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Cemeteries or refuse heaps?

Archaeological formation processes and the interpretation of sites and antiquities[1]

Research simplifies, generalizes, and creates models. Despite the risk of unnecessary generalization, I would claim that the initial successes of radiocarbon and other scientific dating methods in the late 1950s and early '60s freed archaeology from the bounds of chronology. Prior to this, research had largely been descriptive, often limited to the dating of artefacts and forms, and outlining their distribution.

The new scientific dating methods had a variety of effects. They altered, for example, previous conceptions of the spread of cultural phenomena, many of which were now seen as independent. Migrationist models were to a large degree discarded. But the situation also led to naive enthusiasm. Many archaeologists thought that the problems of chronology had been settled once and for all, and they were put aside in a surge of what could be called 'chronological euphoria'.

Scientific dating methods permitted archaeologists to concentrate in a much broader way on new problems of theory and method, and socio-economic problems came to be addressed. This meant the birth of a theoretical archaeology. It also generated factions within the discipline, not all of which were tolerant of others. Views clashed not only regarding the means and methods of archaeology, but also in regard to the ultimate aims of the discipline. As a result, the field split and became fractionalized.

This course of development included sharpened criticism of earlier views, often regarded as metaphysical in content, and a striving to make archaeology an independent discipline. The former role of archaeology — especially in Europe — as prehistory, an auxiliary to history proper or its continuation, no longer satisfied scholars. Typical of this period is D.L. Clarke's paraphrasing of Gertrude Stein: 'Archaeology is archaeology is archaeology'.

In order to stress the independence of their discipline, archaeologists now began to point to the unique nature of their source material, as the basis of wide-ranging theoretical constructs of a general nature (e.g. Clarke 1973; Klejn 1978; Schiffer 1976). These theoretical pronouncements emphasized the complex relationship between past societies and their 'extinct' remains. A main point was that the traces of the past, as revealed in the archaeological record, were not direct reflections of the societies that produced them. The excavated and recovered material was filtered by a variety of natural and human-influenced factors. This problem was hardly discussed at all in Finland at the time, nor has it been taken up in later years.

The past few decades have shown, however, that scientific dating does not always

'work', and they can often entail a number of problems. Will this lead to a new emphasis on chronology? Yes — but in new ways.

One of the main discoveries of recent years is the fact that the amount of radioactive carbon in the atmosphere has varied. Thus, the radiocarbon age of a sample is not equivalent to its age in calendar years. This has, of course, been taken into account and corrected with calibrations. On the other hand, scientific experts have pointed out that radiocarbon ages and the estimates suggested by archaeologists often differ to a great degree (Jungner 1977; Donner 1985). Archaeologists have also recognized this, and unsuccessful datings are usually blamed on contaminated samples, i.e. they include material younger or older than the cultural layer of the site concerned. Because of the large numbers of unsuccessful radiocarbon datings, experts have suggested that archaeologists should take much fewer carbon samples than they have thus far (Donner 1985 29). Although the method itself contains sources of error, the reasons for most 'unsuitable' radiocarbon ages must be sought in the 'post mortem' factors affecting the formation of the cultural layer at sites.

I became interested in these questions in a practical situation. In my studies of the hillfort of Kuhmoinen in South Finland I was faced with an obvious discrepancy between artefact datings, indisputable in themselves, and scientific datings, which I also felt were reliable (Taavitsainen 1990a). In situations like this historians resort to source criticism. Pentti Renvall (1965 167) presented a number of useful questions relating to 'exterior source criticism' when assessing the function of a historical document. Is the document in fact what it appears to be, or is presented as being? Can the document as a whole be placed in only one situation in the past, or did it come about in several stages? These questions are useful for archaeologists as well. They are, in fact, indispensable, for archaeological finds and observations can also be understood as documents or texts to be read in certain ways.

Many source-critical studies have appeared in recent years which especially stress the formation processes of the archaeological record (e.g. Schiffer 1987; Binford 1983; Hodder 1982; Kristiansen 1987; also Salo 1986 226). According to James A. Moore and Arthur S. Keene (1983 17), site-formation processes began to dominate methodological discussion to such a degree that they became »the archaeological agenda for the 1980s» (see also Trigger 1989 357—363). The beginning of the 1990s has shown that this prediction was mostly correct, and it appears that problems of dating and chronology have had a major role in this process.

Although the original problems were strictly my own, I managed to find my way into the mainstream of research. In my study of the Kuhmoinen hillfort the finds were approached from a source-critical perspective (Taavitsainen 1990a), stressing the relationships between past activity and its archaeological traces. In this study I especially underlined the position that different formation processes operate in finds contexts resulting from different kinds of human activity. The variables of environment and culture must also be considered before going on to chronological or other conclusions. »Context is everything» (Gould 1989 8).

The example of the ancient hillforts showed the chronological effects of a source-critical approach (Taavitsainen 1990a), and these details will not be discussed in further detail here. It will suffice to mention the recently discovered Iron Age dwelling sites of Virala in Janakkala and Varikkoniemi in Hämeenlinna [cf. also Domargård I in Karjaa (Heikkurinen-Montell & Suominen 1985)]. Where artefact chronology conflicts with scientific dating the example of the Kuhmoinen hillfort may be of help.

Source criticism has other consequences as well. These are mainly related to the qualitative features of sites, their classification and function. These points, in turn, reflect on the conclusions of scholars.

On a practical level, cremation cemeteries are another example where processes of reuse and recycling, stressed in my hillfort study, provide a point of departure. Of special interest here are the recycling of metals and my hypothesis, discussed in the section on chronology in the study, that at least some of the recycled metal was from cemeteries (Taavitsainen 1990a 44—45).

The idea of cemeteries as »copper mines» is by no means new (e.g. Ailio 1928), and the custom of looting them for this purpose appears to have been universal (e.g. Wray 1985 102—103; Jahnkuhn et al. 1978; Tamla 1990).[2]

Characteristic features of many cremation cemeteries and burial mounds are their mixed nature, the small number of closed groups of finds, fragments of sword grips, but no fragments of blades, burnt bone in various places etc. A plausible explanation for this is looting, and the obvious disturbed condition of cremation cemeteries may explain why it is not always easy to distinguish a cairn from a cremation cemetery on level ground. The latter can often be described as low cairns (e.g. Kivikoski 1966 52). This explanation may also help in solving the semantic problems obscuring precise definition and descriptions (Söyrinki-Harmo 1984 116).

Scholars have suggested that large cemeteries evolved from individual cairns when new burials came to be added in the course of time (Kivikoski 1966 52). Another possibility, suggested here, is that their observed form was the result of repeated looting and other human activity.

If these suggestions are even partly correct, they will affect our conclusions regarding the forms of cemeteries. This especially applies to the collective (hence egalitarian) nature of level-ground cremation cemeteries, as well as further conclusions suggesting that they marked a transition from individual households to village-type settlements (cf. Meinander 1980).

Cremation cemeteries as such involve many problems of definition.[3] It has been suggested that in many cases house-floors have been excavated under the assumption that they were cemetery sites (e.g. Pappila, Raisio; Meinander 1980 8; see, however, Söyrinki-Harmo 1984 120). The recycling of materials underlines these problems, although — as pointed out above — it may help to explain some of the features of cemeteries. The possible presence of recycled material poses problems for defining the precise function of sites.

Smithy sites are characterized by old and broken artefacts, melted pieces of metal, fragments of metal plate, bent and broken pieces of iron, and slag. Also found at these sites are pot sherds, burnt stones, and soot. The same characteristics can be demonstrated for cemeteries. If finds of this kind were recovered from trial pits, an archaeologist carrying out a survey would define the site as a burial mound or cremation cemetery. He or she might also expect to find bone material, although this would not be necessary for a reliable definition, as fragments of bone are also found at smithy locations near dwelling sites[4]. Accordingly, the criteria from defining cremation graves or cemeteries appear to be insufficient. It must be pointed out that many sites defined as cemeteries in survey, or even many excavated sites of a similar nature, are not necessarily cemeteries.

Slag is one of the distinguishing features of smithy sites, which is also found in cremation cemeteries (Leppäaho 1951 201). Must this material always be explained

as relating to supernatural beliefs[5] (e.g. Leppäaho 1951 202; Lehtosalo-Hilander 1990 19), when a more plausible explanation would be the operation of a smithy or iron making? Leppäaho (1951 202) is almost lyrical in his discussion of the religious background of slag finds:» This was quite natural at a time when cremation was a common practice. The deceased journeyed to the netherworld in the blaze of fire, and the glow of coals gave birth to iron, cleaning out the slag.» In a recent work, Lehtosalo-Hilander (1990 19), writing about hoards at Rapola and rusted iron objects from Rupakallio, also points to the magical significance of slag in cemeteries.

Of interest here are the small amounts of bone from burial mounds. Osteological material presents a number of problems, as bones have rarely been identified, and we do not know if they are from humans or animals.

Let us briefly review three sites in the Mikkeli region, assumed to be cemeteries, viz. the mound cemetery of Kyyhkylä, the level-ground cremation cemetery of Latokallio in Moisio, and an inhumation burial from Lampila.

There are six cairns at Kyyhkylä, all of them containing very small amounts of burnt bone. Cairn no. I contained only one fragment, and two small fragments were recovered from cairn no. II. The largest amount of recovered bone fragments (cairn no. III) was only 140 g. The cremation of a human body should under normal conditions produce two to three kilograms of burnt bone. The finds also include unburnt bone, but all of the identified fragments were of animals. None of the cairns contained a full set of burial gear, and the number of finds was small in all of them, mostly consisting of fragmentary pieces resembling scrap metal. Interpreting the cairns presented a number of problems to Jorma Leppäaho, the director of the excavation, who did not regard all of them as burial structures. He suggested that one was the site of a pyre, from where the remains were taken elsewhere for burial. Other researchers have suggested that the site was a cemetery [e.g. Rinne (1947 24—25), Kivikoski (1961 213), Huurre (1984 311), Lehtosalo-Hilander (1988a & 1988b), and Taavitsainen (1988 & 1990a)].

Bone finds were also few (total 250 g) at the level-ground cremation cemetery at Latokallio, Moisio in Mikkeli, and they have not been identified. The finds even include slag, as at Kyyhkylä, and the objects and artefacts were broken and damaged.

A pair of oval tortoise brooches, fragments of an iron artefact, undated beads, slag etc. were found in a field of the Lampila farm in the rural commune of Mikkeli. The material includes an insignificant amount of bone fragments. It has been suggested that the site was a cemetery (Lehtosalo-Hilander 1988 a 258).

Human bones are of course the clearest indication of a cemetery, but the fragmentary nature of this material makes identification difficult. On the other hand, need bone be a criterion, if its small numbers or complete absence is explained by transport to other cemeteries? It has been suggested that in some cases the Christian relatives of the deceased removed the bones after cremation for interment in consecrated ground, while heathens built a cairn or stone structure over the remains of the pyre (Lehtosalo-Hilander 1988a 198). If this is correct, it would apply to only a few late non-Christian burials. On the other hand, there need not be any bones, or they may occur only in small numbers, if the remains of the dead were removed at some later stage for Christian burial. »Perhaps a convert, frightened by a preacher spouting fire and brimstone, dug up the bones of his forefathers and reburied them in a churchyard in the hope of salvation for them as well. We cannot know what went on in the confused minds of terrified heathens brought face to face with the new

religion.» (Lehtosalo-Hilander 1988a 198). Examples of such a practice may be the piles of burnt bone found in late prehistoric and early medieval inhumation cemeteries (Lehtosalo-Hilander 1988a 197—198).

The latter claim requires further discussion. The inhumation cemeteries of Tuukkala and Visulahti in Mikkeli contained a few cremations, some with artefacts and some without any grave-goods. Simple pits of bones without grave-goods have found at Toppolanmäki in Sääksmäki, Liikistö in Ulvila and Kirk'ailanmäki in Hollola. To the sites listed by Lehtosalo-Hilander we add the cemetery of Suotniemi in Käkisalmi (a bone-pile grave with artefacts; Schwindt 1893 6) and Valmarinniemi in Keminmaa, which was the site of the oldest church and graveyard in the locality (c. 10 cremation graves without artefacts; Koivunen 1982 50).

The cemeteries of Toppolanmäki, Kirk'ailanmäki, Tuukkala and Visulahti contained inhumation graves both with and without grave-goods. In some cases unfurnished graves were so numerous that they most probably date from Christian times. The place-name of Kirk'ailanmäki indicates the site of a church, and Valmarinniemi in Keminmaa and Liikistö in Ulvila (Kronqvist 1938) were in fact medieval church sites.

Piles or caches of bones have also been interpreted as evidence of pagan reaction, or as the remains of persons brought from afar for interment in consecrated ground. The chronicle of Henry of Livonia relates how, after their victory, the pagans »dug up their dead from the church cemeteries, and burned them on a pyre in the old pagan manner.» (Pälsi 1938 35—36; Luho & Leppäaho 1949 95—96; Kivikoski 1955 67—68).

Cremation cannot be explained as a Christian custom. They do not occur, for example, in Denmark (Kieffer-Olsen 1990) or in England (Philip Rahtz, pers. comm.), where extensive excavations of Christian cemeteries have been carried out. The idea of cremation was alien to the theology of the period, for God had created the human body in his image as the Temple of the Holy Spirit, which should not be damaged by fire. Nor could cremation be accommodated to the belief in the resurrection (Madsen 1990). Koivunen (1982 50) points out, however, that at Valmarinniemi cremation graves were located in the midst of inhumation graves, and even on top of them. He points out that this cannot be a case of covert paganism, for the graves were most probably laid with the full knowledge of the church authorities.

But bodies have been relocated. King Harald removed the remains of his father, Gorm, and his mother, Thyra, from a burial mound into the church of Jellinge (Randsborg 1980 18—21 and cited literature). Harald's parents were, however, originally inhumed and not cremated.

It is possible that the bone caches and the cremation burials in cemeteries containing solely furnished graves can be attributed to pagans. But what was the situation at Valmarinniemi and Liikistö, which were solely Christian sites. At least in the latter case we may assume that the bones were the remains of pagan forefathers reinterred by their Christian descendants.

If we accept the possibility that a site may be cemetery even without the presence of human bone, how can we then distinguish, for example, burial mounds, cemeteries, dwelling and/or smithy sites, sacrificial cairns and field-clearing cairns? The same characteristics apply to all of the above. A solution to the problem requires a return to our initial question, viz. the precise archaeological definition of these types of antiquities. We must also take into account the possibility of several functions for a single site.[6] If it can be proven that some of the cemeteries were dwelling sites or had a dual function including burials, it is no longer necessary to ponder the old

question of why there are only Iron Age cemeteries in Finland but hardly any dwelling sites.

In the above discussion I have voiced a number of doubts concerning the specific nature of sites traditionally described as cemeteries. I urge others to do the same. Although I have presented counter-arguments supporting traditional views, the above-mentioned Kyyhkylä and Latokallio sites, as well as a great number of other »cemeteries» may in fact have served other functions. What if they are what they appear to be — refuse heaps containing various kinds of material resulting from occupation? In some cases a more thorough analysis of finds may offer an answer. The material may simply contain features alien to grave-goods. A clear example of scrap metal for smithing is a fragment of a silver penannular brooch from cairn no. IV at Kyyhkylä. The object displays signs of hammering. A counter-argument immediately presents itself: the object may have been bit-silver from the purse or pouch of the deceased. On the other hand, a brooch from cairn no. 5 at Kyyhkylä shows no signs of fire, and it cannot be from a cremation, for which the cairns were mostly erected. If it originated from an inhumation grave covered by the cairn, no other signs of such a grave have been discovered.

The finds from Lampila are of an uncertain character. Excavations were conducted at the site in later years, revealing a stone-laid feature near the original location of the brooches, which was interpreted as the foundation of a forge. A connection between the brooch pair and scrap metal presents itself. The exceptional elevation of the site (110 metres above sea level) makes it an unlikely location for a cemetery and requires further explanation. Cemeteries were located next to settlements, which were for long periods close to bodies of water. For example in the Kainuu region settlements did not spread to hilly locations before the 17th century (Keränen 1984 205,212). This was probably the situation in Savo as well.

Defining cemeteries and distinguishing them from other types of antiquities is a task of major importance with potentially significant consequences for our ideas concerning the development of burial practices and conclusions regarding the history settlement, notably the quantitative increase or decrease population. New definitions will undoubtedly affect explanations of social factors and status, especially relating to the assumed sets of grave-goods in cremation burials. If, for example, Kyyhkylä and Latokallio were not cemeteries, we must reassess former views concerning the consolidation of settlement in the Mikkeli region Viking period, and hypotheses concerning the West-Finnish origin of cemeteries and settlement as a whole.

A central question in such a reappraisal is the origin of scrap metal. As observed above, grave-robbing was a universal custom. For example, settlers along the eastern seaboard of the United States cleared their fields in Indian burial grounds, and often paid for clearing and ploughing in scrap metal. In one case, a farmer spent five years clearing his land. During this time he supplied the local blacksmith with three cart-loads of iron axes, gun barrels, copper kettles and miscellaneous scrap metal. Cemeteries were destroyed even before the settlers arrived. Expeditions of warfare including the looting of cemeteries, as practised by Indians allied with the British or the French in the cemeteries of their old enemies (Wray 1985 102—103, 109). Even Sutton Hoo offers an example of the origin of scrap metal. The Ipswich Journal of 24 November 1860 tells of how one of five Roman (!) mounds was opened. Two bushels of iron screw bolts were recovered, presumably clench-nails from a 'ship-

ghost'. They were taken to a local blacksmith to be made into horseshoes (Rahtz 1985 147).

Examples can be found even closer to Finland. The saga of Olaf the Holy includes a description of Torer Hund's voyage of trade and plunder to Bjarmia. At the end of the expedition the shrine of Jomal was looted, and great amounts of silver were dug from a burial mound (Tallgren 1931 101—103; Haavio 1965 184—185). It is also possible that scrap metal was collected from various sources, and it may have been an article of trade.[7] It is also important to consider the nature of the blacksmith's trade. Were blacksmiths sedentary, or did they travel in pursuing their craft (see e.g. Straume 1986)?

There is every reason to be cautious in drawing far-ranging historical conclusions on the basis of scrap metal. If the Viking period finds from Mikkeli are scrap metal, they do not provide unequivocal support for an assumed West-Finnish origin of settlement.[8] An example not mentioned previously is the fort of Käkisalmi. A trade and craft centre at the site contained Merovingian and Viking period finds in a layer dendrochronologically dated to 1310[9] (Taavitsainen 1990a 132, 241—242 and cited literature). Older artefacts, including more Merovingian period ornaments, were later found in late 12th or early 13th-century layers (A. Saksa, oral. comm.).

There are early historical references to expeditions of warfare and plunder from east to west and vice versa. These must be taken into account in connection with western objects found at Käkisalmi, and also in connection with eastern objects in western finds, if they have come to light in contexts suggesting scrap metal. The Merovingian and Viking period finds from Käkisalmi do not necessarily, at least not without reference to archaeological formation processes, shed »completely new light» on its history, as assumed by some archaeologists (Uino 1990 124).

The views and comments expressed in this article are not intended to give answers, but to raise questions. To quote A. M. Tallgren's words from 1934 (see also Tallgren 1937): »Scepticism is a powerful aid to scientific thought. Above all scepticism is justified in the case of creative scientists and is as indispensable as positive knowledge. One must be bold enough to cast doubt both upon the theories of others and upon one's own, and even upon the foundations of one's own science and its method, if one is to achieve a criticism that is not barren but alive. And scepticism is positive if it leads to a knowledge of the limitations of one's field of science, to the suppression of vanity and self-conceit, to an appreciation of realities.»

Notes

[1] This article is based on a lecture given by me in connection with the public inspection of my doctoral dissertation on 11 January 1991. Numerous additions and revisions have been made to the original text.

[2] This was definitely a long-lived practice. The following information was given concerning a students' ethnographic expedition in 1876: »*Towards evening we went to the village of Lapinlahti. Here, the blacksmith and the coppersmith were the first to have their stores of scrap metal investigated* (author's italics). Finds included an oval brooch from pagan times... The coppersmith said that he often melted them together with other bronze pieces found in the soil, and the reports of the other villagers pointed in the same direction...» (Schvindt & Sirelius 1922 54). Although this source does not directly mention where the recycled objects were obtained, some of them may have been from prehistoric graves. In any case, this example shows where collectors of museum objects began to look for prehistoric artefacts.

[3] Cf. Luoto (1990 47) who claims that »once the existence of a cemetery has been established, there is usually no room for doubt.»

[4] It must be pointed out that early iron smelting technology used organic materials (e.g. animal bones) as catalysts for lowering the melting temperature (see e.g. Oldeberg 1966 216—217). Bones are thus natural finds at iron making sites (e.g. Harola in Eura). What role they may have had in smithies is so far unknown.

[5] Slag has been found as grave-goods and in the fill of graves in several places in Sweden, notably in the province of Gästrikland, where a third of the Viking period graves contained slag. This phenomenon has been given functional, religious, and even structuralist explanations (Burström 1990). In Finland, slag has also been found in inhumation graves. For example, it was common at Luistari in Eura, occurring in two-thirds of the Viking period adult graves. It is also mentioned as occurring especially in the fill of graves. There was an earlier dwelling site in connection with this cemetery, and slag from the older site came to be deposited in the fill. It has also been assumed that much slag from a later iron works was deposited at the site. Lehtosalo-Hilander (1982 13—14, 41), however, suggests that this material was in some way related to burial customs.

As a point of comparison we may mention the inhumation cemeteries at Köyliö, large areas of which have been excavated. There, small pieces of slag were found in only a few graves. Writing of the Merovingian period graves at the site, Cleve observes how, at least in Finland, slag is not found »within» the graves, but in their fill or among the stones laid on top of them. Also in the cremation graves, slag is found mainly in the surface layers. Cleve also points out that refuse of this kind was hardly a suitable gift for the dead, but mentions a piece of slag found at the bottom of a cremation-pit grave at Kjuloholm in Köyliö. On these grounds, he was prepared to explain slag, having been in contact with fire, as related to protective magic (Cleve 1943 55, 164—165). In his discussion of the Viking and Crusade period inhumation graves of Köyliö, Cleve observed that they contained only a few pieces of slag, »and it was impossible to say whether they had anything at all to do with the burial rites.» (Cleve 1978 87). It must also be mentioned that archaeologists tend to describe all strange and surprising observations as having to do with religious customs. For example, the remains of a bull calf from the cemetery of Visulahti in Mikkeli have been explained as a sacrifice (Kivikoski 1961 271; Lehtosalo-Hilander 1988a 194, 197), although this was a simple case of later slaughtering refuse deposited at the site (Taavitsainen 1990b). Also cairns that cannot be described as burial structures are easily explained as sacrificial mounds (e.g. Voionmaa 1953 61—63; see, however, Edgren 1968 41—42 and Huurre 1972 65—66). A well-known example from Finland is a sacrificial cairn at Retulansaari, to which the excavator later referred in quotation marks and came to regard it as a dwelling site and a house-floor, disturbed by a refuse pit and later burials of horses. Stones and earth accumulated on top of the structure because of cultivation at the site (Sarkamo 1970 & 1984).

Richard A. Gould (1990 39—40) has warned archaeologists that »they must resist the impulse to read their own expectations into the material record of the past. It is tempting to focus on such obviously expressive aspects of culture as art and ritual, yet it is precisely these components of ancient cultural systems that are most subject to uncontrolled speculation.» In writing of the interpretations, Gould uses the Finnish word »rajatieto» (borderline knowledge).

[6] For example, there is a smithy site in the northeast part of the Katajamäki area in Paimio. Remains of a cremation cemetery have been observed on the hill-top of the location, and an Iron Age dwelling site around the sides of the hill. Finds from historically documented times have been found in the adjoining fields. The smithy has been dated to historical times. The smithy was excavated by Simo Vanhatalo who, in his report, suggests that objects from the cemetery were possibly used as raw material in the smithy (Excavation report from 1988 by Simo Vanhatalo concerning trial excavations of a cremation cemetery and possible dwelling site at Katajamäki in Paimio. Topographic Archives, Section for Prehistory, National Board of Antiquities).

Rupakallio at Rapola in Sääksmäki is another example of a site with several functions. Lehtosalo-Hilander (1990), however, claims unequivocally that the site is a cemetery [cf. discussion by Heikkurinen-Montell & Suominen (1985 28—29) concerning a similar site, where other alternatives are taken into account]. The finds and observations contain, however, strong indications of dwelling site and »non-burial» activities. The »cemetery» included, for example, a considerable amount of slag, indicating a smithy, a stove-like wall construction, and broken objects. The site for the smithy may have been chosen because of the adjacent cemetery, or the whole complex may reflect the remains of human activity of different type and age accumulated at the site over several centuries.

[7] For example the coppersmiths of Sastamala had a clientele ranging over a wide area (Jokipii 1952 150). They used as raw material old kettles, which their clients had left to be repaired. Court records show that the coppersmiths sometimes had to recompense for copper objects that had not been returned to their owners (Jokipii 1952).

[8] For example Lehtosalo-Hilander (1988b 29) has, on the basis of the assumed cemeteries of Kyyhkylä and Moisio and their finds of silver brooches, estimated the period of use of large silver brooches in Savo, and has dated these cemeteries according to the fragments of brooches. She points out, however (Lehtosalo-Hilander 1988b 23) (but does not draw any conclusions on this point) how in a fragment for cairn no. IV there were »distinct impressions of hammering», and how »fragment was, however, beaten, possibly changing its curvature» (Lehtosalo-Hilander 1988b 24). The conclusions regarding the period when the brooches were used, and the concomitant conception of a blossoming of settlement in Greater Savo prior to Karelian settlement is thus based on scrap metal.

[9] The actual dendrochronological age is defined as the first quarter of the fourteenth century (Kolčin & Černyh 1977 113—114), but Kirpičnikov links the site to the year 1310, when, according to chronicle sources, the Novgorodians built a new fortress. Future dendrochronological datings may change previous datings and their interpretations.

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