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LILLBERGET RELOADED: RE-EXAMINING AN ANOMALOUS COMB WARE SITE IN ÖVERKALIX, NORTH SWEDEN

INTRODUCTION

The previous issue of Fennoscandia archaeologica included a contribution by Bryan C. Hood and Samuli Helama (Hood & Helama 2010), which is of great significance regarding the study of the earliest occurrences of metal, namely copper, in prehistoric Fennoscandia. In the article the authors re-examined the evidence from Karlebotnbakken, a site located in Varangerfjord, North Norway (Fig. 1), which is well known as a place where a blade of an early copper dagger was found in archaeological excavations carried out in 1985–6 (Schanche 1986; 1989). The dagger blade was originally dated to the so-called Gressbakken Phase (ca. 2000–1600 cal. BC), mainly based on the excavated material and artefact typology. However, the sclerochronological research recently carried out on the shell middens present at the site, together with a set of new AMS-dates, formed conclusive evidence to revise the date to ca. 3000 cal. BC. The revised date has, of course, implications concerning the interpretation of the site, as well as the bigger picture regarding the distribution of early copper artefacts in Fennoscandia.

Another iconic site frequently brought up when discussing the earliest evidence for the use of metals in Fennoscandia is Lillberget, located in the municipality of Överkalix in Norrbotten, North Sweden (Fig. 1). The site comprises the remains of several semi-subterranean houses and the archaeological excavations carried out there in the 1990s yielded a rich array of finds, which included, amongst other things, the first pieces of Typical Comb Ware pottery found in Sweden as well as some copper artefacts (Halén 1994; 1996; also Färjare 1996; 2000). The site was originally dated to ca. 3900 cal. BC based on few conventional radiocarbon dates (Fig. 2, Table 1), shore displacement backtracking and typologically significant artefacts. This date was also assigned to the material evidence on the use and hypothesized production of copper at the site, as all remains of the semi-subterranean houses were interpreted roughly contemporary (Halén 1994: 174).

Today, such an early date from such a remote place poses severe problems regarding the bigger picture; it is anomalous both considering the general cultural development during the Typical Comb Ware phase and the use and manipulation of copper in prehistoric Fennoscandia. Hence, inspired by the example set by Hood & Helama (2010), we felt obliged to write up this short contribution to encourage further discussion on and critical re-examination of sites and finds that have become iconic in one way or another.

DATING THE HOUSE-PITS AND THE SITE

The Lillberget copper artefacts were found in house-pit 1B, while three radiocarbon dates were obtained from house-pits 1A and 2 flanking it from both sides. The datings (Ua-2632 & Ua-2633) from a fireplace in house-pit 1A gave a result 3950–3705 cal. BC (2 sigma) and from a fireplace in house-pit 2 (Ua-2634) 4255–3805 cal. BC. While it was acknowledged, that house-pit 1A had to be older than house-pit 1B, because during the construction of 1B a layer of soil had been dumped inside 1A, the difference in their age was considered to be small. Interpretation was put forward that all structures had been in contemporaneous use ca. 3900 cal. BC, with the estimated total use-life being no longer than some decades (Halén 1994: 85, 174–6). The adjacent house-pits 1B, 2, 3 and 4 were interpreted as parts of one and the same terrace house (Halén 1994: 92–3, 175), even tough no evidence of inter-connecting cor-

Fig. 1. *The location of Lillberget site and other places mentioned in the text; black dots indicate Neolithic sites with copper finds (as for the end of year 2010).*

ridors or doors – a customary feature in Neolithic terrace houses (e.g. Zhul'nikov 2003; Mökkönen 2008) – was observed during the excavations. If the site really dates to 3900 cal. BC, it would also be the earliest example of a Neolithic terrace house known in the north; usually such houses date between the late 4th and early 2nd millennium cal. BC (Mökkönen 2008: 131–5).

After the original publication of the Lillberget site (Halén 1994; 1996), the number of radiocarbon dates from the location has risen into 16 (Färjare 2000: 13–4; see Fig. 2, Table 1). The new dates are either contemporary with the ones presented by Halén (excluding the oldest date Ua-2634), or somewhat younger. Unfortunately none of the new datings can not be directly linked with the copper finds either. In any case the radiometric datings do indicate more prolonged use of the site, instead of a single episode of habitation (see also Färjare 2000). The datings also render the site perfectly contemporary, not anomalously early, with copper yielding Typical Comb Ware and Rhomb-Pit Ware sites in Finland and northwest Russia.

The estimated date based on a land uplift curve (Halén 1994: 171) likewise seems to be early. The land uplift curve used for the purpose was published by Nuñez (1990: 29 Fig. 2) for Pello–Rovaniemi area in Lapland (Finland), east of the Lillberget site. More recent land uplift curves that reconstruct the chronology of the isostatic rebound in the area of Gulf of Bothnia have been published thereafter (e.g. Nuñez & Okkonen 1999: 106 Fig. 2; Okkonen 2003: 91 Kuva 21). They suggest a date of 3500–3700 cal. BC for altitudes 62–64 m a.s.l. that corresponds both with

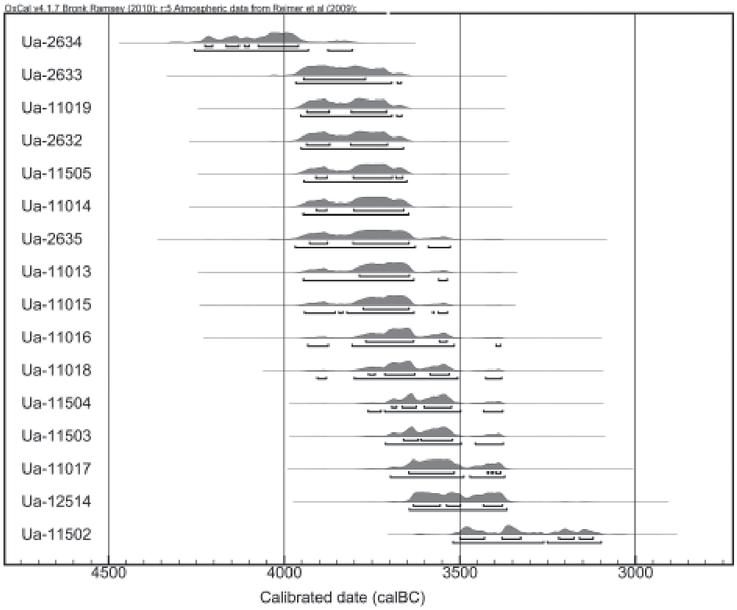


Fig. 2. Radiocarbon dates from Lillberget.

Lab No.	Uncal. BP	Cal.[1] BC (2δ)	Material	Refrerence
Ua-2632	5005±70	3950–3660	charcoal	Halén 1994
Ua-2633	5035±70	3965–3665	charcoal	Halén 1994
Ua-2634	5220±75	4255–3805	charcoal	Halén 1994
Ua-2635	4955±100	3970–3525	charcoal	Halén 1994
Ua-11013	4930±75	3945–3535	birch bark	Färjare 2000
Ua-11014	4975±75	3945–3645	charcoal	Färjare 2000
Ua-11015	4925±70	3940–3535	charcoal	Färjare 2000
Ua-11016	4880±75	3930–3385	charcoal	Färjare 2000
Ua-11017	4780±75	3695–3370	charcoal	Färjare 2000
Ua-11018	4865±75	3905–3380	charcoal	Färjare 2000
Ua-11019	5010±60	3950–3665	birch bark	Färjare 2000
Ua-11502	4590±60	3520–3095	charcoal	Färjare 2000
Ua-11503	4815±65	3710–3375	charcoal	Färjare 2000
Ua-11504	4825±65	3760–3375	charcoal	Färjare 2000
Ua-11505	4980±65	3945–3660	charcoal	Färjare 2000
Ua-12514	4730±75	3645–3365	chewing resin	Färjare 2000

1) OxCal v4.1.7 Bronk Ramsey (2010); r:5 Athmospheric data from Reimer et al. (2009).

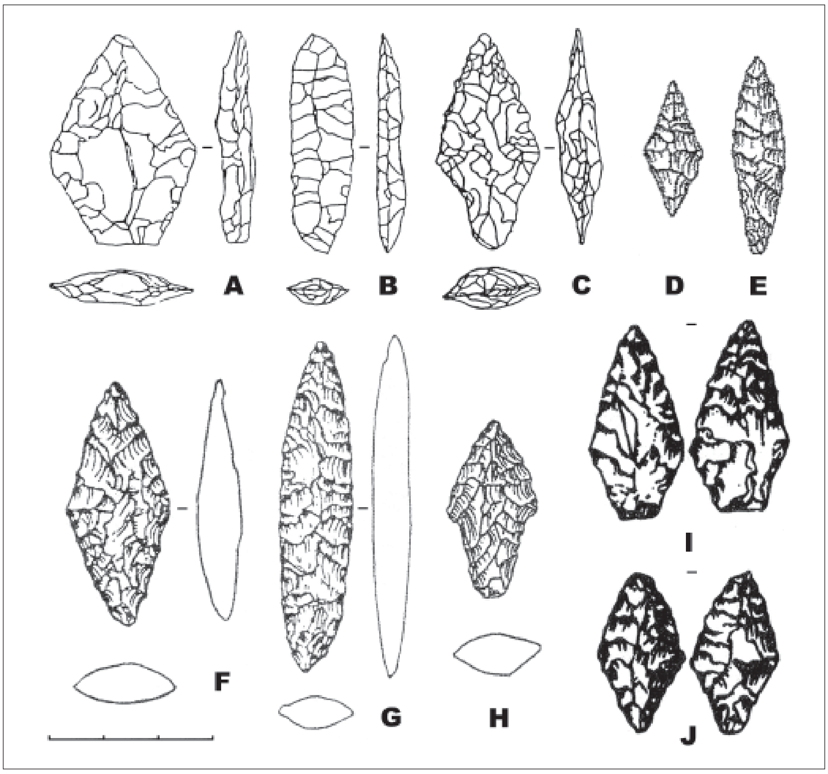
Table 1. Radiocarbon dates from Lillberget.

the level of copper finds and the location of semi-subterranean dwellings at the site. The conclusion to be drawn here is that it is highly unlikely that the site was inhabited immediately after 4000 cal. BC as originally suggested.

OF POTS AND ARROWHEADS

The artefact assemblage of Lillberget played an important role in supporting the early date for the site, but in closer examination many of the arguments turn out to be poorly founded. The pottery found at Lillberget has been identified on stylistic grounds as Ka2:1 (Halén 1994: 136), in other words, as older Typical Comb Ware, which during the time of the original publication of the site was taken to imply also chronological difference as opposed to style Ka2:2, or younger Typical Comb Ware. However, an extensive program aimed to refine the chronology of prehistoric pottery in Finland with AMS-dating method has been recently carried out, and the results indicate that the two variants of Typical Comb Ware, Ka 2:1 and Ka2:2, are in fact synchronous expressions of similar ideas rather than two chronologically distinct entities (Pesonen 2004: 91).

Fig. 3. Three flint point types used in the dating of Lillberget site (A–C, after Halén 1994: Fig 126), and their Neolithic comparanda from northwest Russia (D–E, after Gurina & Kraynov 1996: ris 56; F–H, after Zhul'nikov 1999: ris 48–9; I–J, after Vitenkova 1996: ris 21.



It is also worth remembering that when the Lillberget site was first dated on the basis of Typical Comb Ware finds, the absolute chronology for this pottery had been established with conventional radiocarbon dates derived from wood charcoal samples associated more or less closely with the pottery. Later on, it has been shown that these conventional samples yield usually dates a few centuries older than AMS-dates obtained directly from the sooted crust or birch bark tar repairs on the vessel (see Pesonen 1999: 195). The chronology originally utilized placed the use of Ka2:1 to ca. 3300–3000 uncal. BC, i.e. ca. 4100–3800 cal. BC (Halén 1994: 170) – currently Typical Comb Ware is dated to ca. 3900–3500 cal. BC (Pesonen 2004: 91; Pesonen & Leskinen 2009: 300 Table 10.1). Although pottery will not be dealt here in more detail, it is worth noting that also the variability observed in the ceramics from Lillberget (Färjare 2000) can be seen to indicate prolonged use of the site.

A problematic issue related to the find assemblage is the dating of flint arrowheads used at the site. Originally the flint points were dated from the Late Mesolithic to the Early Neolithic period based on presumably analogous material found in Russia (Halén 1994: 111–2 Figs. 126–7, 170–1). Nonetheless, many of the finds presented as comparanda from other sites can be regarded similar only with regard to a superficial resemblance in shape, while technological similarities and dissimilarities have been practically excluded from the discussion.

The primary technology used for the manufacture of flint points found at Lillberget, bifacial pressure flaking (Halén 1994: 111, 126), dates in Finland and in neighboring areas predominately to Typical Comb Ware period and later (Manninen et al. 2003: 161; see also e.g. Vitenkova 1996; Kriiska et al. 2011). However, a severe error happens in identifying the bifacially worked points from Lillberget with arrowheads made of flint blades with heavy dorsal and milder ventral retouch. The latter, indeed, are typical for the Late Mesolithic and some Early Neolithic industries of northwest Russia (e.g. Gurina 1989a: 64, 244 tablitsa 37; Kraynov 1996: 169, 170 ris 53; Vereshchagina 2010: 21, 42, 45), but do not relate to the specimens from Lillberget (Figs. 3–4). Such northwest Russian arrowheads include also

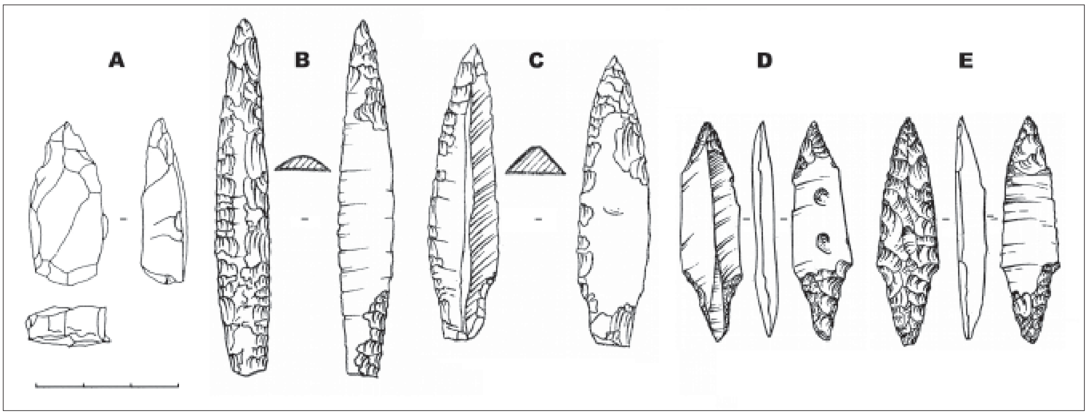


Fig. 4. The alleged Oleniy ostrov point from Lillberget (A, after Halén 1994: Fig. 129), and two such points found in Oleniy ostrov cemetery at Lake Onega (B–C, after Gurina 1989a: Tablitsa 9) as well as two corresponding Mesolithic points from Upper-Volga (D–E, after Gurina 1989b: Tablitsa 37). Similar points, including artefacts B and D, have been presented as comparanda (Halén 1994) for bifaces A–C shown in Fig. 3.

the so-called Oleniy Ostrov type (e.g. Gurina 1989b: 30–1, 216 tablitsa 9), an example of which is also reported to been found at Lillberget (Halén 1994: 114–5 fig. 129). However from a technological or even typological point of view the find from Lillberget has nothing to do with Oleniy Ostrov type points, and it can be reasonably even doubted, whether it is an arrowhead at all (Fig. 4).

Similarly, the transverse arrowheads published from the site were used as another proof of the early dating (Halén 1994: 107 fig. 118, 112–4; for a recent overview on oblique points see Manninen & Knutsson 2011). However, as pointed out already elsewhere (Knutsson 1998: 76), the Lillberget specimens are not transverse arrowheads, but just flake fragments, and thus do not match the alleged Russian counterparts or support the dating.

In some other cases the Russian material presented as comparanda bears a closer relation to the Lillberget artefacts, but in such cases the dating is later. Thus, contrary to being Late Mesolithic and Early Neolithic types, the points published from Lillberget actually have a wide distribution in northwest Russia and Finland during the Neolithic period among different groups producing Comb Ware and subsequent pottery types (see e.g. Gurina & Kraynov 1996: 175–8 ris 56; Kraynov 1987: 160 ris 4; Pesonen 2001; Zhul'nikov 1999: ris 45–9).

OF AMBIGUOUS COPPER FINDS

The occurrence of copper and the alleged evidence for metallurgy at the Lillberget site form another problematic issue. Finds belonging to this category are reported to include a piece of copper sheet, a tubular copper bead and a small fragment of what has been described as copper-bearing sandstone. A few small ceramic cups found at the site have been identified as crucibles, in addition to which all the sandstone implements found at Lillberget are tentatively connected to the processing of copper ore (Halén 1994: 103–5; 153–61). The source for the copper, and the accompanying metallurgical skills that presumably travelled with the metal, was identified as the Volga-Ural area (Halén 1994: 156–7). However, the earliest signs of metallurgy in that region pertain to the Volosovo and Garino-Bor cultures and are currently dated from the second half of 4th millennium cal. BC onwards (Kraynov 1987: 14–5; Nagovitsyn 1987: 32; Nordqvist et al. n.d.). Thus, if the original date of Lillberget site is accepted, one should be able to define the direction from where the technological knowledge was transmitted to Norrbotten in the early 4th millennium cal. BC.

One potential explanation is to connect the copper and metallurgical knowledge to the Republic of Karelia (Russia), where the area surrounding the northwestern shores of Lake Onega was both an important source of native copper and central for the early adoption of metal in the north (e.g. Zhuravlev 1991; Zhul'nikov 1999; Nordqvist et al. n.d.). However, two reasons can be pointed out why this direction does not seem to be the probable source of metal. Firstly, neither native copper nor copper ore is found in sandstone formations in Karelia (see Kuleshevich & Lavrov 2010). Secondly, the interpretation that the copper artefacts found at Lillberget would have been produced by refining metal from copper ore through smelting and hot-working at the site (Halén 1994: 159–61) is in conflict with the evidence from other early copper bearing sites in eastern and northern Fennoscandia. Advanced metal technology, including the know-how needed for smelting, was introduced to the Lake Onega region only centuries later, not ca. 3800 cal. BC as alleged by Halén (1994: 161).

Further, the identification of a tiny sandstone fragment with a green stain as oxidized copper ore must be questioned. Halén (1994: 256) reports that a sample of the sandstone in question was subjected to chemical analysis and a copper content of 45 ppm was measured through atomic absorption spectrometry (AAS). Because only 79.7 % of the sample was dissolved in the analysis, the 'original' copper content was somehow extrapolated from previous figures to be 56.4 ppm. This figure, in turn, was rounded up and converted into a percentage. The resulting value, 0.6 %, is obviously an unfortunate misconversion, while the appropriate figure is 0.006 %. Thus, instead of being 'some 120 times higher than the mean in the lithosphere' (Halén 1994: 256), the figure is in fact well in line with the reported abundance of copper in the Earth's crust (e.g. 50–58 ppm; Emsley 2001: 124; Girard 2009: 21). Therefore, the identification of this find as oxidized copper ore in sandstone can be rejected with a good reason.

Interestingly, the previous observation does not completely undermine the idea about the presence of objects derived from copper ore at Lillberget. When the question is approached by examining synchronous changes in the chemical composition of a copper object applying a method focusing on the variation observed in six common elements in this metal (Friedman et al. 1966), the results give a 99.83 % chance that the copper bead found at Lillberget has been made of metal derived from sulphide copper ore. As Lake Onega district is one of the areas where sulphide copper ores are present (Kuleshevich & Lavrov 2010), it is not difficult to imagine that copper reached the Lillberget site as ready-made objects and long distance imports.

Because hot working of copper seems to have been introduced in Karelia through external influences only during the second half of 4th millennium cal. BC, accepting the above scheme would require the date for metal use at Lillberget site to be adjusted accordingly. Even so, this interpretation is not totally problem-free considering the available radiocarbon dates for the site and the general dating of Typical Comb Ware. Moreover, no certain copper artefacts made of ore-derived copper are known from Typical Comb Ware or Rhomb-Pit Ware contexts in either Karelia or Finland.

In sum, it seems that the copper objects have reached Lillberget as ready-made objects, as no indisputable signs of local production can be observed. The presumed evidence for on-site production, the presence of copper-bearing sandstone (Halén 1994: 161), is shown here to be a misinterpretation. Proposed corroborating evidence, like the alleged existence of crucibles and ore-processing stones at the site, can also be explained in another way. It is true that the small clay cups, the number of which has increased since Halen's excavations, show in many cases exposure to high heat – however, their distribution does not seem to correlate with the fireplaces at the location (Färjare 2000: 31).

Further, the interpretation of small cups as crucibles (Halén 1994: 143–4; 160) remains unsupported, as the inner surfaces of these vessels have not been analyzed and do not show clear signs of use for metal production. In addition, small cups are fairly common in Typical Comb Ware assemblages (e.g. Huurre 1998: 126), and may have been used for a multitude of other purposes than metallurgy. Likewise, the connection between sandstone fragments and ore processing can be seriously questioned, as there is no factual evidence pointing towards this direction (also Halén 1994: 103).

CONCLUSION

While evaluating the data originally used for dating the Lillberget site and the early use of metal there, some peculiarities become evident. Apart from sheer misinterpretations, it is striking that later dates for some of the finds (e.g. Halén 1994: 111) or houses presented as comparanda for the structures present at Lillberget (Halén 1994: 97–8) were discarded without further discussion. The quality of and the differences in the original conventional charcoal dates from different contexts were not paid attention to, although there would have been grounds to do so – for example the dated sample Ua-2635 was derived from charcoal found in a red ochre grave near-by, not from the house-pits. It seems that the pursued general interpretation of the nature of the site led to the conclusion that all dates (and other evidence) reflected just a single episode of use.

After reassessing the dating and a part of the find material, the site of Lillberget no longer appears as anomalous as previously presented. Of course the site remains as one of the extremes in the geographical distribution of Typical Comb Ware, but many interpretations, e.g. the existence of terrace house must be questioned. Also the uniqueness of metallurgy at Lillberget is challenged (with a small condition regarding the raw material), and it seems to be contemporaneous with the early Typical Comb Ware period copper use in prehistoric Fennoscandia. Unfortunately the available material does not allow pinpointing the exact date for the metal use at Lillberget, but it seems that there is no reason to connect it to the very initial use of the site. The longer period of use also drastically changes the original view, according to which the special features observed at the site were the result of exceptional and early sedentism (Halén 1994: 161). In fact, what we are dealing here with is just different aspects of the Neolithization process in the north, in which sedentism and new (exotic) raw materials are only individual parts of the parcel (e.g. Mökkönen 2011; Herva et al. n.d.).

Together with the contribution published in previous Fennoscandia archaeologica on the Karlebotnbakken site (Hood & Helama 2010), this note has perhaps demonstrated that from time to time it is necessary to re-examine the evidence even from the most 'iconic' sites. The framework against which such sites are reflected is constantly changing: new methods and points of view are introduced, while new and thought-provoking information is being gathered at other sites. The degree in which these novelties affect the iconicity of a given site varies from a case to another. In this case it seems evident that the date of the Lillberget site needs to be readjusted, and the previous idea of short period of use needs to be replaced with longer use-life – especially the date for the introduction of copper needs to be shifted somewhat latter than previously thought. Also the origins of metal and means of obtaining it, local manufacture or import, have to be reconsidered. The connection to the east is evident and clear – still the Volga-Ural area may not be the correct forepart of these connections, but the more near-lying regions of Finland and Karelia, and the Lake Onega region in particular.

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