cm wide and 2 m long sooty zone 2 m northeast of the southeast end of the above-mentioned timber. The probable position of the northeast wall was indicated by a sooty layer 1 m wide and about 10 cm thick in the profile under the foundation of the east wall of the late medieval chapel, between the stone base and the yellow sand. The distance between this stratigraphic unit and the timber base of the southwest wall reveals that the size of the log cabin on the SW–NE axis was also 4–4.5 m.

The radiocarbon age of the charcoal sample taken from the southwest edge of the timber construction is 835 ± 45 BP (Hela-914), and the calibrated date is 1160–1265 AD (68.2 % probability). The building is thus simultaneous with the oldest part of the cultural layer of the site.

Since the burnt clay does not seem to originate from the log cabin and concentrates in the area east of it, we must suggest the contemporary presence of another wooden construction, probably another room of the same building, which had been built using wattle-and-daub technique. A post-hole of rounded form apparently belonged to this construction was found 0.6 m southeast of the southeast end of the burnt timber, on the other side of the stone setting. The pit had a diameter of about 40–50 cm and a depth, measured from the top of

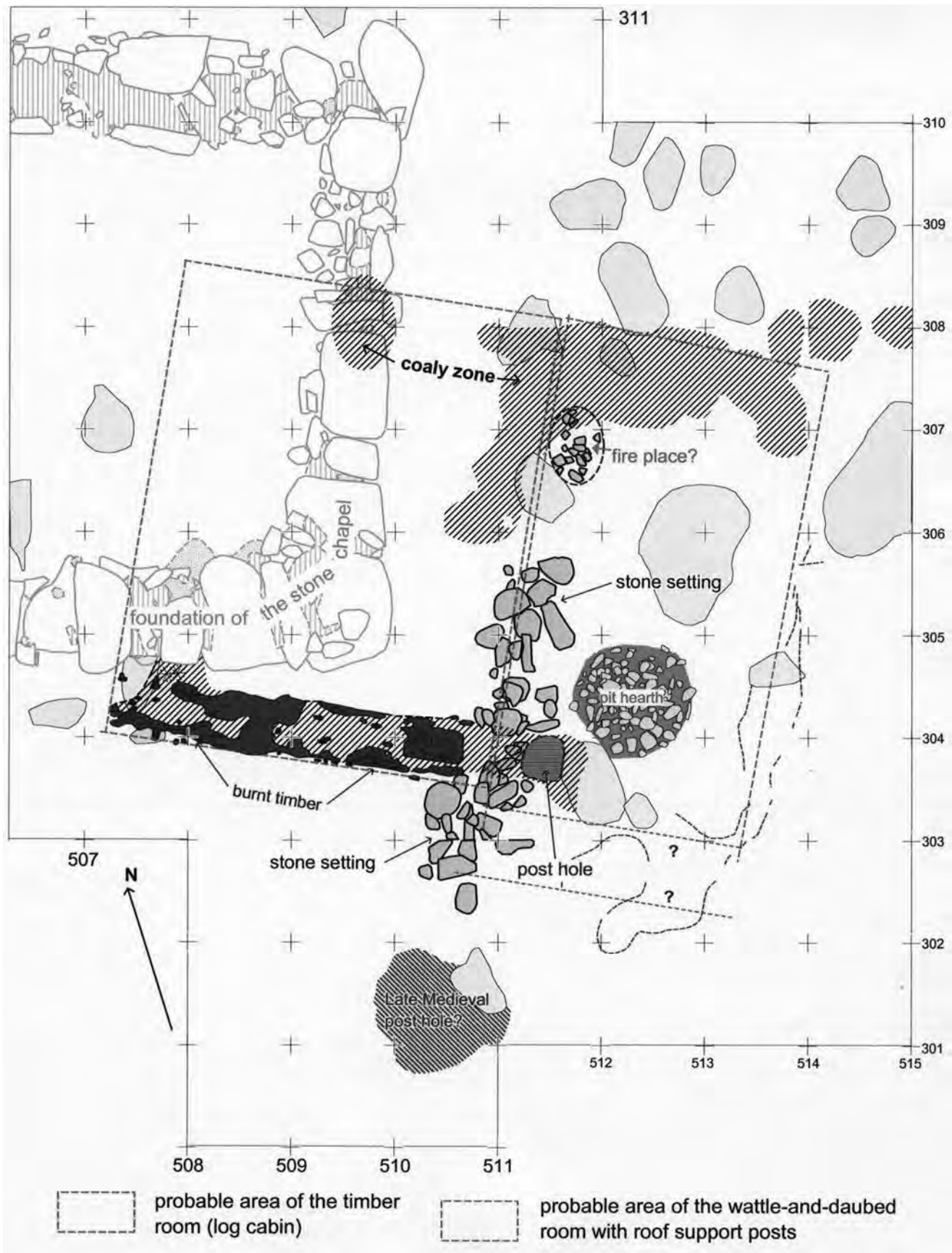


Fig. 7. Medieval and prehistoric structures in the southeast part of the excavation area. Map by Vadim Adel.

the subsoil, of about 30 cm. The post was supported by two oblong stones placed in an inclined position into the hole (Fig. 8). The pit had been filled with grey sand, which contained some pieces of burnt clay, charcoal and the largest fragment of the above-mentioned bronze strip. A piece of charcoal was

dated to 785 ± 35 BP (Hela-1223), cal 1220–1270 AD (68.2 % probability). This proves that the post construction, probably supporting the roof of the assumed wattle-and-daub room, has functioned simultaneously with the corner jointed timber construction.



Fig. 8. Remains of a post-hole with supporting stones. Photo by Vadim Adel/Pirkanmaa Provincial Museum.

Four metres northeast of the post-hole the excavation revealed a WNW–ESE-oriented, 4 m long and 1 m wide zone of sooty patches of various forms, measuring 0.4 to 1.4 m. The area yielded the largest amount of burnt clay, *c.* 1560 g/m², while the average content of burnt clay in its whole area of appearance was 290 g/m². The above-mentioned fragment of burnt bone, dated to 705 ± 35 BP, was found in one of the patches. The sooty zone may be interpreted as remains of the northeast wall of the room built using wattle-and-daub technique. The distance between it and the post-hole (*c.* 4 m) coincides with the length of the timber room. However, it is still possible that we are dealing here only with an intermediate wall or traces of posts, which supported the roof, while the rest of the building remains can be found northeast of the excavated area. It must also be noted that the stone setting, interpreted as the base of the wall between two rooms, continued 1–1.5 m in the southwest direction from the southeast end of the burnt timber. The southeast border and the south corner of the wattle-and-daub room are probably indicated by the border of the layer filled with burnt clay at a depth of about 30 cm. In this case, the width of the room was about 3 m.

Fireplaces

A rounded, flat-bottomed pit, which had a diameter of 1 m and a depth, measured from the top of the subsoil, of about 50 cm was found in the middle of the southwest part of the assumed wattle-and-daub room, less than half a metre northeast of the post pit. The pit was filled with burnt stones, measuring mostly 10 to 15 cm, with pieces of charcoal between them. Detected in the walls of the pit was an approximately 10–20 cm thick band of sooty or burnt, reddish sand, which surrounded the stones. The charcoal concentrated in the bottom of the pit. The construction was interpreted as a pit hearth of the so-called Tyttöpuisto type, which was very common in Finland especially during the Neolithic Stone Age and the Early Metal Period, while appearing in some Iron Age settlements as well (Vikkula 1993).

The main part of the hearth pit did not contain any finds except the burnt stones, nor has the analysis of four soil samples revealed any fossils. Only about 30 g of burnt clay were found in the upper part of the pit. A piece of charcoal, taken from the bottom of the construction, was dated to 2285 ± 35 BP (Hela-1222) and another one, from the east edge of the hearth, to 1980 ± 45 BP (Hela-

1078). The calibrated dates are 405–345 BC/305–205 BC (54.0/41.4 % probability) and 40 BC–80 AD (68.2 % probability) respectively. Short-term activity during the Stone Age or the Early Metal Period is also indicated by few scattered quartz artefacts from different parts of the cultural layer of the site.

It seems that after the hearth had been abandoned, the pit was partly overlaid by a thin layer of sand, but was obviously still visible. Its central part was probably re-used as a fireplace in the early Middle Ages, as shown by the analysis of another charcoal sample, taken from the middle of the structure. The radiocarbon age of the sample is 785 ± 45 BP (Hela-1079) and the calibrated date is 1220–1280 AD (68.2 % probability). The renewed fireplace was smaller and situated in only about 30 cm deep pit.

Remains of another possible fireplace were found near the north corner of the suggested wattle-and-daub room, in the southern part of a sooty patch measuring *c.* 2 x 1 m. The feature was S–N-oriented, about 0.5 wide and 1 m long and consisted of one or two layers of burnt stones, which had a mean size of approximately 10 cm. Only small particles of charcoal were detected, and no radiocarbon dating samples taken there. The finds include only some pieces of burnt clay.

Traces of later medieval activity

The archaeological evidence of building or other activity from the 14th and 15th centuries, before the construction of the stone chapel, is poor and difficult to interpret. A round-bottomed pit, with a diameter of 1 m and original depth of 40 cm or more and filled mostly with dark brown soil and stones of different size, was found 2 m southwest of the southeast end of the burnt timber (Fig. 7). In the middle of the pit an area empty of stones was detected, so the structure may be interpreted as a post-hole. A small piece of charcoal, found in the bottom part of the pit, is dated to 500 ± 40 BP (Hela-1080), cal 1407–1440 AD (68.2 % probability).

Two of the charcoal pieces, found at the bottom of the west wall of the stone chapel, were dated to 460 ± 45 BP (Hela-915) and 590 ± 40 BP (Hela-916). The former sample was taken from subsoil sand beneath the stepping stone outside the door, and the latter from brown fossil topsoil, preserved under the foundation of the west wall and under the paved floor inside the building. The calibrated dates are 1415–1470 AD and 1305–1405 AD respectively (68.2 % probability). In addition to the charcoal pieces, the excavations have not revealed any finds that might be definitely dated to these periods. The former date is the *terminus post quem* for the construction of the stone chapel.

Preliminary conclusions

The oldest dated traces of human activity which have been found at the Nokia chapel site are from the Pre-Roman Iron Age or the beginning of the Early Roman Iron Age. None of the artefacts or fixed structures found during the excavations can be dated evidently to the Late Iron Age, although typologically some of them derive from this period. The fragments of ceramics found during the survey some tens of metres west of the chapel can be interpreted as possible traces of Middle or Late Iron Age activity, but their context and meaning are not yet clear.

The early medieval part of the cultural layer contained the remains of a wooden building, obviously from the 13th century. The building probably consisted of two rectangular rooms, built using horizontal timbers with interlocking corner-joints in one room and wattle-and-daub technique with vertical posts in another, measuring about 4 x 4 m and 4 m (or longer?) x 3 m respectively. There were one or two fireplaces in the latter room. Both building techniques used in the construction and their combination were common in Southwest Finland in the Late Iron Age, and their roots may be found in earlier prehistoric periods. Placing the base timber of a log wall construction in a ditch is also a feature deriving from the Iron Age (Lehtosalo-Hilander 1984b, 331–335). As a type of building, rectangular wattle-and-daub construction with roof support posts was in use until the 13th century (Kykyri 1995, 91–94), while corner jointed buildings are still in common use.

The archaeological data from the chapel place of Nokia does not support the theory suggesting that the remains of burnt building belong to a wooden church or chapel preceding the stone structure. As no clear traces of pre-Christian burials or other ritual practices in the area have been found either, there is for the time being no evidence of the sacral function of the site before the construction of the stone chapel. Unfortunately, relevant archaeological data revealing building or other activity in the 14th and 15th centuries is still lacking, but new excavations may change the situation. At this moment the topography of the site, its manifestable potential, seems to be the main reason for the construction of the chapel at the same place as the early medieval building.

The paucity of the artefact material, the absence of ceramics and cultural plant fossils in the early medieval layer do not permit an interpretation of the site as a farm. Nonetheless, the structure of the building, including the fireplaces, and the bones of domestic animals suggest residence, which may be interpreted rather as periodical or seasonal, and possibly relatively short. Traces of this kind of residence together with the significant geographical situation and topography of the site seem to provide

evidence of a function of control and management of some kind of seasonal activity in the area. This accords with the both above-mentioned theories concerning the earliest history of Nokia Manor. The Church and the Birkarls both engaged in the economic exploitation of more or less distant territories and had their relevant seasonal activities, such as collecting and transporting of the taxes or the catch. Strategic points such as Nokia were needed to control the water routes used in this activity. A simpler interpretation of the early medieval building found during the excavation can be proposed by accepting its connection with 'a fur-hunters' house' as the original meaning of the name of Nokia, since activity of a seasonal kind was obviously typical in fur hunting and fur trading as well. Another possible function of the site could be the control of fishing in the rapids of the Nokianvirta River, which was also of a seasonal character .

The building techniques used in the early medieval construction found in Nokia, and the metal artefacts, probably belonging to a woman, reveal the connection with native Late Iron Age culture and local settlement. Thus, the interpretation of the site

as an outpost of the diocese organization in the area of Pirkkala does not seem sufficiently probable. The suggested episcopal manor of Nokia could rather have been founded in the 14th or 15th century. On the basis of the material provided by the excavations, the theories connecting early medieval Nokia with fur trade and interpreting it as a strongpoint controlling the important water route can be characterized as more credible. The presumed connection between the site and the local community or local elite that managed the fur trade and economic exploitation of so-called *erämark* territories ('wilderness' areas not settled by the agricultural population) in the north, also seems probable. The folklore tradition connected with the site may thus also have a historical background. The coincidence between the date mentioned in the sources concerning the history of the Birkarls, and the radiocarbon dates from the excavations, is striking. Nevertheless, it must be noted that only a small part of the archaeologically potential area in the vicinity of Nokia Manor has been studied. New fieldwork and the archaeological prospecting of the whole area may still reveal the broader context of the early medieval building and change its interpretation.

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Abbreviations

- FMU *Finlands Medeltidsurkunder samlade och i tryck utg. af Finlands statsarkiv genom Rein. Hausen I–VIII. 1910, 1915, 1921, 1924, 1928, 1930, 1933, 1935. Helsingfors: Statsarkivet.*

COMMUNICATION AND TRANSPORTATION

ROADS, TRACKS AND COMMUNICATION AREAS – Human movement in the old parish of Sysmä, Eastern Häme (Tavastia) from the Late Iron Age to the Middle Ages

Introduction

Roads have always been important and crucial to man, and the movements of man have always created new roads and tracks. Before constructed roads, people walked through dry valleys and forests and used natural waterways. So far, the study of ancient roads and travel routes has been rather scarce in Finnish archaeology. Land and marine transportation have often been discussed separately and land transportation tends to be left without due attention in studies discussing the movements of prehistoric man (see also Carlie 2001). Prehistoric roads were often more like tracks and paths (see Masonen 1995, 20; Brink 2000, 24), but their significance might at the same time have been important. We have to also remember that prehistoric roads were not necessarily precise and strictly defined roads like today.

Furthermore, it has to be noted that the routes and their orientation may have changed depending on the season and climatic conditions. Some routes consisted of waterways and some of paths on land, but there were also routes that combined both. Good examples are winter routes that were common in Finland in prehistoric and historical times, and in some places even today. They took advantage of the icy lakes and swamps, going where it was most advantageous. In England it has been noticed that in some parts people used different roads in summer, during the dry season when the valley that were normally too wet were passable and in other times the used ridgeways were too dry and hard to walk on (Hindle [2001] 2005, 6). Thus, it seems that constant changes were part of prehistoric roads and therefore this has to be considered when studying them.

This article concerns the roads and communication in the medieval parish of Sysmä, Eastern Häme (Tavastia) in Finland (Fig. 1). The article discusses the way in which transportation routes varied in different periods and seasons and what means of transportation were used. Also under consideration are the attributes of natural and social environment that affected these routes. The methods used include map analysis and the use of historical sources. The period of time under investigation extends from the Late Iron Age to the Middle Ages with a particular

emphasis on changes in the communication system during the period. In this regard, changes in the settlement are of high relevance.

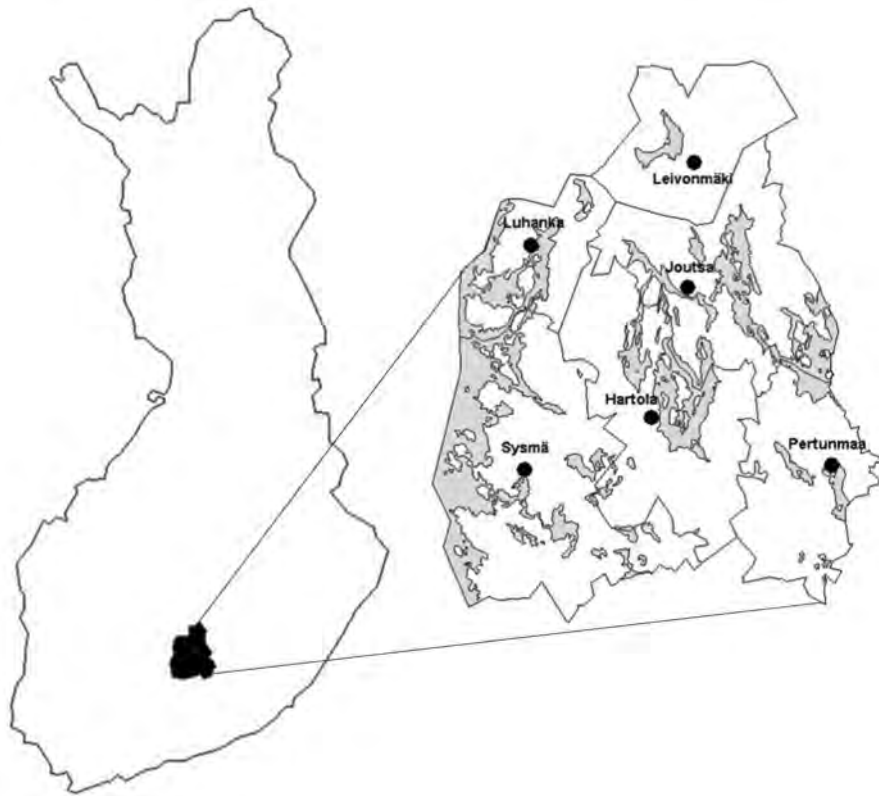
Archaeological finds show the area of Sysmä to have been one of the most important centres of settlement in Eastern Tavastia in south Central Finland during the Late Iron Age. Settlement continued in the Middle Ages, but the area was quite distant from the most important medieval towns. It is situated on the outlying borders of Finland's densely populated regions during both the Iron Age and the Middle Ages, both profiting and suffering from this position. The people of Sysmä area traded goods from the wilderness to commercial centres, but this made good travel routes essential. Therefore the study of these routes can provide a lot of information on the whole area and its economic and social life.

It is better to study roads as a system rather than individual routes or tracks, for they rarely functioned as the latter. Here, the study of communication areas is one possible way of seeing things. Communication areas are a specified application of central place theory, which can help us understand the communication system in broader perspective. Communication areas are also linked to economic areas, and therefore the prevalent economic model had effect on the communication and routes.

The research material in this article consists of Iron Age archaeological material and historical information on the medieval settlement of Sysmä parish. No particular maps from these periods exist. The routes and tracks are defined on the basis of source material, which consists of later historical maps and other historical sources, archaeological records and information on the environment. Also information on prehistoric means of transport is discussed. There is a great deal of archaeological data on Iron Age settlement in the Sysmä area, particularly from the area surrounding the present-day centre of the community, but less from the Middle Ages. In the inland parts of Finland, to which Sysmä belongs, the archaeological study of the Middle Ages is still rather limited.

The Finnish Iron Age begins around 500 BC and ends at 1150 or 1300 AD, when Christianization began to have influence in Finland and the first

Fig. 1. The medieval parish of Sysmä. The present-day municipal centres are marked with dots.



crusades took place. Therefore, it overlaps with the Middle Ages in most of Europe. The first crusade to Finland was carried out from the west in 1155, mostly affecting only Southwest Finland. The ending of Iron Age is usually given as two different dates, because it took place earlier in Southwest Finland than in the inland. Sysmä is a problematic area in this sense and the Iron Age probably came to an end there between 1150 and 1300 AD. The Häme area, of which Sysmä was part, came under Christian influence more gradually and the first congregations developed later than in the western parts of the country. The Middle Ages ended in Finland in the beginning of the 16th century, being said to have ended in 1523 with the coronation of King Gustavus Vasa (Suvanto 1985, 181).

The parish of Sysmä

The medieval parish consisted mainly of the areas belonging to the present-day communes of Sysmä, Hartola, Joutsa, Luhanka, Pertunmaa and Leivonmäki in the Lake Päijänne area (Fig. 1). The area is known for its many water systems and the most important ones are the water system of Lake Päijänne in the west and the water system of Lake Puula in the east. These water systems are connected with the Tainionvirta River which starts from Hartola and flows into Lake Päijänne in Sysmä. The differences in water level between these two water systems are not too crucial and this has made the natural waterway of the Tainionvirta River easy to travel. Another important feature in the landscape are the two ridges running from the southwest to the northeast.

Sysmä Parish emerged at the latest in the Middle Ages but the settlement in the area already began to consolidate in the Late Iron Age. The parish's eastern borders were confirmed for the first time in the early 15th century and revised in 1450s. The Medieval parish of Sysmä survived until the end of 18th century, when the parish of Hartola parted from it. The eastern border was also the border between the historical provinces of Häme and Savo, and therefore important. This position far from the central areas and on the borders of provinces seems to have had an effect on the economy of the whole area. The Lake Päijänne region had an important role in dealing the goods from the wilderness of Central Finland to Tavastia and Southwest Finland, for example furs and other goods.

The congregation of Sysmä was one of the first to be established in Eastern Häme, and the church of Sysmä was probably built in the end of 15th century (Hiekkanen 1994, 251). This strengthens the picture of the parish as one of the most important centres in the Lake Päijänne area. The first time Sysmä parish or areas belonging to it are mentioned in written sources was 1398, when Pope Boniface IX encouraged the people in the area to go more to the church of Hartola (FMU 1081; Juvelius 1927, 52). However there is no proof of a church in Hartola at this time, and it is possible that the pope meant the church in Sysmä.

There are already numerous written sources concerning Sysmä parish and its villages from the 15th century, but we do not have a proper list of the villages and houses in the parish until 1539. During the Middle Ages the settlement pattern probably did not differ greatly from habitation in the Late Iron

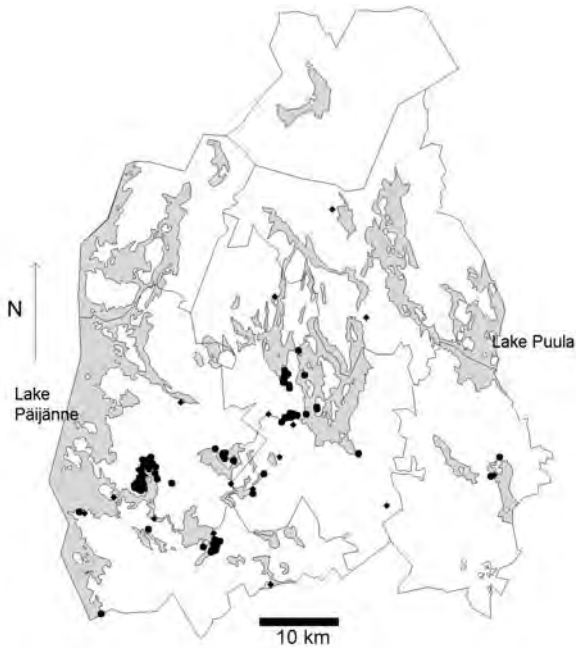


Fig. 2. Late Iron Age sites and stray finds in Sysmä parish. In the map the sites are marked with a dot and the stray finds with a diamond.

Age, even though it grew gradually. The parish was quite far from the medieval towns, and there was no need for systematic written account of the houses and villages. However, the settlement in the end of the Middle Ages supposedly does not differ greatly from the situation in 1539 and therefore we can use this information when outlining the medieval settlement in the parish.

The archaeological record and its distribution

Most of the archaeological material from Sysmä parish has been found from the present-day Sysmä and Hartola, even though there are some finds and sites from Joutsa and Pertunmaa as well (Fig. 2). It appears that settlement concentrated to the southwest part of the area and other parts were not as densely populated. More densely populated areas in Häme and other parts of Finland were to the west and south of Sysmä parish, which may have had an effect on the concentration of sites and finds through trade and other important contacts. However, more attention has been given to Sysmä and Hartola when searching for new sites, because of research history and the more active history of building and development. This might have had an effect on the presently known archaeological record.

Iron Age archaeological material from Sysmä parish dates mostly from the Late Iron Age. There are a few sites from the Merovingian Period (575–800 AD), being in present-day Sysmä, the Southwest part of the area. The Viking Age (800–1025 AD) sites and finds are more numerous and these can also be found in Hartola and Pertunmaa, with a few

stray finds also in Joutsa. Settlement seems to have spread more into the west during the Viking Age. There are some finds and sites from the last period of the Finnish Iron Age, the Crusade Period (1025–1150/1300 AD), mainly from Sysmä and Hartola.

The largest concentration of finds and sites is in the present-day towns of Sysmä and Hartola (Fig. 2), and in view of present knowledge of the finds it seems that these were the most important areas. Especially around the medieval church of Sysmä in the present-day centre there are several settlement and burial sites. The archaeological finds are extremely fine and they can be compared to the finds from Southwest Finland. In any case, to balance the picture of the Iron Age in the whole area, the more distant areas should be studied more closely. Thus far, fieldwork has concentrated more on the areas with more known sites.

Based on the archaeological finds it appears that western contacts predominated in the Merovingian Period and the Viking Age. Therefore, traffic might have been directed more in this direction during these periods. Starting from the Late Viking Age and during the Crusade Period there were more contacts towards the east and also more traffic in this direction (Jansson 2006, 101). It has been suggested previously that the population came to the Sysmä area from the west in the Merovingian Period and the archaeological finds seem to support this view, since most of the objects from this period are western types (Juvelius 1925, 23–24, 33).

Recent surveys, however, (e.g. Poutiainen 2004) have revealed more evidence of possible settlement in the area also in the Early Iron Age or Early Metal Period. This can mean that western objects came to the area in a different way, possibly brought by the local population. Also pollen analysis has shown implications of some human activity in the area before the Middle Iron Age (I. Vuorela 1979; 1981). At any rate, it is difficult to study the prehistoric populations and their migration and this point of view deserves and needs more attention in the future.

Archaeological research on the medieval phase of Sysmä parish (1150/1300–1523 AD) has been rather scarce so far. Only in the municipality of Sysmä have there been a few excavations where medieval activity has been noted. In many parts of the parish, settlement has continued at the same sites from the Middle Ages onwards. Therefore, more recent construction has probably destroyed many medieval sites. It is also difficult to arrange excavations in areas that are already inhabited, such as municipal centres.

Traces of activity from the Early Middle Ages possibly indicating a market and a settlement place have been found near Sysmä Church. The many objects found from the site include, for example,

weights that were used when handling market goods. Also many horse-related implements were found (Poutiainen 2000). It is possible that the use of the site had continued from the Late Iron Age, as a large number of objects from that period have been found. In general, the medieval history of Sysmä parish calls for much more attention in the future.

Tracks and paths in the Late Iron Age

Sysmä parish is favourably situated with respect to different waterways and natural land routes such as ridgeways. Lake Päijänne provides easy access to areas in the south, west and north, and the waterways also lead to the east through the Lake Puula water system. Also travel on land was meaningful already in the Iron Age, but it increased gradually starting from the Middle Ages, when settlement increased and the level of technology slowly improved. However, it is likely that technological evolution was for a long time of rather low relevance, since most of the travelling was done on foot.

One of the most important waterways seems to have been the one crossing the Lake Päijänne to Padasjoki on its western shore. From here it was possible to travel to other parts of Häme and from there to Southwest Finland. Also the route to the south following the coastline was important because the Iron Age settlement centre of Hollola and its surroundings were located there. It is interesting to note that Sysmä later had some land properties in Padasjoki, owning part of Virmaila Island off Padasjoki in the Early Middle Age. Padasjoki was also part of the congregation of Sysmä before 1470 (K. Vuorela 1981, 10–11). It seems that it was important to the people in the eastern shore of Lake Päijänne to secure the waterway by ensuring their presence on the western shore of the lake.

Also the Tainionvirta River seems to have been an important waterway during the Iron Age. The river starts from Hartola and leads to Sysmä and Lake Päijänne. Most of the Iron Age sites in Sysmä are situated on the banks of the river or close to it. Also many of the sites in Hartola are close to the river. Because most of the Iron Age sites in the former parish of Sysmä are either in Sysmä or Hartola, the river must have been of major importance. The difference in water level was not too great between the different water systems in the research area, which increased the usability of the natural waterways, particularly the Tainionvirta River.

The remains of a boat radiocarbon-dated to the Crusade Period have been found in Hartola at the starting point of the Tainionvirta River (Taavitsainen 1999). This proves the use of water transport at the time and it must have been quite important.

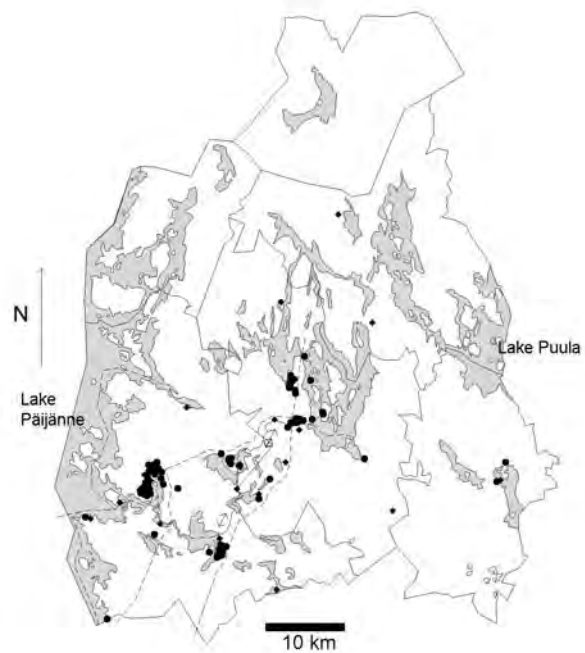


Fig. 3. Possible routes used in the Late Iron Age.

Other means of transport found in the area include some skis, but none of them date from the Late Iron Age. It is in any case likely that skies were in use in the winters during this period. The number of discovered skis is rather limited and they have not yet been dated systematically. Skis were used in snowy forests and valleys, but also on icy lakes and rivers. The other means of winter transport were sledges, and parts of them have been found in the areas surrounding Sysmä parish.

The importance of ridgeways has been debated to a great deal when studying prehistoric roads in Finland. They formed natural routes of communication and in Finland they run mostly from south to north or southeast–northwest. The question has also been studied in England and one of the arguments against the theory is that prehistoric sites and finds do not seem to cluster around many of the ridges. Paul Hindle ([2001] 2005, 5), however, has pointed out that roads and sites do not have to be located in the same place, because different kinds of factors influence the location of sites and roads. Even though ridges provide a favourable environment for roads, they do not necessarily favour settlement around them. This point, however, needs more clarification in the future.

In Sysmä parish there are two major ridges running roughly from the southwest to the northeast. One leads from Asikkala to the centre of Sysmä and the other one to Hartola. Their use as a route already in the Late Iron Age is not yet clear to us, but in the earliest map showing the major roads in the area, dating from the 18th century, there are roads on these ridges. Dating is one of the biggest problems when studying prehistoric roads. If there are some constructions belonging to the

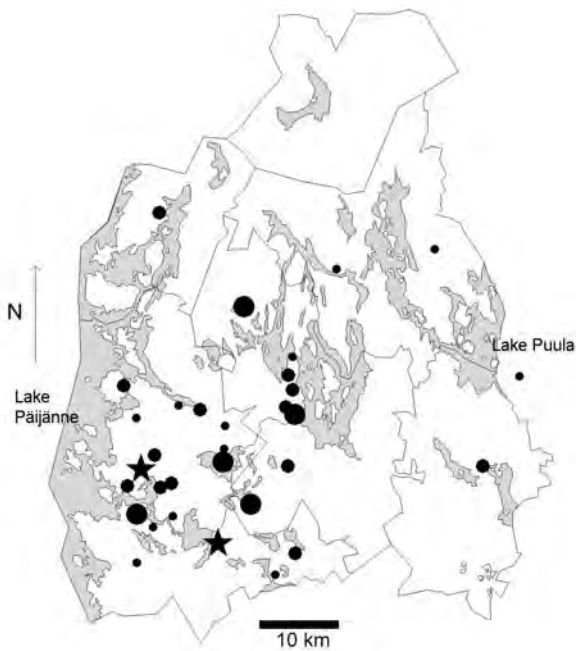


Fig. 4. Farm households in Sysmä parish mentioned in the land register of Häme in 1539. The smallest dot indicates a village of 1–3 farm households, the middle-size dot a village of 4–9 farm households, the large dot means a village of 10–19 farm households, and the star a village of more than 20 households.

road, they can be sometimes dated. For example, wooden constructions crossing marshes could be dated with the help of radiocarbon dating. In any case, it is highly likely that at least some kinds of roads followed these ridges already before the 18th century.

Paul Hindle ([2001] 2005, 5–6) has noted that these early land routes must have been different from modern roads. They were less pronounced and much wider road corridors, where many parallel routes ran close to each other (see Jørgensen 2001, 7; Stenqvist Millde 2007, 19). Each traveller chose then the best route for himself. The map (Fig. 3) shows the probable tracks and waterways used during the Late Iron Age.

Archaeological evidence for the use of land routes during the Late Iron Age consists of the many items of horse gear found in Sysmä and Hartola. Consisting of bits, horseshoes and different kinds of mounts, they begin to appear on sites dating from the Viking Age (800–1025 AD). It is in any case likely that horses were not very common during the Iron Age and the most common way of travelling was walking or skiing in the winter.

Roads and communication in the Middle Ages

In the Middle Ages settlement appears to have expanded from the Late Iron Age and therefore also

the used routes and tracks were more numerous and varied. The earliest relatively comprehensive source on settlement in Sysmä parish is the land register of Häme from 1539 (Juvelius 1925, 70–71). This list of the farms and villages, however, is not complete, as it lacks a few villages that were already mentioned in earlier sources.

The map in Fig. 4 shows the farms mentioned in the list from 1539. There is, however, some inaccuracy in the map, since lacking the maps of this time we cannot know the exact places of the farms. In the map, the farms are located according to village as far as we can know their areas based on the present-day situation. It is possible that some of the farms in village might have been situated quite far from the actual village area. In any case, we can form an overall picture of settlement and its distribution in Sysmä parish with the help of this information.

By the end of the Middle Ages settlement had spread to new areas in comparison with settlement in the Late Iron Age. The areas in the east and north of the parish were populated. Also in Sysmä and Hartola settlement was more varied and widespread. In any case the most densely populated areas are the same as earlier. This points to a continuation of settlement at least to some extent.

The Tainionvirta River must have been an important waterway still in the Middle Ages and later. Even more settlement had developed along the river, especially in Hartola. Traffic increased in Lake Päijänne and widened northward, because by the end of the Middle Ages settlement also developed in Luhanka and the northern parts of Sysmä.

As noted above, one of the most important waterways was the one crossing the Lake Päijänne to its western shore. This seems to have been the situation also in the Middle Ages since the village of Sysmä had some land properties in Padasjoki. There are also mentions of a 17th-century winter road from Sysmä to Padasjoki, crossing the ice on Lake Päijänne. The same route was used by boats in the summer (Viertola 1974, 57).

In the Middle Ages it seems that the importance of routes on land also increased. By now population had also developed in areas not as dependent on waterways. In the lake districts, waterways have definitely been of great importance almost to the present day, but the development of roads and transportation technology made it possible to populate areas also more inland.

There are some interesting notes on the medieval winter road from Savo to Tavastia, from one province to another, which led through Sysmä. The winter roads were ones that were used only in the winter, usually on frozen lakes and swamps. There is a lot of information on historical winter roads, but their study is sometimes quite difficult. Winter

roads might also have changed from time to time, depending on the varying needs for them.

The first mention of the winter road from Savo to Häme is from the beginning of the 15th century. The road passed through Hirvensalmi east of Pertunmaa and an inn was established to secure the route. The road probably went from Hirvensalmi to Hartola and Sysmä and from there to Häme (Viirtola 1974, 49, 57). Interesting place names in Hartola also indicate this. In Lake Jääsjärvi there is at present *Talvitaipaleenlahti*, 'winter journey bay', and in a map from the end of the 18th century the *Talvitaipalinsaaret* Islands are mentioned, *i.e.* the 'winter journey islands'. There is also some information on an old winter road leading from Sysmä to Luhanka and from there to Central Finland (Viirtola 1974, 57).

Shown in the map in Fig. 5 are roads and waterways that were probably used in the Middle Ages. The earliest map showing the roads of Sysmä parish, the so-called King's Map (Alanen & Kepsu 1989), is from the 18th century. The roads in these maps do not differ much from the possible Iron Age and medieval routes which are defined by settlement and natural routes of travel.

The use of horses had already begun in the Late Iron Age and it no doubt continued and increased in the Middle Ages. Probably also skiing was common in the winter and boats had evolved from the Iron Age. But still the most important way of travelling must have been walking.

Communication areas and other aspects of road studies

Communication areas are a way of seeing things in a wider perspective and can therefore help in studying roads and tracks in a specific area. Communication area study is linked to the study of central places, originally started by Walther Christaller (1966) in the 1930s when he came up with the concept of central place. The concept has been much studied in archaeology and geography but it is necessary to bear in mind the limitations and highly abstract nature of the theory and the critique it has received (see Collis 1986). However, applied central place studies can also give new ideas and broader perspectives for the study of prehistoric roads.

Communication areas are a specified application of the central place theory. Usually the communication areas are defined on the basis of the archaeological material and the natural environment with the help of other possible sources. A major part of defining a communication or an economic area is to define its centre (Dicken & Lloyd 1990, 25–38). Communication areas can be also defined at different levels, which can sometimes overlap.

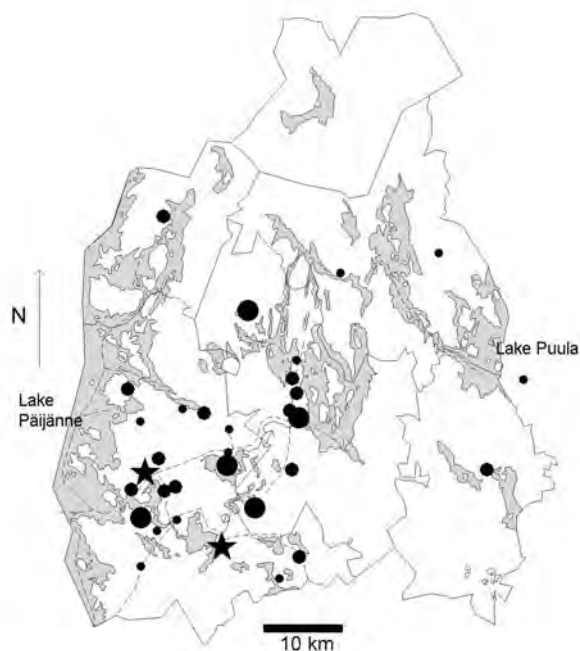


Fig. 5. Possible routes used in the Middle Ages.

In the Late Iron Age, Sysmä parish was part of the Päijät-Häme economic and communication area, as defined by Masonen (1989, 130, Map 18). This means basically the Lake Päijänne area and its surroundings. It has been noted that the Päijät-Häme communication area was probably divided into a northern and southern area (Jansson 2006, 83–85). The centre of the southern area was probably Hollola and the most important area in the north was the one surrounding the medieval church of Sysmä. Finds from Sysmä include objects pointing to a market place from the end of Iron Age and the beginning of the Middle Ages. All this supports the idea of Sysmä being an important centre in the Lake Päijänne area during these periods.

Settlement in Sysmä parish during the Late Iron Age concentrated in the areas of Sysmä and Hartola. Therefore, the major communication areas within the parish formed around these parts of it (Fig. 6). The connecting route between these areas was the waterway of the Tainionvirta River but probably also the routes on land were significant. In the eastern part of the parish there was also a small concentration of settlement at Pertunmaa. The role of this area between Sysmä and Mikkeli, an important centre in the east, should be given more attention in the future.

By the end of the Middle Ages settlement had spread to a wider extent and was now more evenly situated in the parish. The communication areas were now more varied and diversified (Fig. 7). Settlement had spread to new areas, so that new routes and tracks had evidently been taken in use. Areas in Sysmä and Hartola were still very important, but settlement had spread to areas not used for permanent occupation

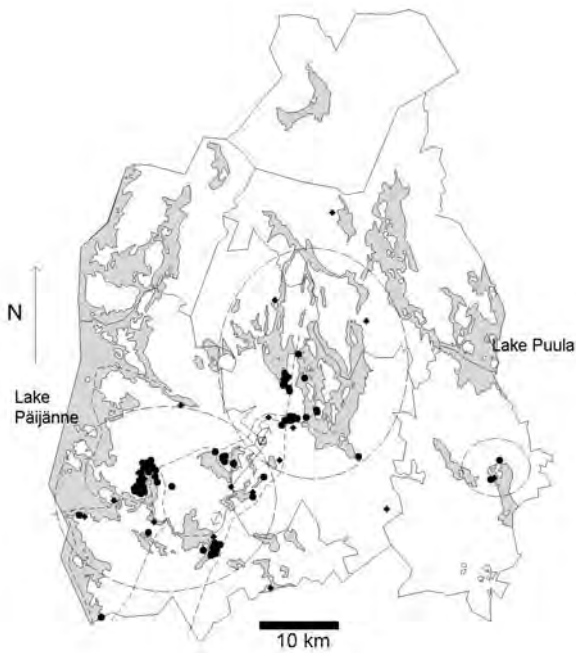


Fig. 6. Iron Age communication areas in Sysmä parish outlined with reference to settlement and possible routes.

before. It is possible that more advanced cultivation techniques or a more versatile subsistence strategy made it possible to populate new areas. In any case, in the future archaeological research on the medieval life of the area would provide more information on this little-known phase of Eastern Häme.

The network of roads can be studied at different levels. The regional level of the network consists of the roads leading to major centres, local roads led from a village to another and finally there were smaller roads serving individual farms or houses (see Mähl 2002, 17; Hindle [2001] 2005, 13–14). Sometimes roads were divided only into local and regional roads (Jørgensen 2001, 3). Many road studies have so far concentrated on regional roads. The smallest roads or tracks used thousands or hundreds of years ago are highly difficult to study, because in most cases they have been long gone or forgotten. According to Stenqvist Millde (2007, 260), these smallest roads were most likely to change while travel with economic, political and social importance was more stable, an institutional tradition.

It is also essential and useful to discuss the need for travel and the significance of sources of livelihood for the routes and tracks that developed. In a study in Padbury, England, it was noticed that only some of the roads lead to other villages. Most of them lead to the woods and fields that were essential to the villages' economic and day-to-day life (Hindle [1982] 2002, 46). Roads that lead further were used only occasionally because the need to travel there arose seldom. It was also sometimes difficult to keep the regional roads in a good shape, because

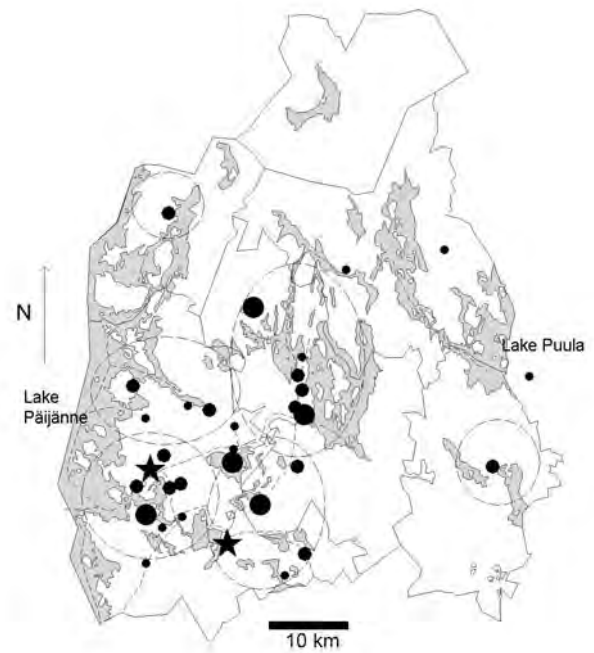


Fig. 7. Medieval communication areas in Sysmä parish outlined with reference to settlement and possible routes.

the responsibilities to take care of the road were not clear. Therefore, regional roads developed slowly.

Noting this point, we should start studying more the smaller local roads and the roads going inside a village, even though this might be challenging. In this we can use information on the economic life of the village and the sources of livelihood. Also communication and economic areas are linked to each other, and by analysing the economics and the subsistence strategy of the area, it is easier to study the network of roads used. Studying the economics of Sysmä parish could be highly useful in the future.

Under consideration could be also the role of more separate houses and settlement sites. In a Swedish study it was noticed that houses that did not have neighbours were often near the borders of villages or parishes (Mähl 2002, 187–188). These houses or sites were also on important travel routes. The same kind of situation can be seen in Sysmä parish at least in the Late Iron Age. For example near the waterway leading to the western shore of Lake Päijänne there is the site of Rapala in the western cape of Sysmä and near the ridgeway leading south in southwest Sysmä there is the site known as Supittu. This can indicate the importance of a close travel route when establishing a household outside densely populated areas or that these households were established to secure the routes. The problem with the latter alternative is that it would require organized government in the parish, and we still do not know whether such existed in Sysmä in the Late Iron Age or the Middle Ages. In any case, this consideration deserves more attention in the future.

Conclusions

Roads and tracks have been important to the development of the Sysmä area, as to any other area lying far from the central areas. Good transport routes have been useful in for example delivering the goods to market places and gaining access to distant fields and hunting grounds. The centre of Sysmä was situated at the crossroads of both waterways and routes going on land and the whole area gained advantage of this.

Provisionally, it seems that settlement from the Late Iron Age to the Middle Ages concentrated mainly in the same areas in the parish. The continuation of settlement in some areas seems probable. During the Middle Ages settlement increased to some extent, but the areas populated earlier remained the most important ones. This is partly because these areas had access to different kinds of routes, those going on land and waterways.

It is likely that the main routes and roads changed only little during these periods, but new minor roads and tracks emerged, leading to the new settlement areas and areas important for economic activities such as obtaining trading goods. Probably changes and development in the economic subsistence

strategy had some role in the extended settlement. In the future these minor roads and tracks could be worth studying, but this would require improved research methods.

Also medieval communication areas changed to some extent in the Sysmä area compared those in the Late Iron Age. This was partly caused by increased habitation but also because it grew into new areas. The relationship between communication and economic areas could provide much information and new perspectives on the study of roads. The study of communication areas is still relatively scarce, but it has great potential. Especially the methods need a lot of attention to develop and here, for example, the GIS could be helpful.

These early roads were often so-called road corridors, and these might have also changed in time depending on the changing needs for them. We have to bear in mind that constant change was part of prehistoric and historical roads. By studying travel routes as a system and as a network we gain more information than by only concentrating on separate roads. It seems that by studying prehistoric and historical routes and in general the movements of prehistoric man, we can collect a great deal of information on the prehistoric economy and way of life.

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Abbreviations

- FMU *Finlands Medeltidsurkunder samlade och i tryck utg. af Finlands statsarkiv genom Rein. Hausen* I–VIII. 1910, 1915, 1921, 1924, 1928, 1930, 1933, 1935. Helsingfors: Statsarkivet.

SHIP FRAGMENTS ON THE SEAFLOOR – What do we know about medieval seafaring in Finland?

Introduction

From a maritime-archaeological point of view Finland is more or less known for its well preserved wrecks from the 18th century, among them cargo ships such as the *Sankt Mikael* (1747) and the *Vrouw Maria* (1771) and naval ships such as the Russian frigate *Sankt Nikolai* (1790). At the same time there are only a few finds of seagoing ships from medieval times, and the prehistoric finds are represented by some log boats and parts of a few sewn boats (Vilkuna 1998, 258, 260). Many of the log boats are dated by sediment layers or land uplift, not by accurate methods. Both the log boat and the sewn boat tradition continued until the 20th century in Finland. Otherwise, the only evidences of prehistoric seafaring are Stone Age paddles (Vilkuna 1986; 1998), rock paintings and Late Iron Age rivets and nails from boats that derive from so called cremation cemeteries under level ground (*cf.* Andersson 1963; Raike 1996; Matikka 2000).¹

In many countries around the Baltic Sea, boats or ships from the Iron Age have been found (*e.g.* Crumlin-Pedersen 1984; Stepien 1984; Litwin 1995; Bill *et al.* 1997; Crumlin-Pedersen 1997).

Basing on archaeological evidence and written sources, we know that throughout history there have been frequent contacts with neighbouring areas, and accordingly the potential for similar finds in Finland should be the same as elsewhere.

By the time of writing, five wreck finds in Finland have been dated to the Middle Ages (Fig. 1). The dates of these ships are based on either scientific dating methods or typologies of the artefacts found in the ships. This article will discuss why there are so few medieval finds, present the latest research in the field and discuss what the new research can add to knowledge of the Middle Ages. In Finland the Middle Ages are considered to be the period 1150–1520/1550, during which Finland was part of the kingdom of Sweden.

Previous research

Thus far, the only research of any broader scale that has touched upon medieval seafaring has focused on Finnish trading contacts across the Baltic Sea (*e.g.* Grotenfelt 1887; Kerkkonen 1959; 1977). These works generally concentrate on the period from the beginning of the 16th century

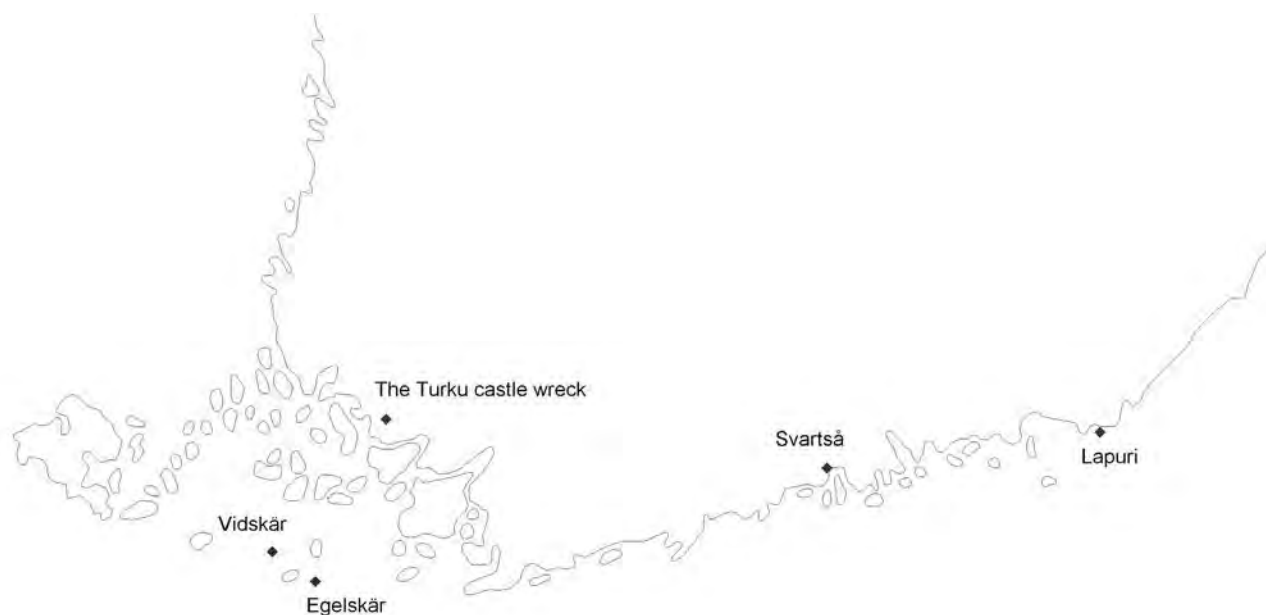


Fig. 1. The location of the five medieval wrecks discussed in the article. Map by Vesa Hautsalo/National Board of Antiquities.

onwards, due to the lack of documentary sources before that time. There are some articles that discuss seafaring also from other points of view (*e.g.* Voionmaa 1925; Kallioinen 1999; Jokipii 2002) but until these days there has been no explicit attempts to try to find medieval vessels or any project concerning them in Finland. The only exception is the research concerning sewn boats in the lake districts of the inland parts of Finland (Forssell 1983; 1995; Taavitsainen 1999). There is a considerable number of these finds, and many of them are dated to the Middle Ages. The sewn boats, however, are not included here due to the limitations of this article. Three of the five finds of other boats or ships dated to the Middle Age have appeared under different circumstances during the 1970s. These will be presented below.

The Svartså wreck was found in 1971 during dredging works at the mouth of the Svartså River in the municipality of Borgå (Fi. Porvoo). The dredging machine hit wood and parts of the bow came to the surface. The site was inspected by Christoffer H. Ericsson, the director of the Bureau of Maritime History.² Details of the carpentry, such as the joints of the clinker planking, the rabbet line and the use of iron rivets, were thought to be old-fashioned and the wreck was estimated to be from the 11th–14th centuries (C. Ericsson & Halme 1971).

Evidence of the enthusiasm that arose over the wreck find has survived in the Maritime Archaeology Unit's archives. Among the papers concerning the Svartså wreck is an excavation plan with a scale drawing of a cofferdam, and a budget dated to the summer of 1971. A cofferdam is a watertight construction that was planned to be built around the wreck enabling the water to be pumped out in order for the excavation to be carried out as a dry excavation (H. Ericsson 1971).

Unfortunately the excavation of the wreck never took place. The reason for this is not to be found in the archives, but apparently the dating of the wreck by the radiocarbon method played a role. During 1971 three wooden samples of the wreck were sent to the University of Helsinki to be dated. The first two (Hel-182; 170 ± 100 BP, Hel-183; 240 ± 100 BP) dated the wreck to the 18th century, while the third (Hel-214; 360 ± 100 BP) dated it to the 16th century. The age was clearly much younger than expected by researchers, which probably affected the plans for an excavation. The researchers, however, did not yield in their point of view, the stem post together with some other parts of the wreck were exhibited in the Maritime Museum of Finland as an example of shipbuilding techniques from the 14th century.

The Turku castle boat was found during draining works under a road (Linnankatu) next to the medieval castle of Turku in April 1973. The draining works were stopped and the remains of

a small clinker-built boat of oak were carefully excavated and documented. Originally the boat had been 7–9 metres long, but less than half of the length was preserved from the bow aftwards. A radiocarbon dating of a treenail of juniper produced the result 640 ± 80 BP (Hel-406), which gives a date to 1230–1390. An article of the find with the dating, a description of the individual timbers and an interpretation of the find has been published (Forssell 1984). After the excavation the boat parts were conserved and can be seen today in the permanent exhibition in Turku Castle.

In 1976, yet another find was made. In the municipality of Virolahti in the easternmost part of the Gulf of Finland, a sports diver found a ceramic vessel on top of some planks and close to that a wreck covered with stones (Alopaeus 1985, 117). The wreck, called the Lapuri wreck after a nearby island, was investigated in 1977–1978 and 1992–1993 by the National Board of Antiquities (in addition to that several control dives including collecting samples for various reasons have been carried out at the site). The remains of the wreck are 9.8 m long, the original vessel has been calculated to have been approximately 13.5 metres long. Also this wreck was clinker-built using oak planks.

The dating of the wreck has caused some trouble due to a divergence of 600 years in the various radiocarbon dates. Firstly, two radiocarbon datings (Hel-1029; 1190 ± 90 BP, Hel-1030; 1010 ± 80 BP), the first of the wood in a plank and the second of the caulking of animal hair, dated the wreck to the Viking Age (Ericsson 1977, 4). The wood sample, however, was taken without regard for year rings and was therefore rejected (Alopaeus 1995, 128). In 1993 an additional dating was made from a piece of cloth found in a plank scarf. The result (Hel-3379; 570 ± 110 BP) was clearly younger than the first two dates, placing the cloth in the Middle Ages (Alopaeus 1995, 128). Since the dating of 1993 made the situation more confusing than before, three new datings were carried out in 1997 from a piece of cloth³ (Hela-134; 780 ± 70 BP), wood from a frame (Hel-3958; 990 ± 90 BP) and caulking of animal hair (Hel-3959; 750 ± 110 BP). Also these results are spread evenly over a period of 350 years.

In 1998 it was decided to try another dating method. Nine samples for dendrochronological analysis were collected from the wreck. The samples have been compared with both Finnish master curves⁴ and master curves from other countries around the Baltic Sea, but it has not been possible to date them (Zetterberg 2000).

From another point of view, however, research took a leap forward in 1998. The ceramic vessel from the wreck had been roughly dated between the Middle Age and the 17th century when the wreck was found (Alopaeus 1985, 117). In 1998 Dr David Gaimster defined the ceramic vessel to be a proto-



Fig. 2. The church bell from Egelskär as it appeared when the divers discovered the site. The bell was raised for conservation in 2003. Photo by Kaj Enholm/Rannikkosukeltajat ry.

stoneware jug made in the Rhineland 1265–1300 (Gaimster 1998).

The problematic dating of the wreck and its research history has recently (2006) been published in an article by archaeologist Teemu Mökkönen. In his article, Mökkönen evaluates for the first time all the radiocarbon datings together and tries to place the wreck within the local history of the find location. He has gone critically through the dates and chosen to use the three youngest dates of caulking material for a combined dating of the wreck. The result is 1220–1295, with a strong indication towards the last quarter of the 13th century (Mökkönen 2006, 40–44).

For the moment it does not seem to be possible to get any further with the natural scientific dating methods concerning the Lapuri wreck. It is however the author's intention to go through the wreck remains typologically and compare them with other finds in a forthcoming article.

Recent research

Due to the finding of a medieval foundering site in 1996 at Egelskär in the municipality of Nagu (Fi. Nauvo) in Southwestern Finland, new interest in medieval seafaring arose at the National Board of Antiquities. An investigation of the site was begun, and when resources became available after 2004,

efforts were intensified at this and other sites. A test excavation at Egelskär was carried out in 2005, followed by a major excavation in 2006. Parallel to this it was decided to attempt to obtain a new dendrochronological date for the Svartså wreck, since it now doubt displayed features of medieval technology. During the work with these two finds a new wreck site, Vidskär, with artefacts of apparent medieval date, was discovered by sports divers in the Finnish archipelago.

The Egelskär wreck

The Egelskär site was discovered in 1996 by a group of diving biologists who were collecting algae samples from the seafloor. During their work they found a church bell and some ceramic vessels on the bottom (Fig. 2). They reported their find to the National Board of Antiquities.

The wreck site is on the shore of a small island consisting of bedrock. The site is today situated at a depth of 4–15 metres. Due to the elevation of the land in the area, the seafloor have risen approximately 2 m since the shipwreck took place (Mökkönen 2001). The structural parts of the wreck and the remains of the cargo are separated by a distance of circa 20 m.

Owing to the lack of staff and resources, it was not possible to start an excavation at the site

immediately, but the site was mapped by a group of sports divers, *Rannikkosukeltajat ry*, in 1998 and 2000–2001 (Enholm 1999a; 1999b; Enholm & Kytölä 2003). From 2001 onwards, the National Board of Antiquities has carried out fieldwork at the site. Between 2001 and 2003 the fieldwork was directed by Riikka Alvik and in 2005–2006 by Stefan Wessman.

In 2001–2003 the investigations at Egelskär concentrated on documenting and raising visible artefacts from the sea floor. This was partly done because of the obvious risk of looting at the site. The results of the fieldwork were published in an article by Alvik and Georg Haggrén in 2003.

Among the raised artefacts from 2002–2003 were several complete ceramic vessels of stoneware hardened at a high temperature. The vessels are most likely manufactured in Bengelrode in Lower Saxony and date from the 1310s–1330s (Alvik & Haggrén 2003, 20). Two metal artefacts were raised in 2002. One is a Romanesque style church bell, which unfortunately bears no inscriptions. The church bell is, however, one of the oldest that has survived in Finland. The other raised artefact is a bronze pot that was found in connection with the wreck parts (Alvik & Haggrén 2003, 21–22).

Other interesting finds from the wreck consist of stone material (Alvik & Haggrén 2003, 22). Both pre-forms of whetstones and natural shaped limestone were found at the site. The whetstones were sent for petrographic analysis to Kari A. Kinnunen at the Geological Survey of Finland. The material is suitable as whetstones, even if it is not of the best quality. In his report Kinnunen suggests Norway, Germany, France or Scotland as the origin for the material (Kinnunen 2006, 4–5). A sample of one of the stones was incorporated in a Norwegian project which will carry out further analyses on the material and try to pinpoint its provenance. The project involves cooperation between the Norwegian Maritime Museum and University of Oslo's Mineralogical-Geological Museum.

The limestone was analysed by Anneli Uutela PhD at the Geological Museum of the University of Helsinki. It turned out to be white chalk of a form that occurs sparsely in Scania and along the German and Polish Baltic coast, but plentiful in Denmark (Uutela 2006). Chalk was mainly used in construction work, but also in glass and iron production during the Middle Ages (O'Ceallacháin 2006).

In 2005 a test excavation was carried out at the site. A test pit was made close to the only visible ship timbers, the keel and the mast step, since it was feared that the ship had completely broken up in the shipwreck. The purpose of the excavation was to find out if more of the structure had survived.

During the excavation it soon turned out that the remains of a clinker-built ship were hidden in the sediment. Alongside the keel, several strakes were preserved, held together by fragments of frames. In the end of the excavation, the test pit was covered with mosquito netting to protect the wreck from seaweed and molluscs, while allowing fine sediment to settle on the exposed wood (Wessman 2006b).

In August 2006 a four-week excavation was carried out at the wreck site of Egelskär. The various parts of the wreck are today situated on a steep slope surrounded by underwater cliffs, forming a small canyon at the site. Most of the cargo is situated in one spot, 20 metres from the wreck, apparently as the result of the vessel overturning on the underwater cliffs before it sank. The excavation in 2006 concentrated on the wreck itself, not on the cargo.

The remains of the wreck are very fragmentary due to the circumstances of the shipwreck. The vessel sank on a steep slope consisting partly of smooth cliffs and partly of large boulders. The shallow water together with slow sedimentation at the site were not an especially favourable environment for the preservation of the wreck. It was flattened out and broken into pieces before becoming covered with sediment.

At first, a layer of recent, loose sediment approximately 20–70 cm thick was removed from the excavation area. After that the wreck was excavated stratigraphically in 10-cm layers, working down the slope. The sediment was removed from the site with an induction dredge and pumped through a sieve. The artefacts found in connection to the wreck were few, mostly bone fragments and a few sherds of the same kind of pottery that the vessel carried as cargo. Directly on the bottom planking, several lime stones that had served as ballast were found. The small number of finds is not surprising taking into consideration that the vessel overturned before it sank.

The position of the wreck parts and discovered artefacts found were recorded by trilateration measurements from ten datum points that were drilled into the cliffs above the wreck site before the excavation. The diver took the measurements and gave them by radio to the surface, where they were transferred to a computer and immediately checked. The site was also photographed both digitally and in colour slides; also digital video was used for documentation. Finally, a map of the exposed timbers *in situ* was drawn to 1:10 scale.

Beforehand, we were aware of a large piece of concretion (approx. 120 x 60 x 80 cm) in the bow part of the wreck. Since there was no reason to believe anything else than it belonged to the context, it was decided that we should raise the object during the excavation in 2006. That turned out to be a time consuming project. The seafloor around the object was also covered with concretion originating from

the object. The concretion had got a good grip around stones, a frame and the seafloor, from all of which the object had to be carefully removed. The excavation soon revealed that the object actually was an almost complete barrel with unknown content. Finally, the barrel was released from the bottom and raised with most of the concretion still covering it. It was transported to the conservation facilities at Hylkysaari in Helsinki for further investigations to which I will return later.

The remains of the wreck are planned to be raised and analysed in 2007, therefore only some basic features will be presented here. Judging from the scarfs in the planking the vessel sank with the stern towards the shore and the bow downwards the slope. The stern of the ship is completely gone. The keel survived to a length of approximately 8 m, but other parts of the hull are preserved only from the bow to just before amidships. The vessel was clinker built, and on the starboard side parts of at least six strakes have survived. The garboard is 40 cm wide, the other strakes 25–30 cm wide with a tendency to decrease towards the gunwale. The frames were broken up in short pieces when the hull opened up and was squeezed towards the underlying cliffs. The remaining fragments are 8–10 cm wide with a rectangular cross-section. The mast step is the most massive timber that has survived. The remaining part is 2.7 m long and 30 cm wide. Around the mast step are some timbers that seem to have supported it. A small area on the port side of the bow is still to be excavated; this is where the barrel was situated. After the excavation the remains of the wreck were covered with geo-textile for protection (Wessman forthcoming excavation report).

After the excavation the work with the barrel continued. The barrel was x-rayed with a portable x-ray machine in order to gain information on its content before proceeding with the excavation of the barrel (Lehtosaari & Saarenpää 2006). The x-ray clarified several things to us. In the concretion on top of the barrel, a chain that had corroded away a long time ago had left distinct cavities that showed up as shadows in the x-ray pictures. During the removal of the concretion from the barrel, the cavities left by the chain were observed and photographed over a large part of the upper side of the barrel. A chain, possibly the anchor chain, ended up on top of the barrel, contributing to the preservation of the barrel. Around the lower end of the barrel the seafloor had turned in to a solid substance that was lifted together with the barrel. In the x-ray pictures it could be seen that within the substance short pieces of ropes had been preserved.

The contents of the barrel were difficult to interpret. The whole barrel seemed to be filled with something that showed up as thin lines in the x-ray pictures. Occasionally one could see groups of rectangular objects. The only exception from this pattern was in what was assumed to be the upper end of the

barrel. In this part of the barrel there was an object so dense that the x-rays could not penetrate it. From some angles the object turned up as rings in the x-ray pictures. A small sample was taken from the material and sent for material analysis (SEM-EDS), which revealed that it was almost pure tin (Hornytzkj 2006).

After the x-ray, the concretion was carefully removed from the barrel. On the upper side of the barrel the planks were missing, revealing the content. The barrel was full of small (approx. 9.5 x 2.3 x 0.7 cm) iron bars, thought to be so called osmund iron, which was, among copper and tar one of the most common trading goods in the Baltic Sea during the Middle Ages (Björkenstam 1971, 6–8, 10; Magnusson 1998, 43f). On top of the iron bars was a stripe of tin, that had been rolled to form a spiral, placed there before the barrel was closed. At the moment of writing we have just begun the process of dissolving the content of the barrel (Pouta & Wessman forthcoming report).

The Svartså wreck

For several decades the Svartså wreck was set aside, but not completely forgotten. The parts of the wreck that were not included in the museum's collections were looked after by a local enthusiast, Kaj Karlsson, who stored them in his garden covered with plastic sheets, following instructions from the authorities. He did however more than that. Since he found the wreck interesting and was worried about the wood starting to crack when it dried, he actually freeze-dried the pieces outside during the first winter (Karlsson pers. comm.). During the 1980s and 1990s the site was visited occasionally, but no decisions were made about the future of the stored timbers.

From a researcher's point of view the construction of the ship felt still in the beginning of the 21st century to be as old-fashioned as it appeared in the 1970s. In the autumn of 2004 it was decided to date the Svartså wreck using dendrochronology, which has proven to be an accurate method for dating wrecks. In March 2005 a series of eight samples were cut from the dry planks and frames that Karlsson had stored in a shed in his garden (Wessman 2005). The samples were sent to the University of Lund for analysis. At the same time, an agreement was made that when the dating of the wreck was ready, a decision had to be taken concerning the future of the timbers.

The results of the analysis turned out to be very interesting (Table 1). Surprisingly, the new dating contradicted the radiocarbon date and supported the researcher's point of view, *viz.* that the trees that were used for the construction of the ship were cut down at the very beginning of the 15th century. For two of the samples, the felling date of the trees was

Table 1. The results of the dendrochronological analyses.

CATRAS no	Sample no	Wood sp.	Description	Measured	Sapwood	Last preserved tree-ring	Estimated felling date
55363	D1	Oak	Plank	2rd. 177 years	0 years	1380	After 1389
55364	D2	Oak	Plank	1rd. 179 years	0 years	1351	After 1360
55365	D3	Oak	Plank	2rd. 214 years	8 years, no wain-edge	1396	1397–1411
55366	D4	Pine	Plank	4rd. 174 years	86 years, wain-edge preserved	1406	Winter 1406/1407
55367	D5	Pine	Frame	3rd. 122 years	56 years, wain-edge preserved	1406	Winter 1406/1407
55368	D6	Pine	Frame	2rd. 130 years	26 years, no wain-edge	1366	1410 ± 20
55369	D7	Pine	Frame	3rd. 134 years	47 years, no wain-edge	No dating	No dating
55370	D8	Pine	Frame	1rd. 90 years	33 years, no wain-edge	1384	1421 ± 20

fixed to the winter of 1406–1407 and the rest of the dates can all be related to the same felling date (Linderson 2006). The analysis comprises however more interesting data than just the felling date for the trees. All the pine samples, four from frames and one from a hull plank, come from trees that had been growing in central or southern Finland, while the oak samples, all from hull planks, come from oaks growing in the Gdansk/Pomerania area in present-day northern Poland. This points to trade in timber either way between the areas, something that does not necessarily show up in written sources.

Since the use of different wood from two completely different areas is very interesting for the research, an additional series of six samples was taken from the oak parts of the wreck in March 2006 (Wessman 2006a). This time samples were also taken from the actual wreck, which turned out to be completely covered with mud. The samples concentrated on the oak parts since the felling date of the oak (1397–1411 with 1403 as the most probable felling date) was calculated with reference to sapwood statistics, not in absolute terms as in the case of the pine. The analyses of the additional samples have not yet been completed.

When the new samples were taken, Karlsson was finally released from his 'duty' as guardian of the timbers, a task that he preformed without fail for more than 30 years. The timbers were transported to the Maritime Museum where they were incorporated in the collections.

Why the radiocarbon method gave so different results is not known. Unfortunately it has not been possible to find any report in the archives of how and from where the samples were taken. The only mentioning about the samples is in the radiocarbon report and it simply says; 'wood from a ship' (Jungner 1979, 30, 34). One possibility is that the timbers were at some point mixed with some other timber, which could explain the difference.

The Vidskär wreck

In May 2003, another shipwreck site in the Finnish archipelago was found in the municipality of Korpo

(Fi. Korppoo). The discovery of this site is similar to that of the Egelskär site. Sports divers from the Nautic Club found a few artefacts on the seafloor but could not find any sign of a wreck except sparse wooden parts. The divers raised two three-legged bronze pots (Ehanti 2005a; 2005b) which they forwarded to the National Board of Antiquities, but left some other artefacts untouched (Fig. 3). The pots were typologically dated to the latter half of the 14th century or beginning of the 15th century. The sports divers returned to the site to look for the wreck, but they only found some eroded wooden parts. Later on, the site was even mapped with side-scan sonar without any results.

In October 2003, the Maritime Archaeology Unit visited the site. The site looked exactly as described by the sports divers; with a couple of artefacts and some widespread unidentifiable timbers. During the last dive, the remains of the wreck were found, almost by accident. On the stony bottom a suspicious ship-shaped stone formation caught the diver's attention, and a closer look revealed that a keel was sticking out of one end of the stone pile. The only larger structure that is left of the wreck consists of the ballast stones and, most probably, a well-preserved ship bottom beneath them.

In January 2006 the site was carefully mapped with a Remote Operated Vehicle (ROV) in order to gain a picture of its extent. The site will be visited again during the spring of 2007, this time we will concentrate on gathering information of the wreck remains.

Discussion

One of the questions presented at the beginning of this article was why we know of so few medieval wrecks from Finland. The answer is probably quite simple: there has not been any research concentrating on finding or identifying medieval vessels. However, the amount of wrecks reported to the National Board of Antiquities on a yearly basis has been somehow constant over the past decades. The number of known medieval wrecks has, despite this, remained unchanged between the 1970s and the end of the 1990s. Something in this picture does not seem to be right and it calls for an explanation.



Fig. 3. A pitcher standing on the seafloor at the Vidskär site. Photo by Stefan Wessman/National Board of Antiquities.

Since the 1950s, maritime archaeological research in Finland has to a certain degree focused on large complete ships full of cargo. The first wreck to arouse national interest in Finland was that of the Russian freighter *Sankt Nikolai* that sank during the second naval battle between Sweden-Finland and Russia at Ruotsinasalmi (Svensksund) in 1790. The wreck was found in 1948 and fieldwork on it took place in the 1950s and 1960s, but also later on (Kotka, St Nikolai, MAU archives). In the 1950s the cargo ship *Sankt Mikael* (1747) was found in the southwestern archipelago. Since that time fieldwork has been carried out at the wreck on a regular basis (Nurmio-Lahdenmäki 2005). In 1967 the *Jussarö II* (1785) wreck was found (Edgren 1979; Grönhagen 1980; Ahlström 1997) and the same story has continued with the wreck of the *Vrouw Maria* (1771) as one of the latest examples (e.g. *MoSS Newsletter* 1/2003).

All the above-mentioned wrecks have a few things in common: they all date from the 18th century, they are extremely well preserved with intact hulls and some even with standing masts, and they match exactly the picture of a wreck that most people have in their minds. Over the past decades several other not so well preserved shipwrecks have been excavated, but who remembers them? The large, complete wrecks are the ones that are remembered and form the image of wrecks that people have.

Several medieval shipwreck sites in Finland, Egelskär, Lapuri, Vidskär, have a similar story of discovery.

The first parts of the cargo were spotted by sports divers, but they were not able to find a wreck at the site. In many cases they did find wood at the site, but they report it as less significant information in connection with the statement that there is no wreck at the site. This is because the mental picture of a wreck among Finnish sports divers is a well-preserved construction and not tiny wooden fragments that might indicate that something more is hidden in the sediment.

Commitment to medieval research during recent years has shown that medieval wrecks are present in our waters, and the question is rather of identifying them. The medieval wrecks that we have identified so far have all foundered in shallow water (< 10 m), which makes them exposed to destructive formation processes such as wave and ice movement and they will naturally not be as well preserved as younger wrecks. Also, the medieval wrecks found so far are all small representatives of the light Nordic clinker building tradition and not comparable in strength and timber dimensions to the much larger 18th-century cargo ships.

So far we have only investigated the most obvious cases; a careful inventory of potential wrecks in our archives combined with control dives and fieldwork would most certainly result in new finds of medieval wrecks. Strangely enough, in this respect we have actually been quite successful in Finland. The larger number of medieval ship finds, for example, in Denmark and Sweden is partly a result of a more

developed cultural heritage management system. Two examples of this are the large number of medieval ships found in connection with major projects at Helgeandsholmen in Stockholm in the 1970s (Varenius 1989) and in Roskilde in the 1990s (Bill, Gøtche & Myrhøj 1998). This gives that we in Finland have percentually found a higher number of medieval wrecks in open water than in comparable countries where open-water wrecks are more rare.

In the introduction it was also asked what new information we can produce about seafaring in the Middle Ages through new research. The medieval seafaring tradition cannot be taken out of context; it needed a long period development to become what it was during the Middle Ages. The prehistoric finds mentioned in the introduction show that seafaring was known to the people inhabiting this country after the last Ice Age. There is a log boat tradition from the Stone Age to the 20th century, and a sewn boat tradition that goes back at least to the end of the Iron Age, but probably all the way to the Bronze Age. From the Merovingian Period (AD 550–800) onwards, cremation cemeteries with iron rivets representing the Scandinavian clinker building tradition, appeared in both Ostrobothnia and southwestern and southern Finland. Based on the evidence from the Nordic countries we know what these ships looked like, but we lack information or concrete evidence concerning Finland. This means that we do not know if other influences or for example the sewing tradition affected the building tradition, or if the Scandinavian clinker tradition simply replaced the existing tradition?

The same problem concerns the Middle Ages. From this period we have a couple of excavated wrecks, but almost all analyses and interpretations are lacking. Without them it will not be possible to say what types of vessels were built and what tradition they followed. The really interesting questions, such as the time of changes in techniques or strategies and what triggered them, will need several excavated and analysed vessels before we can provide answers. The Finnish medieval wrecks so far seem to be representatives of what we would call small-scale seafaring, which gives research another interesting dimension. If these vessels are the representatives of peasant trade, it gives us an opportunity to study a phenomenon that is mentioned in documentary sources, but of which hardly any detailed records have survived. The cargo of the Egelskär wreck seem to be a little bit too valuable to represent peasant trade. Maybe these wrecks are representatives of a market so small that it did not need larger ships?

Ironically, the first time that we can actually prove scientifically that Finnish wood was used to build a medieval ship, as in the case of the Svartså wreck, it is in connection with wood from the Pomerania/Gdansk area. The close felling dates of the pine and the oak parts of the ship exclude the possibility to explain the phenomenon with repairs. The ship was built on

a single occasion using timbers from two different locations. This opens up discussion on the timber trade in the Baltic region in the early 15th century.

One possibility is that the ship was built in the area from where the oak came, for example in Gdansk which had a major shipbuilding industry at the time (Paner 1999, 49). This would have required import of curved timber from Finland, something that as far as I know is unheard of before. One should also bear in mind that at least one of the hull planks was of Finnish pine, even if there was no lack of oak in the region at the time.

Another possibility is that the ship was built in Finland, which means that the wood would have been imported from the Polish area. This is not unthinkable; we know that export of timber from this region began already in the 14th century (Bonde, Tyers & Wazny 1997, 202). This would mean that there was a tradition of building ships of oak in Finland, since there would have been no problem to find suitable pine or spruce for shipbuilding. A commonly accepted opinion in Finland is that all ships of oak are of foreign origin. The only reason for this opinion seems to be that oak is not very common in Finland, presently growing only along the south/southwest coast. During the medieval warm climatic period (800–1300) oak, however, was far more common in Finland. It has not been possible to date the dendrochronological samples from the Lapuri wreck (Zetterberg 2004). Maybe this is an indication that the material came from Finnish oak, for which the basis curve is insufficient?

There are, of course, other possible scenarios for the ship, but none of these questions can be fully answered without further investigation of the wreck. This was also one of the reasons for taking the additional dendrochronological samples. The question that bothered the researchers from the beginning, the age of the wreck, was answered but together with it came a host of new questions that we did not even understand to ask.

The Egelskär wreck is a good example of the international character achieved by trading in the Baltic Sea during the Middle Ages. With its cargo originating from a vast area, including pottery from Lower Saxony, limestone from Denmark and iron of probably Swedish origin, it has as much to offer in the international and national perspective alike. A wreck like this offers so much information that it is impossible to address without the help of researchers from countries that are represented in the trade goods.

The barrel with its content of osmund iron was once one of the most common goods to be traded over the Baltic Sea. Despite that, reference material for the find has not been easy to find. So far, the only other example of this type of cargo seems to be from the Polish 'Copper Wreck', in which eight barrels of

something thought to be osmund iron was found (Litwin 1980, 218).

Together with the Vidskär wreck, Egelskär is an example of what the Finnish waters can offer at the most. Both are ships that sank far away from land during the journey, apparently with all equipment and cargo on board. This is what makes them unique; most finds of medieval wrecks are abandoned or deliberately sunk ships, often found in harbours. There are of course exceptions, for example the Danish Vejby cog (Thomsen 2002), the German Darss cog (Förster 2003; Förster & Jöns 2003) and the Polish 'Copper Wreck' (Litwin 1980).

Concluding remarks

So far we have opened the door only slightly onto seafaring in the Middle Ages in Finnish

waters, realizing that in most cases one answer opens for several new questions. We are already a great deal wiser than a couple of years ago, but there is still a long way to go before we can start to draw any broader conclusions based on the material. What we need to do is continue the excavations, which will be the case at least with the Egelskär wreck but hopefully also with some of the other partly investigated or newly found wrecks. After that, a proper documentation of the timbers with modern methods and comparative analyses needs to be done on all the five wrecks. In combination with that a systematic search through the documentary sources needs to be done. All this work needs to be done before it even will be possible to try to establish a medieval history of seafaring for Finland. This work will need cooperation with several Finnish and foreign researchers and institutions – work that has already started.

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Notes

1. Cremation cemeteries under level ground were the predominant burial form in Finland and Estonia during the Middle and Late Iron Age (c. AD 550–1150/1200). Typical features are that they are not visible above ground and that the burned bones and artefacts are scattered into the cemetery in a random fashion, making it impossible to distinguish separate burials.

2. The Bureau of Maritime History that was formed in 1968 was integrated into The Maritime Museum of Finland in the beginning of the 1990s. In 2004, the Maritime Archaeology Unit was formed as an independent unit under the Department of Archaeology within the National Board of Antiquities.

3. At the time of writing it has not been possible to decide whether it was the same piece of clothing as in 1993 that was dated or one of the other similar pieces of found in the wreck.

4. The Finnish master curve is insufficient due to the fact that pine and spruce were more common and therefore favoured as building material.

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MEDIEVAL ARCHAEOLOGY MADE PUBLIC

MEDIEVAL CULTURAL LAYERS IN DIALOGUE WITH MODERN SOCIETY – Challenges for urban archaeology in Finland (Turku) and Karelia (Vyborg)

Market archaeology

I see a challenging analogy between the circulation of money and goods on the global market today and treatment of cultural heritage. In market economy it is beneficial to put one's monetary property into motion – at the owner's risk. We know that rules of marketing and human sciences are forced to shake hands but they do not go hand in hand easily. Trials to calculate the value of cultural heritage in numbers are at the same time both ridiculous and dangerous.

But frozen heritage does not benefit human interaction and welfare. Conservation of heritage in storages, documents, databases, *etc.* means its stabilization or even demolition. In exchange, its value will be real and it will grow.

Of course I do not speak for a black market of antiquities! Researchers change material culture into immaterial entities suitable for the immaterial market of information. Interpretations are transformed into readable format in text or another type of communicative code system such as illustrations or performance. In this way *material* culture of the past changes into the *mental* culture of today. Thought-provoking ideas derived from the material heritage stimulate debate which in turn will increase the cultural richness of our generation and the heritage we leave to generations to come.

In today's Scandinavia human sciences (hopefully!) resemble a market place also in that we are free to offer different products of our handwork to colleagues and 'customs' without strict control by any single authority. We are not forced to obey any single political direction. Quite the contrary: a broad variety of interpretations is encouraged. Can we speak of 'market archaeology'?

The youth of urban archaeology in Turku

This article discusses medieval archaeological material in motion in today's contexts. The quest for knowledge and development of conclusions are a dialogue between scholars and empirical evidence. Accordingly, new interpretations are mediated to the general public in two-directional interaction. In the post-processual human sciences there are

no one-way flows of information from 'objective' empiria to an observer or from an authority to a passive audience. Material cultures of the past are deliberately used as surfaces for reflecting today's multicultural values.

In dialogues with the empirical material a young researcher has to stand errors and confusion. Communication with the audience is a learning process, too. In Turku the research of medieval archaeological material is proceeding in promising directions and at accelerating speed. Connections between academic studying of empiria and public in large are still on a developing stage. I see the collection of articles of the present volume as a demonstration of resources that are available for notable steps forward in the near future.

Many of the authors of the current publication regard themselves as the *young* generation of town archaeologists in Turku. The value of the medieval and post-medieval material cultural heritage was revised in the 1990s *e.g.* at excavations in the yard areas of selected medieval manor houses in Southern Finland (project: SUKKA = *Suomen keskiaikainen kartanolaitos*; see Niukkanen 1997; 1998). New sources of information caught the archaeologists' eye. The methodological development of field methods continued in the late 1990s and the large town excavations of the medieval quarters of Turku were in the foreground (*e.g.* SKAS 1/1999; Suhonen 2004; Seppänen 2006).

After the change of the main orientation of research towards archaeology of historically recorded times at the University of Turku in the mid-1990s the empirical material has multiplied. The study of archaeological material of historical times is appreciated at the Finnish Academy of Sciences and in certain private foundations, which has made it possible to finance a few studies in this area (*e.g.* Seppänen 2003; Harjula 2005). The excavations in the medieval quarters of the town awake the interest of town-dwellers and visitors. Excavation staffs have been forced to reconsider PR policies, and the current trend is growing openness.

The research of medieval and post-medieval sites is still a young, flexible and developing field in Finnish archaeology (overviews *e.g.* *Turun*

maakuntamuseo: Raportteja 6 [1984]; Peltonen, Haggren & Niukkanen 2000; SKAS 1/2006; Turku: Taavitsainen 2003; Majantie & Motuste 2007). For constructive provocation I shall argue for motivation for archaeologists' acting as stimulators of flourishing thoughts not only in scholarly societies but also in interaction with the public. I compare a few current trends in the archaeological work in Turku and in the medieval port town Vyborg on the Karelian Isthmus.

This essay is a continuation of my presentation at a national seminar organized by the Archaeological Society of Finland in 2005 (Suhonen 2006a). My viewpoint here is that of a critical journalist. The background is my own experience as a field archaeologist and researcher in both towns. Thus, I am aware of the continuous misbalancing that an archaeologist has to face in sharing his restricted working time between research and other time-consuming tasks.

Pressure caused by the rules and practices of the market economy is the main reason why researchers in cultural studies tend to exaggerate carefulness. We defend ourselves by acting as defenders of countless cultural values. Many-sided views on past cultures open possibilities to see our own acting in modern society as development of culture beyond the traditional border zone between established cultural life and everyday life. The human sciences are expected to participate in the development of the Finnish economy and innovative cultural life in general. In a vacuum within the walls of research institutions, archaeology will not survive either economically or morally.

Material, culture and heritage

Is *culture* equal to all human activity? Is *material* equal to objects with tangible physical dimensions? How should we treat preserved material culture as our *heritage*? Is this part of our common heritage material, cultural or both?

In common parlance *culture* is frequently opposed to *e.g.* economy or so called realities in political affairs. The design of tableware is art (culture), production is industrial (not culture), selling and buying is business (far from 'soft' values). The collection and use of vessels in a household does not necessarily tell much about the users (how about welfare and taste?) and broken vessels are simply a waste problem (Antitheses of creative culture? Raw material for innovations and works of modern art!).

The administrative categorization of many-faceted human activities implicitly dictates our ranking of values. The Ministry of Education participates in the competition for financial resources at state level and at the grassroots level local actors do the same. The active production of culture is no longer a

natural whole. Instead the process is split according to means and infrastructure of working. Musicians are not supposed to paint and researchers have to refuse to invest time in performances.

As far as archaeological research questions are considered divisions between cultural acts in the past and other kind of activities in past societies would be destructive. Our source of information consists of results of both intentional production and reproduction of material culture and by-products: worn utensils and unintentionally deposited waste. Thus, only part of the archaeologically informative links to the past correspond to the 'high culture' of modern Western society. Valuation of only part of it as archaeologically interesting would be regression back to the early decades of archaeological research. In the worst case, the preservation of sites and portable archaeological material would be limited again. It would hardly be desirable to set aside the modern methods of precise collection of portable artefacts and ecofacts now or to limit protection of medieval sites again to the most outstanding monuments only.

In other words, I am ready to place all the physical objects which were produced by man in the past and which despite post-depositional processes have been preserved to our days under the heading of material culture (*cf.* Suhonen 2003b). Living environments of man are included as well, of course.

Archaeologists share responsibility for the material *heritage* with ethnographers, art historians *etc.* Disputable borders between remains protected by the Antiquities Act and legislation protecting architecture, art *etc.* cannot be touched upon here. In case medieval or post-medieval buildings such as churches and manor houses are studied by archaeological methods they can be seen as part of the continuum from the bottom of the cultural layer to the pinnacle of a tower. Heritage is our property now. We are responsible for it to past, present and future generations.

The ethical base of antiquarian work for the protection of ancient remains is appreciation of collective experience of mankind and history as a prerequisite of our own civilization. In terms of information potential there is no hierarchical listing of different portable and non-portable remains. All stratigraphic layers and the portable artefacts buried there are equally valuable and their practical usefulness depends on research questions. As a consequence, we try to collect 'everything' from the field. The collections grow at uncontrolled speed. As long as we regard them as valuable and assume them to be of equal value in the future we are morally bound to taking care of depositories and archives in the best possible way. But storing and collecting archives is not a sufficient goal for work itself.

The illusion of the unquestionable value of all cultural heritage is naive. Natural resources are of

little value unless we are to apply them in practical use. Changes in technological development, political situations, *etc.* strongly affect their prices on the global market.

Potential availability vs. rarity of a raw material is important, of course. But we are proudly collecting medieval rubbish: undecorated pieces of redware vessels, animal bones, *etc., etc.* Exploding the amount of collections and archives leads to inflation. It is not self-evident that future generations of researchers welcome the material heritage in our museums without seriously questioning its purposefulness.

The young generation and responsibility

Archaeology cannot escape the competition over real resources for fieldwork and research in real currency. In abstract terms, it is clear that innovativeness like art, social activities and the human sciences form a highly appreciated base for welfare and peace. This in turn is a fundamental prerequisite for economical development and thus worth public investments of funds and attention. Research of the past is a huge possibility to participate in building the future. But the number of euros invested in this construction work seldom corresponds to the scope and depth of visions.

As far as research of medieval history is considered, archaeology has not gained any established position yet. We have to struggle for growing appreciation among decision-makers and the public at large. Our starting point in the general society is within the category of 'culture' which regrettably is not the most attractive area of either public or private financial investment.

The historical importance of Turku as the episcopal and administrative capital of the eastern part of medieval and post-medieval Sweden gives researchers of the past of this town high responsibility. We are deeply involved because, according to our knowledge, the quantitative potential of organic medieval layers as sources of intact archaeological information is of greater amount than anywhere else in Finland. The volume of town excavations is bigger than in any other town in Finland and the material is within easy reach in the collections of the Turku Provincial Museum. At the Department of Archaeology at the University of Turku in average every second MA thesis is based on medieval or post-medieval material. Between 2000–2007 the number of these works has been about 20.

It is self-evident that Turku is not the only fast developing centre for lively archaeological study of medieval and post-medieval material remains in our country. The thorough survey of the archaeological potential in 15 post-medieval towns ([www.nba.fi/fi/kaupunkiarkeologia], see also Mökkönen in this volume), archaeological research of the medieval

town of Naantali as well as field work in the post-medieval towns of Oulu and Tornio in northern Finland are worth mentioning here (*e.g.* Uotila, Lehtonen & Tulkki 2003; Kallio & Lipponen 2005; Ylimaunu 2006). Surveys and excavations of medieval village sites open new perspectives on the medieval countryside (*e.g.* on the coast of the Gulf of Finland: [www2.harnosand.se/maritime/]). There are also interesting research projects focused on artefacts, medieval wrecks, private castles, stone churches, *etc.* (*e.g.* [www.nba.fi/fi/vakp]).

Urban archaeology has played a leading role in recent development of field methods in our country. Because of the quantitatively remarkable volume of stratified cultural layers Turku is the most suitable working ground for learning of stratigraphy. The complicated structure of construction remains and preserved medieval layers encouraged us to apply the stratigraphic working method and to consider stratigraphy from theoretical viewpoints. Discussion with Scandinavian colleagues has been crucial for the learning process (*META* 4/1996; Eriksson, Larsson & Löndahl 2000; Suhonen 2004; Seppänen 2006). Currently stratigraphy is a usual practice at Finnish excavations of prehistoric sites, too.

In Turku masses of material await the attention of curious students and post-graduates. The community of archaeologists is growing and thus the power potential of the medieval material is increasing. But on the other hand I might say that clustering of young people training in a single field of research – medieval Turku – may become a problem in itself. Unwritten rules of discussion within the community are fairly strict already today. The background is shyness: it would be frightening to express openly or to publish results in a preliminary stage. Instead, it has become the custom to remain silent and to use extremely careful vocabulary.

When are research results mature enough? The public is curious to know how people lived in medieval Turku and what happened there in the Middle Ages. Archaeological finds can give excellent answers even if conclusions are still developing. The pressure to put new material under the spotlight may rather accelerate the process in a dynamic way. Increasing dialogue with people outside the academic sphere will hopefully force us to a more dynamic exchange of experiences and opinions among ourselves, too.

In research on medieval and post-medieval times archaeological material can challenge standardized interpretations of history to 'duels' (Suhonen 2001; 2004). Views derived from material remains either support or confront conclusions based on written documents, medieval art, *etc.* According to the classical and medieval tradition, such games are public entertainment. At the same time they are an essential part of social life and politics – all over the world since very early prehistoric times. At first glance established chronologies or views seem to

be superior on the battle scene if the opponent is an immature archaeological observer. But focusing the debate on specialized questions will make the dialogue balanced and exciting.

At present we face big challenges from outside excavation areas. We need methods for communication beyond academic or antiquarian work and eager or potential users of its result. My vision is that medieval archaeology can continue as an innovator in methodological discussion in Finland.

Political pasts

The translation of material culture into languages of common discussion is a political project. For example, interpreting the history of a nation, tribe, family or other self-confident group is a demanding political act. Connections between archaeological material, ethnoses and nationalism have varied from the constructive building of identities to destructive reasoning for violent oppression. Previous research is of course the base for new interpretations but at the same time stereotypes are major enemies of fresh thoughts.

The end of 'pagan' times is illustrated in the last poems of our national epic, the Kalevala (Poem 50, see [www.finlit.fi/kalevala]). Also in the scientific study of history, this period of cultural transition is traditionally painted in dramatic colours. The romantic times of Vikings and the heroes of Kalevala were over, peaceful lake districts became resource areas of the Swedish crown and people were forced to become servants of a strict Lord in Heaven... The two poles of the stereotypical picture are spontaneous self-organization of local small societies and artificial bureaucratic systems without any local background.

The Kalevala was composed by one man: Elias Lönnrot. He based it on the folklore that he had collected in Eastern Finland and Karelia but the main part of the epos is poetry written by Lönnrot himself. During his work in the 1830s Lönnrot did not have any archaeological material in his use. The discovery of 'national' material culture was a later phase of Karelianism towards the end of the 19th century. In the 19th century and until the Second World War interpretations and illustrations in a romantic spirit were politically logical and in a way necessary in our country (for critical views, see Fewster 2006 and cited sources).

A few Iron Age finds and sites have become symbols of Finnish national romanticism. Standing on the top of a hillfort 'ancient Finns' in national costumes are hosts and hostesses ready to defend the green lake-districts of their ancestors against Christianity. In works of art ornaments found in Karelian Late Iron Age inhumation burials are worn by the girls

and matriarchs of Kalevala. The heroic men of the Kalevala world fight with weapons which have parallels in the archaeological material.

Bringing concepts from research history into current scientific discussion can easily lead to the repetition of outmoded conclusions. Today it is easy to condemn national romantic stereotypes as old-fashioned and irrelevant but as a matter of fact this is self-betraying. Art and literature of the years of national awakening were essential building stones of the current state cultural agenda. Archaeologists are in no way forced to accept any traces of traditional ways of seeing but it is extremely hard to leave them behind.

In Finland the transition from prehistoric times to the Christian Middle Ages in the 12th, 13th and 14th centuries has been traditionally seen as times of confrontations in a scarcely inhabited periphery between the Western Catholic world and the Eastern Orthodox culture. But the development of a medieval kingdom and changes in pre-industrial societies cannot be grasped with modern concepts alone. Furthermore, the cultures of medieval Fennoscandia are not parallels to feudal or urban societies of Central Europe. Archaeological research of the northern coastal areas of the Gulf of Finland enriches the picture of trade contacts and the position of these districts between southern maritime networks and relationships between medieval agricultural villages and the Lapps, dwellers of *e.g.* the lake districts in present Finnish territory.

Cultures of 'pagan' times are frequently seen as wild and distant while the Middle Ages mark the dawn of 'logical' civilization. In archaeological material cross pendants symbolize transition. Medieval innovativeness and internationality are present in the material heritage as vessels, shoes, coins, etc. Medieval society is a useful and deceptive surface for projection of the two opposites of stabilization and change. Distance between our everyday systems and medieval Christian values and medieval life is long enough to allow us freedom for some simplifications or exaggerations. Nonetheless, Christian values and medieval administration are not as distant and hard to approach as prehistoric cultures. Town excavations strongly support our illusion of medieval progress because the traditional way of life of the countryside cannot be attained.

Medieval society was not democratic. If we so desire, we can see the medieval centuries as a period of strong pressure by the leading classes and put emphasis on the unfortunate destiny of suffering tax-payers. But it is also possible to note that in a hierarchical system everyone has their own space and to emphasize the mutual benefit of the medieval upper class and the more silent and less prosperous members of the medieval society. We can admire the beauty of ecclesiastical life, or see the role of the Catholic Church as conservative and restricting.

Knights and soldiers may be given the role of heroes or we can see medieval warfare as ridiculous game. The position of women and children in society, the meaning of prestige, *etc.* can be added to the list of themes the understanding of which in the medieval context strongly depends on the political orientation of the interpreter.

Compact and split pasts

It is a fact that in the history of Finland the turn of the 13th and 14th centuries is a period of remarkable changes. Christianity, administration and the re-organization of society into four classes were applied in the eastern part of Sweden as 'ready' systems. The number of medieval towns in Finland was only six. Thus, current research on the two largest medieval urban centres, Turku and Vyborg, is necessary for understanding the urbanization process in the eastern Baltic sphere (Suhonen 2005).

A compact picture of 'true' pasts has changed from a daydream to the nightmare of researchers. We would not accept any authority to dictate facts nor do we desire to be dictators ourselves. The simultaneous existence of different pasts is natural to us. Nevertheless ranking no doubt prevails among the scholars on each research field. Junior and senior researchers are not equal.

The splitting of scientific knowledge into parallel, overlapping and contradicting views confuses the audience. Travel in a many-coloured and uneven landscape of the past demands training and it may become too exhausting for the layman. To prevent him from giving up and losing his curiosity we have to summarize a reliable chronological fundament. Without it the goal to serve the public cannot be achieved.

In both Turku and Vyborg the interpretation of the earliest phases of the urban history is changing. The authors of the new alternatives are highly appreciated authorities. Despite this, it will take a while before the repainted picture of the past will become available to the public. The open market of scientific knowledge resembles a real market place: the meeting of sellers and customers is a matter of competition. For me, visiting the market in Turku and in Vyborg are different experiences.

Early medieval Turku and Vyborg

According to Docent Markus Hiekkänen the establishment of Turku by a historical water route in the mouth of the river Aurajoki was an agreement between the Swedish crown, the Catholic church and the Dominican order. He concludes that Turku was established as a medieval town at the end of the 13th century, *i.e.* during Christianization and the organizing of medieval taxation in southern

Finland. Hiekkänen's hypothesis challenges the more traditional interpretation that Turku developed from a port of Hanseatic traders into a medieval town gradually in the 14th century (Hiekkänen 2002; 2003a; *cf.* Gardberg 1969; Pihlman & Kostet 1986). Hiekkänen has worked on his hypothesis for several years and he first crystallized it at an international conference. He brought it to Turku in a *studies generalia* in connection with the interdisciplinary conference *Dies mediaevales* in 2003.

Hiekkänen's main idea is to draw an equation mark between Turku and as a corresponding case the late-13th century town of Linköping in Sweden. The chronologies seem to fit well together. Turku Cathedral was probably inaugurated in the year 1300 and the first building phase of the medieval castle may date from the 1280s. The establishment of Linköping was the result of many-sided interpretative process, too (Tagesson 2002). There are no documents which would prove that any negotiations concerning the establishment of Linköping or Turku took place in the 13th century. According to Tagesson and Hiekkänen, the infrastructure of the two towns, archaeological material and a few hints in written documentation point to early planning of the town space and coordination of administration since the very beginning of urban settlement.

The more multi-disciplinary conclusions are and the more connections there are to different categories of empirical source material the more difficult it becomes to either verify or falsify them. In the case of Turku the archaeological material from the late 13th century is fairly sporadic, but this does not make Hiekkänen's interdisciplinary argumentation too weak. On the contrary, the interpretation is fairly widely accepted by archaeologists, historians and the public at large.

A couple of months before Hiekkänen's *studies generalia* lecture in Turku a thought-provoking radiocarbon date was published from Vyborg (Saksa, Saarnisto & Taavitsainen 2003). One of the wooden remains found in the excavations near the location of the medieval town wall of Vyborg in 2001 suggests that there had been some buildings there already in the 1270s. Docent Aleksandr Saksa, the leader of the archaeological expedition has come to the conclusion that the medieval town area was inhabited before the establishment of the Swedish castle at the mouth of River Vuoksi in 1293. According to Saksa, the inhabitants were Karelians, probably fishermen (Saarnisto & Saksa 2004; Suhonen 2006c; *cf.* Ruuth 1908; Ruuth *et al.* 1982).

Saksa's suggestion brings an empirical aspect to one of the most important debates on the early history of Vyborg. The continuation of settlement in Vyborg and surrounding areas cannot be proved yet. Owing to the lack of systematic surveys hardly any Iron Age settlement has previously been found in the close vicinity of Vyborg or in the town area (Uino 1997;

Suhonen 2006c and cited sources). There are a few 12th and 13th-century artefacts from the castle island of Vyborg but their find contexts are questionable. In his excavations in the 1970s and 1980s the leader of the Soviet archaeological expedition of Vyborg, V. A. Tjulenev, also found wooden remains of buildings which he interpreted as a fortification (Tjulenev 1982; 1995). He dated the constructions to the 13th century but he never published any radiocarbon or dendrochronological dating results (Uino 1997, 345-346). Tjulenev suggested that the Swedes attacked the Karelian fortification in 1293 and a burnt layer at the foot of the castle was formed in battles between alien conquerors and Karelian defenders. Due to unsatisfactory documentation of empirical evidence, the hypothesis deserves strong source criticism (*e.g.* Hiekkanen 2003b; Suhonen 2006b; Suhonen forthcoming; cited sources). Nevertheless, this version of history has been popular in Vyborg since early 1980s. It builds a connection to local prehistory as a background of the harbour, with the role of the Swedes as that of late newcomers – colonialists.

Saksa's interpretation is quite radical because it is unclear whether the dated log belonged to a building and if it had been removed from somewhere else (Saksa 2002). The fishing equipment found in the same excavation area are medieval but their dating to the 13th century is improbable. Saksa refers to corresponding finds from the early medieval layers of the Kexholm (Käkisalmi) castle island (excavations in Kexholm [Priozersk]: see *e.g.* Kankainen, Saksa & Uino 1995).

Healthy conflicts

Different cultures can exist side by side passively without friction only if the border zone between them is never crossed. Interaction over invisible borders will cause contradictions. People on both sides are forced to reconsider their own opinions about alien and possibly unpleasant phenomena. Visitors to the past try cross a border zone from the familiar to the unfamiliar.

As professional observers and interpreters of past cultures we are ethnologists. In order to meet people of the 'dark' Middle Ages with professional and open eyes it is important to be aware of our motives of prejudging certain phenomena and to try rather to tolerate otherness with curiosity. The explorer of the past is constantly assailed by stereotypes. Even if he manages to avoid their attacks against open-minded viewing of the life of past generations they tend to reappear in the process of formulating the interpretations into verbal and visual exhibitions. For example concepts such as 'Europeanization', 'progress', 'civilization', *etc.* are all but value-free in the context of 13th century in Finland and Karelia. There is the risk that medieval networks are composed to fit our modern ideal of international cooperation.

One of the missions of archaeology is comparable to modern art. Artists perform personal interpretations of physical, social and mental environments in order to make the audience see a phenomenon in a new light. Equally, a researcher of culture makes phenomena explicit in order to make people face them. Returning from the field, privileged discoverers of primary material can use it to increase multicultural tolerance at home among the general public. Presentation of *e.g.* medieval life is a kind of ethno-cultural demonstration. Successful translations of scientific language into everyday language are 'brain-storming' and lead to the enrichment of values (Lillehammer 2004, *passim*).

The medieval town in the modern town

My illusion can come true only under peaceful conditions. The idea of provocative behaviour in human sciences sounds odd in a world where human lives are lost every day because of warfare between ideologies. Archaeologists have to be careful in order not to put material cultural heritage deliberately in danger.

At the everyday level, conflict between the conservation of heritage and progress in modern land-use is seldom avoidable when previously unknown sites are found. In the countryside a landowner has a close relationship with his land and he seeks to defend his personal economic interests. If a compromise between the protection of cultural values and modern land-use is not achieved, the local media would have a word to say. In towns land is collective but at the same time a number of town-dwellers have personal feelings and strong opinions about their everyday environment. Fieldwork on a medieval or post-medieval site is like acting on an open scene before the eyes of a critical audience. Compromises are fragile nets between various attitudes.

Turku is proud of its past. Unfortunately, a lot of old architecture has been replaced by new buildings, but still part of the medieval town area is a historical milieu in the heart of the modern town. The medieval cathedral on the east bank of the Aura River is surrounded by parks and there are *e.g.* several buildings from the 19th century. There may be some traces of the medieval town plan left, too (*cf.* [www.aboavetusetarsnova.fi]). Turku has about 200,000 inhabitants. A number of families have their roots in SW Finland and thus local identity is strong. In my view, successful rescue excavations in the medieval town area since the 1990s and *e.g.* the educational work of the popular private museum Aboa Vetus have led to increasing general interest towards history beneath the surface and have supported positive attitudes towards urban archaeology in Turku. History will no doubt play an important role in the year 2011 when Turku and Tallinn will be the cultural capitals of the EU

([www.turku2011.fi], [www.tallinn2011.ee]). Of course, some contradictions between antiquarian interests and modern land use nonetheless occur.

In 2004 Turku celebrated its 775-year jubilee. The city council made an exceptional initiative to support research excavations in the very heart of medieval Finland, at the foot of the Cathedral of the medieval diocese of Turku. Archaeologists were asked to find out how old Turku actually is. In 1229 the first and only bishop's see in the eastern part of the developing Swedish state was probably moved from inland to Koroinen to the bank of the Aurajoki river about 1 km upstream from the location where the medieval cathedral was built a few decades later. Is it reasonable to consider this event as the first dawn of a medieval town?

After two successful field seasons it is obvious to everyone that the excavated material instead answers questions of another kind! But the research excavations changed the PR policy of the Turku Provincial Museum during archaeological fieldwork in general. For the first time, one of the members of the excavation team could devote a considerable part of her working time to media and education ([www.varhainturku.info/english]). One important aspect was that the city-dwellers should be given a possibility for personal experience in searching for the roots of their home town. The idea to allow laymen to take part in excavation work is becoming popular in Finland – and critical comments are heard as well. In Turku the work with volunteering non-professionals in 2005 and 2006 was a positive experience. Guided visits to the excavations also awoke a lot of encouraging interest.

We can hope that there will be a person in charge for mediating up-to-date news in every large-scale archaeological field project in the future. The growing importance of active contacts with the local audience and visitors calls for renovations in study plans at the departments of archaeology at universities. In addition to skills in fieldwork and research, the archaeologist benefits from pedagogical knowledge.

In the old town of Vyborg, history is even more visible than in Turku. The medieval town was surrounded by a defensive wall at the end of the 15th century. At present part of the architecture of this area represents the 18th and 19th centuries (Neuvonen 1994). In addition, a couple of façades have been rebuilt to resemble the architecture of the 17th century. But in contrast to Turku, general interest in the remote history of the town as part of the Swedish realm seems to be almost lacking in Vyborg. Just outside the oldest town area there is now the modern market place which is a shiny window on the multicultural Vyborg of today. It is a Russian and multi-ethnic town of c. 80 000 inhabitants, who are relatively rootless

on the Karelian Isthmus. Most families have their background outside Karelia because after the summer of 1944 the town was empty and in ruins. New inhabitants were invited there from different parts of Soviet Union to build a closed military and industrial centre near the new state border. Recently, a number of individuals and families have come to Karelia from *e.g.* southernmost Russia and former Soviet republics in Central Asia. For a long time, Vyborg suffered from the lack of adequate literature on local history in the Russian language. Fortunately, a couple of new volumes published by the provincial museum meet high criteria (Abdullina 2000; 2004; *Vehi vyborgskoj istorii* 2005).

As the representative of the Institute of the History of Material Culture at the Russian Academy of Sciences and leader of the archaeological expedition, Aleksandr Saksa is repeatedly forced to fight for observance of the Law for Protection of Ancient Remains in Vyborg. The law clearly expresses the responsibility for *e.g.* building companies to finance rescue excavations. In practice, the law is followed in many ways depending on the will of local authorities. After a long period of dissatisfactory antiquarian care for the archaeological heritage of Vyborg in the 1980s and 1990s, rescue excavations are currently taking place in every field season (research history: Suhonen forthcoming). Regrettably the economical base of the work is unstable and the risk for unexpected changes in the schedules of fieldwork is a continuous problem. Research grants from the Finnish foundation Karjalaisen Kulttuurin Edistämissäätiö are a prerequisite for Saksa's excavations. The Provincial Museum of the Vyborg District concentrates on tourism without any interests in field archaeology in the city.

In Russia, treasure hunting with metal detectors is an enormous problem and in the countryside some archaeological sites must be kept in secret for their protection. Excavating a medieval plot is far from picking up prestigious weapons and ornaments. The material is ideal for showing how archaeologists read the past from fragments. Saksa's excavation team is a group of elementary school pupils. The excitement of history hopefully spreads to a few homes in Vyborg and among the young generation.

Archaeology may become politics in a harmful way in Vyborg. For example Finnish money in the cash box of the archaeological expedition could be misinterpreted as intentional support for marginal political plans to return ceded Karelian territory from Russia to Finland (*e.g.* [www.prokarelia.net/en/]). Contacts with local authorities and town-dwellers are essential in order not to provoke false impressions about plans to 'sell' any of the history or present cultural identity of Vyborg to foreigners. Finns and other outsiders are visiting specialists, not colonialists.

Discursive and established pasts

Both Hiekkanen and Saksä connect broad questions of the early history of medieval centres mainly to the contexts with which they are personally most familiar (*cf.* dissertations: Saksä 1998; Hiekkanen 1994). Neither author deliberately aims at re-writing the past in a politically 'more correct' way. Hiekkanen emphasizes the role of the Catholic Church in building and maintaining the infrastructure of medieval society. He also refers to current discussion concerning the importance of planning in the development of urban centres elsewhere in Europe. Saksä links Vyborg with late Iron Age and Karelia.

Saksä's and Hiekkanen's competence in argumentation concerning large-scale research questions is unquestionable. For a less experienced researcher it is challenging to step in front of the public with new information because at the same time he cannot escape from exhibiting his own personality as producer of a vision. After the field seasons of 2000 and 2001 in Vyborg I participated in the writing of a couple of articles about the new observations and interpretations together with Russian colleagues (Saksä *et al.* 2002; Belsky *et al.* 2003). The writing processes were exciting because the Russian colleagues are much more eager to express hypothetical thoughts than we are in Finland. For example the usage of concepts concerning ethnoses of the past differs in the Russian and Finnish archaeological vocabulary respectively (*e.g.* *Vehi vyborgskoj istorii* 2005: 30–49; *cf.* Suhonen 2003a). I feel that the rules of scientific discussion allow and require fairly provocative and constructive discourse in Russian archaeology in general.

Above I described my idea about circulation of knowledge as a market of ideas. In Turku this could be realized in practice, too. One of the main tourist events is the medieval market event which is organized in the originally medieval market square every summer. Products which meet the criteria of being of medieval spirit are sold by craftsmen and other private entrepreneurs. Actors entertain the public in the roles of the king, his servants, and medieval town-dwellers. Dresses in medieval fashion make the market colourful and there are games, dance, music, *etc.* in the program. Cooperation between the organizers and active archaeologists could be much more varied than it has been so far. At present visitors definitely enjoy the market atmosphere but they will not know much about the medieval cultural layer under their feet. Scientific information on the earliest settlement on the banks of the Aura River could very easily be offered in an entertaining way.

In Vyborg medieval knights and ladies come together every year on a summer weekend. Campfires are lit on the castle island. The festival is a meeting of clubs and societies for role-playing games. The public

can enjoy the excitement of duels, games, music, *etc.* The main idea is entertainment, not selling and buying goods. Scientific archaeology is absent from this event, too.

Publications aimed at both researchers and laymen are extremely important mediating media. Saksä's results in Vyborg came just in time to get publicity in the new Finnish book series on the history of the Vyborg district (Saksä, Uino & Hiekkanen 2003; Korpela 2004). Thus, the hypothesis gained a permanent form in Finnish before being integrated in the chronology of the town in Russian. I have expressed my concern because of exaggerated hurry in the publishing of Saksä's hypothesis (Suhonen 2006d). More material is badly needed before the existence of either the Karelian fortification or villages of fishermen can be considered even as probable, let alone facts. But I am ready to revise my attitude and to see the positive sides of open discussion.

However interpretative history might be, it must be a solid background for today's labile life conditions for those who need it as a reliable building stone of a fundament of identity. It is impossible to build a worldview by continuously questioning of everything and with source criticism towards all knowledge. In the showcase of a permanent exhibition of a national, provincial or town museum local prehistory and history become established. Implicitly there are official 'true histories'.

In both Turku and Vyborg there is a permanent exhibition of the history of the town in the medieval castle. In the Provincial Museum of Vyborg there is a new miniature model which is an artist's view how the 'Karelian fortification' looked on the castle island in the 13th century. It is a wooden castle in Viking style! In the eyes of a professional archaeologist the picture can be described only as ridiculous. For a museum visitor it may look real. In other words, a Karelian castle is 'true' in Vyborg until it will be pulled down by researchers who have convincing evidence against the prevailing hypothesis and whose argumentation will be heard.

Short-term exhibitions of the finds of recent excavations in Turku, seminars, articles in popular journals, TV interviews, *etc.* constantly revise the history of the town on forums frequently visited by town-dwellers, tourists and scholars alike (*e.g.* Ahola *et al.* 2004). The permanent exhibition of the Provincial Museum of Turku needs urgent updating on the basis of archaeological material as well. In the centre of the exhibition hall there is a 'house of 13th-century German merchants' in natural size. The main message is to display archaeological field methods – the equipment of the 1950s when the house was excavated and interpreted (Valonen 1958).

Why is the updating of a permanent exhibition such a slow process? It is not a question of money

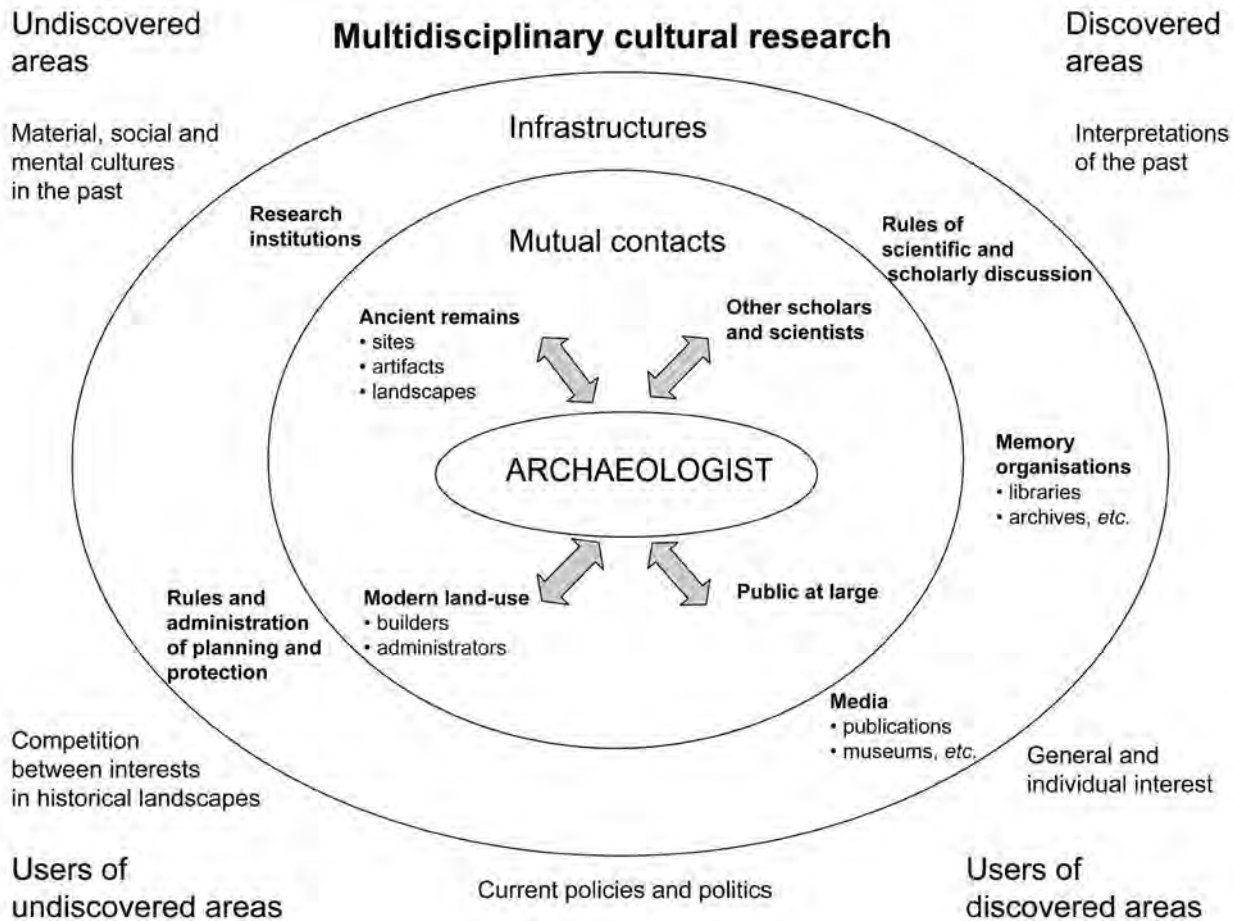


Fig. 1. Flowchart depicting the various dialogues in which archaeologists are involved in their work.

alone. Authors of an authoritarian text have to pose themselves in the position of authority. Above I have already referred to the unwillingness of Finnish researchers to take risks of this kind.

Dialogues at cross-roads

An open-minded encounter with the past and the simultaneous facing of various pressures of today is like a cross-roads of many paths, or a windy place where winds from several directions blow at the same time. Flows from different directions will keep the mill running (Fig. 1).

A researcher leads a dialogue between himself and his material. The researcher has to produce energy without letting his wings go to uncontrolled speed and break. The archaeologist can sometimes leave the stormiest waters and concentrate *e.g.* on fieldwork, devote himself to research or use his time for antiquarian administration and bureaucracy. But work on interpretation of the previously undiscovered past leads him to crossroads again and again.

In the post-processual world, the illusion of objectivity has given way to fair play with empirical material. The excavation of artificially horizontal layers square by square would lead to the manipulation of empirical material to make it fit artificial coding systems.

Current research aims at a collection of suggested interpretations. The archaeologist works at the cross-roads in three-dimensional space and on time-scales. The stratigraphic method is an interactive way of working in a more or less hermeneutic spirit. Accordingly, work with documents and literature proceeds as oscillation between hypothesis and observations.

During the process, the researcher moves from near the empirical evidence towards consequences on one hand and potential readers on the other. An artist will lose his creativity if there is no response from the audience. A researcher is in similar situation. Continuous interaction with both the academic and non-academic audience is a precondition for the productive continuation of work. Conclusions that a scholar makes during the discussion with the past will be critically evaluated in scholarly community. The public at large gives response on the basis of common sense. Stimulations lead the researcher to reconsider interpretations and to reformulate them. On the other hand, the audience holds a protective umbrella above him. This will hinder the interpretations from becoming all too imaginary and flying off into space.

The third dimension of dialogue is cooperation between research and the infrastructure for the management of cultural heritage. In antiquarian work for the protection of the cultural heritage,

the archaeologist should maintain a more or less authoritarian position. He does not need to fight alone. Laws, rules and administrative praxis will support him in handling the empirical material in an ethically acceptable way.

Even if the physical preservation of the remains is in order, specialists are needed to keep them alive in modern climatic conditions. Protected sites have to be integrated in a rural landscape or a living town quarter as windows on the past. The lack of a common language between modern viewers and the past would let ancient heritage take on the role of a passive freak or a clown. At present the National Board of Antiquities acts as interpreter of the material culture of Finnish archaeological sites. Information tables, guide maps, *etc.* are dictionaries with the aid of which laymen get in touch with the intangible messages of tangible remains.

In Finnish towns medieval stone walls are rare enough to be protected whenever found in excavations. Grey stones, bricks and mortar are a wax table and the styli are given in our hands. The restricted space can be filled with text and illustrations according to our choice.

Since the excavations in 1998–2000 a few metre of the medieval town wall of Vyborg have been exposed in the foot of the tower, the foundations of which are part of the same defensive fortification. In my opinion the worn-out look of the wall and the message of a few fallen stones is questionable. In Turku the foundation of a 16th-century cellar will be part of the cultural milieu in the new courtyard of the town library. At the time of the re-opening of the library after major renovation, the information sign was missing and the condition of the remains was undesirable.

The development of pedagogical skills is needed in archaeology. Most casual viewers confront the remains of the past without any conscious intention to study history at a site or in an exhibition. Information has to be compact enough to be grasped within a few minutes. It should be light enough to be portable in the pocket or a handbag and interesting enough in order not to be thrown into the nearest litter bin. Precise information should be dressed in an exciting and attractive story. The message should not be too missionary but neither should it be too simple or childish.

In addition to the protection of sites our dialogues with the past are worth keeping in collective memory in archives, depositories and literature. The satisfactory restoration of artefacts, technical maintenance of printed copies of texts and photographs as well as digitization of the material will ensure the survival of the unique heritage to future generations. Again archaeologists have endless possibilities to prevent the heritage from becoming passive.

A few people make use of history in creative activities and entertainment. It is a hobby, it offers material for works of art or it can be the seed of a business idea. The initiative for contacts with the active public can come from our side but the service which we offer to our audience has to meet actual needs of the actors in other areas of society. Researchers may act as consultants but freedom of fantasy and joy of entertainment have to be appreciated. The public at large encounters the past via several media in museums, literature, digital equipments, *etc.* Personal contacts are essential, too.

The power of conflicts?

It may seem that the broad definition of material cultural heritage which I formulated above and my ambitious visions about the potential roles of an archaeologist as mediator of the heritage to modern common knowledge are very distant from the reality of urban archaeology in Turku and Vyborg. In smaller towns and in the countryside confronting attitudes may be very conservative and the gap between resources and idealism is even larger.

At present there is no young generation of archaeologists in Vyborg. Most of the time Saksa works there alone. For him Vyborg is an auxiliary job for only brief fieldwork periods. Despite the hindrances caused by the attitudes towards archaeology from local administration, building companies and other entrepreneurs, the Provincial Museum and the general public, the archaeological fieldwork is proceeding. Hopefully both cooperation with the archaeological institutions in St. Petersburg and international colleagues will permit the research of the material in the near future. It is also necessary to rebuild the economical basis of the salvage of material cultural heritage there.

In Turku we have already had enough time to prepare ourselves and our equipment for a journey. Some of us have already proceeded a few miles. I feel that there is room for creative 'intelligent conflicts' in Finland. In my view the audience is becoming more and more familiar with the past and interest in history is constantly growing. If the destination is as broad as the horizon of an open landscape there are countless paths to choose between and all of them will lead in a desirable direction. The critical moment is to get under way.

The young generation of post-graduate students in Turku and our close undergraduate colleagues are no longer an inexperienced generation. We are enjoying our best working years now! A few remarkable scholarships which our projects have received from different foundations are undeniable proof of the appreciation of our work also outside Turku. The pressure to use financial and mental resources in effective ways is strong. I do not imagine any manor exploiting of activity in Turku in near future nor

do I think this should be our dream. The ordinary exhibiting of puzzling material or the presence of professionals at cultural events may serve as stimulation. The materials of individual studies on the desks of each individual researcher can be used as open windows on the past for the non-academic audience. It is also necessary to keep on putting together a puzzle and repainting a few features in the history of the town with new colours.

Archaeological work in Turku strongly benefits from each new international contact. The exchange of opinions and comparisons of corresponding finds belong to everyday practices, of course. But I hope that we also keep learning from our international colleagues how to utilize the unique heritage and how to develop the education of the future young generations to handle archaeological material not just as an object of research.

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Maija Kärki

FRAGMENTS OF REALITY – The Middle Ages in Nordic archaeological museums

Introduction

The following article observes how the Middle Ages are presented in the museum sphere. Owing to the fragmentary nature of the remains, understanding archaeological remains is easy neither for archaeologists nor for ordinary people. The material remains of past generations are rarely undivided structures, but fragments of architecture, artefacts or organic remains. In fact, the basic field of archaeologists is to understand and interpret these marks of past.

The Italian semiotician Umberto Eco (1985, 364) has aptly remarked that everyone has their own, commonly twisted idea of the Middle Ages. The medieval period just like any other archaeological era has been the subject of constant re-evaluation. Museums reflect the results of scientific research, but they also interpret the past from their own perspectives. In this article, this museological interpretation and presentation are dealt with on the basis of my MA thesis *Postmodernin haaste keskiaikamuseolle*, 'The Challenge of the Postmodern for Museums of the Middle Ages' (Kärki 2005a).

Contemporary issues of the presentation of the Middle Ages

In the Nordic countries the concept of the Middle Ages is chronologically flexible. In its broadest sense the Middle Ages can be conceived to begin in the 9th century and end before the middle of the 16th century. Typical characteristics of the Nordic countries in the medieval period are literary culture, Catholic Christianity, monarchy and a market economy. These features differ broadly in timing and emphasis in the various Nordic countries and can be seen in various ways (Sawyer & Sawyer 1996). Historical epochs following the Middle Ages have made their own interpretations of the medieval period. The contemporary museum institution is also part of this continuity. Inevitably, every description of the past is a product of its own time and context.

The life cycle of a find has been studied by archaeologists mainly from the perspective of one item, the artefact. Generally an artefact's deposition

in the ground and its exposure to physical changes have been referred as its life cycle (Suhonen 2003, 163). Schiffer (1972, 158) considers the multi-phase chain of the artefact, in which an item that has been made and used in the past ends up to be contemporary information on the past. The process covers the item's phases within the surroundings of a community, its deposition in the ground, the physical, chemical and biological process that the item is exposed to, the archaeological excavation, the conservation of the item, and finally its role in archaeological interpretation. The process, however, continues in the museum where choices are made as to which finds are relevant to the exhibition and what kind of information is presented to the audience.

The whole process is thus not just the disappearance of information but also the origin of new knowledge (Suhonen 2003, 163, 164). In this case, the time of birth of these processes is a medieval reality, which differs from the views produced by contemporary researchers.

Information is subjected to constant transformation. Some artefacts are research subjects several times, and different perspectives present them with new dimensions. The way of presenting the interpretations of the medieval past have rarely been discussed or called to question by professionals in museums, especially archaeologists. Generally the critical tradition of debate about cultural historical exhibitions is still taking shape (Kärki 2005, 5) and the perspective of archaeologists would be essential in that process.

Medieval exhibits in Nordic museums

Nordic museums presenting the Middle Ages have formed the *Nordisk Nätverk för Medeltidsmuseerna* network that intends to improve exhibitions through international cooperation. In Finland the network includes the Aboa Vetus Museum of Turku and in Sweden the Museum of Medieval Stockholm and the Lödöse Museum. Norwegian museums in the network are Bryggen's Museum in Bergen and the Erkebisbegården Museum in Trondheim. In Denmark Gråbrødrekloster in Aalborg has shown interest in the network. Nearly all these facilities are

in situ museums, *i.e.* they have been built directly on archaeological remains.

1. Bryggen's Museum

Bryggen's Museum in Bergen was founded in 1976. Its collections are mainly from archaeological excavations conducted between 1955 and 1968. The excavations were necessitated by an extensive fire in Bergen's Bryggen area in July 1955 (Herteig 1985, 9). Bryggen's Museum presents the results of the excavation of the remains of Bergen's oldest permanent settlement. However, the basic exhibition does not show the audience what archaeological research was like in the 1950s and 1960s and how it has affected to contemporary interpretations.

The museum displays five remains of wooden buildings and parts of their alleyways (*Handbook* 1978, 11). It must be noted in particular that archaeological remains are not displayed *in situ*. The remains of the buildings have been removed from their original locations because of the construction of the actual museum. Reconstructions at the museum have been made from original materials and the original ground plan has been preserved in approximate condition. Nevertheless, some missing details have been repaired by using newer materials (*Handbook* 1978, 11; Vihovde 1996, 20). The museum presents partly destroyed remains of medieval buildings and thus the focus of the exhibition is on archaeological finds rather than the actual medieval construction methods.

The second part of the basic exhibition describes urban life in Bergen at the turn of the 14th century. The exhibition was created in 1986 when the museum celebrated its first decade. It was built to describe the medieval construction with its continuous line of houses and medieval interiors of various kinds. On display are interiors of warehouses, market stalls, workshops along Øvrestret, the medieval main street. In addition to these passages, the exhibition also presents Bergen as a cultural and religious centre and displays the administrative centre of Holmen.

2. Lödöse Museum

A new museum was opened in Lödöse in 1994 to replace an old, smaller museum. The new museum of Lödöse is influenced by medieval church architecture. The permanent exhibition presents finds illustrating life in old Lödöse in the Middle Ages. The permanent structures of the museum include the reconstructions of a half cog ship and a workshop. In the Lödöse Museum, the methods of illustrating the Middle Ages in Lödöse are based on archaeological finds and various reconstructions and models. For instance, the transformation of urban landscape is described with wooden miniatures and topographical pictures. Also on

display is the reconstruction of a cross-section of an archaeological excavation, as is characteristic of an archaeological museum. In addition, the basic exhibition includes a section where children can try different handicrafts. The museum does not seek to create a traditional medieval atmosphere, since the milieu is spacious and well-lit.

3. The Archbishop's Palace Museum

Trondheim's Erkebispegården, *i.e.* the archbishop's palace, has a unique position in Norwegian history, having become an important political and religious centre in Norway in the second half of the 12th century. In its current role in Norway as a national monument, Erkebispegården has often been the subject of archaeological and art historical research (Larsson & Saunders 1997, 86). The permanent exhibition of the museum is from 1997 and it has been constructed principally on the basis of the latest archaeological research. The other section of the exhibition presents the sculpture collection from the Cathedral of Nidaros. On display are miniatures presenting the construction stages of the cathedral and the palace of the archbishop. The remains from the oldest stone wall, a hall from the 13th century and a mint from 1532 are on show in the *in situ* part of the museum (*The Archbishop's Palace Museum* 1997, 4, 5, 60–78).

4. The Museum of Medieval Stockholm

The Museum of Medieval Stockholm was opened in 1986 according to the *in situ* concept. It was built around the remains revealed in archaeological excavations at Helgeandsholmen. The museum presents the tow wall and a grey stone wall that surrounded the cemetery of Helgeandsholmen in the 14th century. An archaeological excavation has been reconstructed in front of the cemetery wall. The *in situ* material of the museum also includes a tunnel from the 1640s and a vaulted passage from the 18th century. The aim of the exhibition builders was to 'bring back to life the medieval urban life of Stockholm' (Weidhagen-Hallerd 1993, 9). Colours, lighting and even odours enhance the experience of visitors to the museum.

The museum has remarkably many different reconstructions. For instance, a constructed cabin illustrates medieval building techniques, presenting different types of masonry, arches, portals and windows. The cabin was built from new, handmade bricks. In the harbour there have been reconstructed wharves and storehouses to illustrate the importance of trade, seafaring and fishing for the medieval town. The largest exhibit of the museum is a reconstruction of the Riddarholmen ship. The reconstructions represent these major themes in the museum that are also presented with archaeological finds, pictures and texts.



Fig. 1. An interior of the permanent exhibition in Bryggen's Museum. Photo by Juha Mäki, 2004.

5. Aboa Vetus & Ars Nova

The Aboa Vetus Museum of Turku was opened to the public in 1995 after several years of archaeological excavations in the area of the so-called Rettig Palace residence. Aboa Vetus *i.e.* old Turku, is a pure *in situ* museum, since it was built directly above and around the original finds left in their authentic locations. The museum especially depicts the life of burghers and craftsmen, for the remains are a part of a densely populated medieval block of the town dating from the beginning of the 15th century (Hiekkanen 1995; Sartes 2003, 80). An important part of the museum is also the Rettig Palace that is located above the remains. It was built by the ship owner and a tobacco manufacturer Hans von Rettig in 1928 (Hilska 1995, 12).

The old permanent exhibition of Aboa Vetus (1995–2005) was divided in two parts, one presenting research and one describing the medieval town. The purpose of a new permanent exhibition is to present the latest research data on the Middle Ages in Turku and to exhibit the various analyses of material excavated over a period of ten years in the area. The new exhibition covers the following domains: houses, their inhabitants and their domestic animals, the urban fabric and Turku and its relation to the Hanseatic world. The form of the exhibition is based

on the story of a 7-year-old boy called Matti, who moves from the countryside to the town of Turku. The old exhibition provided glimpses of lifestyles in the area during several different eras, while the new exhibition creates a whole imaginary narrative that contains the entire tour of the museum. The information in it is divided into four categories: the story, general facts, information concerning stone buildings in the area and special children-oriented interactive material. Through Matti's story, the museum seeks to outline a comprehensive view of life in medieval Turku.

6. Aalborg's Gråbrødrekloster

Aalborg's Gråbrødrekloster, *i.e.* Franciscan convent, is a part of the Aalborg Historical Museum. The *in situ* concept has been adapted in the presentation of the Gråbrødrekloster and the historical development of old Aalborg. The museum originated with archaeological excavations that were conducted by the Aalborg Historical Museum in 1994 and 1995 (Bergmann Møller 2000). The area of the museum is small; therefore its atmosphere is not disturbed by music or multimedia. The museum counts on the fact that the ruins themselves tell the story of medieval Aalborg. The interpretation of archaeological remains has been clarified by using



Fig. 2. Medieval music performed at the Aboa Vetus Museum. Photo by the Aboa Vetus & Ars Nova Museum.

the interactive method: visitors can press a button of a text of their choice and shortly afterwards a light comes on in the appropriate place in the ruins.

Traditional exhibitions of the Middle Ages in transition

Hans Andersson (1997, 12, 13) divides the origins of Swedish medieval studies into two different research traditions. The research of monumental subjects with the methods of building research and art history was a common interest in the early days of medieval studies. The other research tendency was urban archaeology that approached the field of cultural history. The latter perspective can be connected, for example, with research at Lödöse at the beginning of the 20th century. Stefan Larsson and Tom Saunders (1997, 79) have criticized the way in which the research of archaeological subjects such as stone churches and castles has been merely unilateral and descriptive. Traditional art history has dominated the majority of the 20th-century research of medieval stone buildings. The functional and structural characteristics of the buildings have been thoroughly evaluated in great detail, but their social and cultural meanings were not brought under study until the advent of post-processual

archaeology. In Finland, medieval studies of the first half of the 20th century also included to a considerable degree the research of monumental buildings. The contribution of historians and art historians to medieval studies was far larger than that of merely archaeologists (Taavitsainen 1999, 6; Peltonen, Haggrén & Niukkanen 2000, 46).

The traditional tendencies of art history have had great influence on museums of the Middle Ages. They tend to reflect these lines of medieval studies due to collections emphasizing religious items such as wooden sculptures and altar-cloths. Exhibitions of medieval art kept strictly to chronological order and the history of style has played a major role in the presentations. Archaeological excavations, however, have broadened the scope of presenting the Middle Ages in museums. Archaeological exhibitions have traditionally addressed typologies as well as aesthetic matters. In addition to art historical and archaeological exhibitions, contemporary exhibitions of the Middle Ages have sought influences from cultural-historical exhibitions (Falk 1990, 2). *In situ* museums are even further removed from the original tradition, enlivening the Middle Ages for the visitor with stationary remains. New exhibition techniques have created modern possibilities for presenting the Middle Ages. Current archaeological museums of the Middle Ages are gradually distancing themselves from traditional presentations and approaching the so-called postmodern museum.

Hilde Gaard (1999) has compared modern and postmodern museum exhibitions, taking as examples three different features common to postmodern exhibitions. First of all the postmodern exhibition utilizes parody, irony and even sentimental nostalgia in order to bring the visitor to the centre of the exhibition. Secondly Jean Baudrillard's (1988, 166–184) concept of simulation, brought into the museum environment, is employed to bring closer the representation and reality closer to each other. The visitor is thus able to experience extreme emotions connected to the subject of the exhibition. The third feature of a postmodern museum exhibition is multimedia. It resists linear narrative, making every 'reading act' unique, depending on the interests of the user. The research of an object is relevant in a modern exhibition, whereas in a postmodern exhibition the visitor is in the centre of attention.

Esben Kjeldbaek (2001) has criticized in ironic terms the postmodern museum and has classified museums, typifying their activities and features with caricatures. Kjeldbaek describes three generations characterizing the lifespan of museum development. The museum of the first generation is a mausoleum, dealing with its subject absolutely and belonging in a way to the same history that it presents. The museum of the second generation maintains professionalism and educational values. The earlier museums choked on magnitudes of objects, but



Fig. 3. An example of a typical miniature model in Gråbrødrekloster in Aalborg. Photo by Maija Kärki, 2004.

the new exhibitions usually avoid this difficulty. The informational value of an artefact is crucial and the object texts are long and explanatory. The postmodern museum generation presents instead episodes and personal details rather than community histories. The exhibition uses unexpected methods of illustration and it utilizes the latest technology.

Frans J. Schouten (1995, 27) defines a typical visit to a museum, stating the main problem of archaeological exhibitions:

Museum professionals should not be surprised when people leave the museum after half an hour. They just have had enough of looking at objects that more or less look the same, have an incomprehensive explanation and say no more than people can see for themselves.

Item explanations in exhibitions aroused questions and criticism in the preceding manner already in the 1980s. An object text in a traditional archaeological museum describes and classifies an artefact and is meant to be educational. A typical item description includes a number to facilitate finding the artefacts in the display case, the expression of the type provided by archaeological research, technique and use, material and dating, archaeological culture and context, time of discovery and the museum's catalogue number. The object texts may also include

information on the artefact's historical meaning or further publications offering additional information (Skeates 2002, 209, 210). Criticism concentrates on the point that traditional object texts often present the specification as the objective truth of the object, although it is only an interpretation of an artefact. Museum texts are socially constructed statements that hardly avoid ideological interpretations of the past (e.g. Shanks & Tilley 1987, 68, 69, 90–97; Hooper-Greenhill 1999, 14–23).

Museologists have noted that average visitors find traditional texts hard to comprehend and their concentration is disturbed by several factors. Lighting in the museum, for example, may have negative effect negatively on the interest of visitors. Scholars have applied too much jargon of their own field, while disregarding the expectations of the visitor (e.g. Pearce 1990, 195; Hooper-Greenhill 1992, 210; Skeates 2002, 210, 211). In recent years, both theoretical museological discourse and practical museum work have developed new kinds of texts from a cultural point of view. These texts are reflective and versatile, taking into consideration new visitor groups. They use the method of interactivity and they attempt to take advantage of different interpretations and visitor evaluations. New informative texts also try to take readability into account (e.g. Pearce 1990, 195, 202;



Fig. 4. One of the children's tasks at the Aboa Vetus Museum. Photo by the Aboa Vetus & Ars Nova Museum.

Hooper-Greenhill 1999, 4, 15–23; Skeates 2002, 211, 212). They present archaeological evidence in a more versatile way than before the transition, and they encourage visitors to make their own interpretations of the past. On the other hand, the tendency to appeal to the visitor's emotions and to serve different interpretations has been criticized for 'overpersonating' the past. It must be noted that this newer kind of museum text also includes political and ideological interpretations of the past (Saville 1999; Skeates 2002, 216, 217).

Traditional object texts were used in several of the Nordic museums of the Middle Ages in my study. It was also common to reuse the traditional exhibition procedures through typologies, materials and the functions of artefacts. In these museums, the place of an object represents its informational and educational value. The texts are explanatory and fairly long. Bryggen's Museum in Bergen has broken the conventions of traditional composition with interiors that reflect entire life spheres from a single viewpoint (Fig. 1). The Museum of Medieval Stockholm places the artefacts in a reconstructed artificial context, trying to reveal their authentic meaning. *In situ* museums more commonly permit the authentic place to speak for itself merely by

creating an undisturbed atmosphere for the visitor. In the Aalborg monastery the visitor was provided with the possibility to spotlight details. Aboa Vetus in Turku represents the *in situ* concept by opening the ruins for the audience with explanatory text, pictures and multimedia. The new basic exhibition at Aboa Vetus was an exception in the field of presentation through its unorthodox narrative. Object texts supported the narrative thematically and they were short and informative (Fig. 2.). The strong interpretation and even fictional content of the tour differ radically from the traditional concept. However the discourse of researches and different perspectives are disregarded at Aboa Vetus, and the view of the past is still unanimous.

A leaflet introducing Erkebispegården to the museum audience (*The Archbishop's Place Museum* 1997) presents archaeological excavations in the manner of the new kind of museum text described above. The leaflet offers different options of interpretation and maintains the uncertainty, interpretational difficulties and surprising elements of the excavation process. The results are not presented merely as results of clear and objective deduction, but are instead narrated, informing the reader of the feelings of researchers, the problems

they endured and changing inferences while analysing the remains. The leaflet advances in the order of several excavations concerning the history of the palace through the Middle Ages following the same logic as archaeological field work. In 1983, an extensive fire destroyed important parts of the finds of previous excavations, including for example the collections of the Cathedral of Nidaros. Paradoxically, the fire offered a new chance to re-evaluate Erkebispegården in order to construct new information based on new research.

Conclusions – A critique

Nordic museums include features of new kinds of methods for presenting the medieval period. The past is reconstructed with the interactive method and developing multimedia practices in addition to the conventional reconstructions. Even new narrative methods have been used in an open-minded manner. Do the museums of the Middle Ages thus resemble the postmodern museum?

Nordic museums differ little in their views of the Middle Ages. The basic exhibitions deal with aspects such as the development of the town, trade, handicrafts and medieval building practices. Certain special features result for instance from a museum's *in situ* material. These features are the results of different choices made by archaeologists during excavations and later in the construction of the exhibition. At Gråbrødrekloster in Aalborg the religious aspects of the medieval period were maintained. Gråbrødrekloster counted on the atmosphere of the ruins to inform of the Middle Ages purely in a manner of a postmodern museum. Erkebispegården in Trondheim displayed the

administrative aspects of the Middle Ages and the exhibition stressed the international importance of the subject. Aboa Vetus in Turku takes an educational approach to the remains. Most of the museums tried to grasp the perspective of common medieval people and present it engagingly to the audience.

The museums had different illustrative reconstructions and miniatures (Fig. 3). The Museum of Medieval Stockholm had various reconstructions that exhibited the Middle Ages in a postmodern manner. The Museum of Lödöse utilized other typical characteristics of an archaeological exhibition, such as miniatures presenting the town's development, and a reconstructed profile of an excavation presenting the history of the area and the basics of archaeological research. Postmodern features in Lödöse are children's workshop activities, which are directly linked to the museum exhibition. A similar solution was followed in Aboa Vetus, where the children's tasks are a relevant part of the exhibition's structure (Fig. 4). Aboa Vetus of Turku has employed multimedia to the largest degree among the museums of the present study. In particular, the new exhibition's experiencing methods and the personified narrative approach the definition of the postmodern museum.

In most museums it would be possible to break down the traditional means of exhibition even more courageously. Visitors could be shown a wider variety of scientific methods that reached the conclusions of the interpretations concerning the medieval past. This, however, would require archaeological discourse to naturally attend to the field of museology, particularly the discourse on communication in exhibitions.

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- XIV Immonen, Visa, Lempiäinen, Mia and Rosendahl, Ulrika (eds.) Hortus novus. Fresh approaches to medieval archaeology in Finland. Saarijärvi 2007.

The Society for Medieval Archaeology in Finland has compiled this collection of articles to present the work of young Finnish medieval archaeologists especially for an international audience. The compilation reflects the special characteristics and current disciplinary developments of medieval archaeology in Finland.

The collection comprises fourteen articles on various subjects covering all aspects of medieval archaeology: rural and urban archaeology, medieval material culture, maritime archaeology, lines of communication, and the archaeology of religious beliefs. Also such issues as the archaeology of castles and experimental archaeology are covered.

Medieval archaeology as a discipline has experienced a considerable transformation in the late 20th century. The use of scientific analyses, including osteological and dendrochronological studies, has provided completely new means for approaching the medieval past. Furthermore, the recent increase in the amount of archaeological material available to scholars in Finland as well as the new methodological and theoretical views have also affected the ways in which the research process, the aims of the discipline, and its relationship with contemporary society are conceived. The current volume presents the young generation's on-going research and views on these developments.

The compilation is the fourteenth volume in the *Archaeologia Medii Aevi Finlandiae* series published by the Society for Medieval Archaeology in Finland.

