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CHANGES IN NEOLITHIC LITHIC RAW MATERIALS IN EASTERN FINLAND: INDICATIONS OF CHANGING CONTACT NETWORKS

Т. Меккенен, К. Нордквист, В.-П. Херва. ***Изменения в использовании каменного сырья в неолите Восточной Финляндии: свидетельства меняющихся систем коммуникаций***

Анализируются изменения в использовании разных типов сырья для производства каменных орудий в регионе озера Сайма в Восточной Финляндии во время распространения традиции типичной гребенчато-ямочной керамики в 4 тыс. до н.э. Полученные результаты позволяют предположить проникновение в южную часть региона нового населения в результате миграции и постепенное развитие социальных контактов с населением северной части. Рассматриваются возможности моделирования древних систем социальных связей в регионе.

Introduction

Two Neolithic migrations are traditionally recognized in Finnish archaeology: Typical Comb Ware (3900–3400 cal BC) and Corded Ware (2800–2000 cal BC). This paper focuses on the first one. The appearance of Typical Comb Ware to Finland has been seen as a result of migration from the east/south-east over the whole country, and associated with radical cultural changes: new pottery type, intense import of flint, changes in burial customs and settlement, etc. (e.g. Tallgren, 1931; Edgren, 1992).

In this contribution the feasibility of idea promoting migration and uniform development is explored in the Lake Saimaa region (eastern Finland; are ca. 50.000 km2), which is commonly seen as the core area of Typical Comb Ware within the present-day area of Finland (fig. 1). We do this by studying the changes in use of lithic raw materials during the 5th and 4th millennia cal BC. Apart from flint, we focus especially on local raw material use and exploitation of high-quality microcrystalline quartzes. The purpose is to study what the (local) lithic profiles tell about the contact networks of groups inhabiting different areas and how the changes are related to other archaeologically observed phenomena.

Crystal cavities and high-quality quartzes

Large-scale acquisition of local high-quality raw materials, chiefly different varieties of rock crystals (termed here also as high-quality quartzes), is possible only by exploiting special deposits. One of the most productive deposit types is called crystal cavities. These cavities are hollows and cracks in the bedrock, in which different varieties of quartz can be found in crystalline form, and which have become randomly exposed by the Ice Age (fig. 1). Crystal cavities are present mainly in the Wiborg Rapakivi Massif area (south-eastern Finland and Karelian Isthmus, Russia); smaller rapakivi areas are known in Salmi (northern Lake Ladoga region, Russia) and Laitila (south-western Finland).

The majority of known and studied cavities are located in south-eastern Finland. Typically the size of roundish or cylindrical cavities is several decimetres in diameter, whereas the largest known examples may be 2–2.5 m in diameter (e.g. Eskola, 1927; Kinnunen et al., 1987). Most commonly the crystal cavities contain singular crystals or crystal clusters of clear quartz (rock crystal) and smoky quartz, but also other varieties of quartz as well as true gemstones like topaz may be present (e.g. Kinnunen et al., 1987; Lahti, Kinnunen, 1993). High-quality quartzes are microcrystalline in structure and devoid of internal flaws, which makes them the only local raw material close to flint in terms of knapping properties (see Rankama et al., 2006).

The scarce and limited occurrence of high-quality quartzes is in stark contrast to the normal, macrocrystalline vein quartzes, which occur abundantly in the bedrock and as pebbles in moraine. Therefore, the acquisition of crystallized quartzes requires particular awareness of where to discover such materials in the environment — and apparently also specific requirements placed for the raw material itself.

Lithic raw material use in the 4th millennium cal BC

It is commonly repeated fact that flint is pronouncedly present in Typical Comb Ware assemblages (e.g. Vuorinen, 1982; Вуоринен, 1984). In our research area the amount of quartz during the Early Neolithic (5200–3900 cal BC) and after Typical Comb Ware (i.e. after 3500 cal BC) is 95–99% of all knapped lithics (in weight), whereas in Typical Comb Ware assemblages the amount of quartz is only 67% (31% of flint) (data presented in this chapter is based on materials presented in Mökkönen, Nordqvist, 2016).

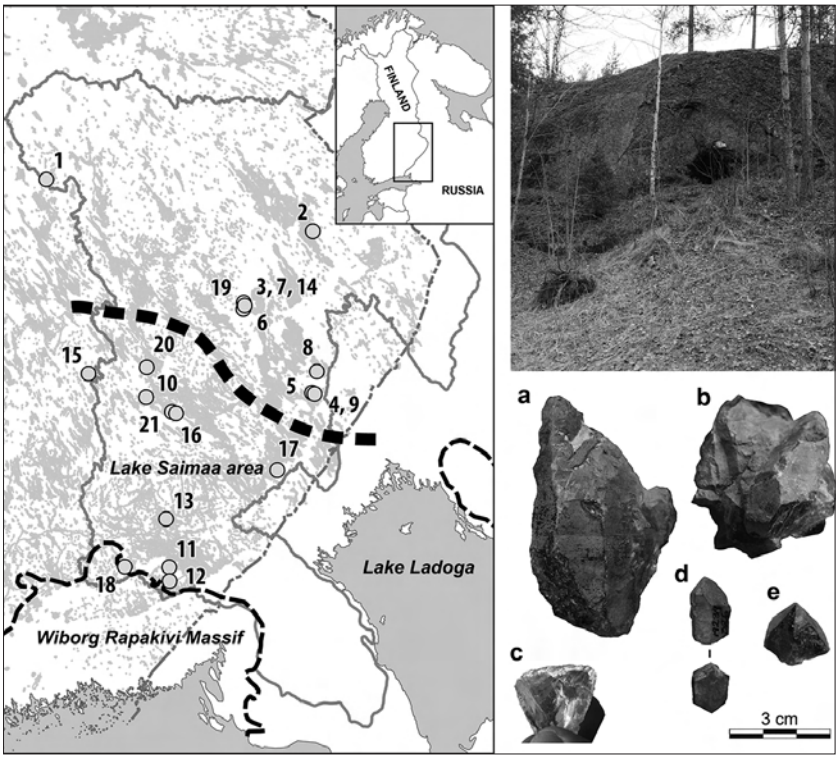

Fig. 1. The location of Lake Saimaa area, Wiborg Rapakivi Massif and the sites included in the original analysis. Thick dashed line divides the Lake Saimaa area into northern and southern parts (see text), solid line shows the River Vuoksi catchment area. Pictures on the right: an exposed crystal cavity in south-eastern Finland (Luoperinvuori) (top), and examples of high-quality quartzes from the Vaateranta settlement and burial site (below): idiomorphic rock crystals of smoky quartz (a — KM 30887:920, b — KM 30322:1031, d — KM 19239:326, e — KM 31825:3551) and a scraper made of rock crystal (c — KM 30887:1145). Map and photos T. Mökkönen, K. Nordqvist

Рис. 1. Карта региона озера Сайма, выборгского массива гранитов рапакиви и археологических памятников, проанализированных в исследовании. Жирный пунктир разделяет регион озера Сайма на северную и южную части (см. текст), сплошной линией показаны границы бассейна р. Вуокса. Справа: обнажение выхода хрусталя в Юго-Восточной Финляндии (Луоперинвуори) (вверху); примеры высококачественного кварца из материалов поселения и могильника Ваатеранта (внизу): идиоморфные кристаллы дымчатого кварца (a — KM 30887:920, b — KM 30322:1031, d — KM 19239:326, e — KM 31825:3551) и скребок из горного хрусталя (c — KM 30887:1145). Карта и фотографии Т. Меккенена и К. Нордквиста

The small amount of flint in Early Neolithic assemblages represents mainly imported, ready-made artefacts (no flint occurs naturally in Finland) and high-quality quartzes were also employed in knapping during this time. High-quality quartzes equal to 13 % and 17 % of all quartzes during the Early Neolithic and Typical Comb Ware period respectively, whereas their proportion is less than 1 % after 3500 cal BC. During Typical Comb Ware flint is introduced in the knapping process alongside high-quality quartzes. Notably, there is a marked difference between the northern and southern Lake Saimaa area: in the north the amount of flint is 6–13% (quartz 86–93 %; in weight) and in the south 21–52 % (46–76 %). The most extreme values derive from the Vaateranta site, which is the southernmost and oldest of the analysed and dated sites, with 52 % of flint, 46% of quartz (of which ca. one fourth consists of high-quality quartzes; fig. 1), and just 2 % of other raw materials (in weight).

High-quality quartzes reflect also the local use of raw materials: rock crystal is present everywhere, blue quartz in the north and smoky quartz in the south. This corresponds to the natural distribution of these quartz varieties and suggests that high-quality quartzes were not transported over long distances. Further, regional variation is apparent in the ratio of flint tools vs. flakes: the proportion of ready-made (imported) tools is much higher at the northern sites, which, in addition to the volume of raw material, indicates more active flint import in the south. The preference of flint knapping is reflected also in the reduction techniques applied on quartz: in the north, over 75 % of cores represent bipolar technique (customarily used on vein quartz) and in the south up to 50 % quartz cores are either platform or irregular cores.

In addition to knapped lithics, Typical Comb Ware pottery — usually conceived as uniform in all areas (but see Nordqvist, Mökkönen, 2015; Нордквист, Меккенен, 2015) — represents clear differences between the northern and southern Lake Saimaa areas. In the north the presence of local, Early Neolithic tradition is visible as hybrid forms and, for example, the common use of asbestos temper — at the southern sites pottery confirms more with every aspect of the traditional definition of Typical Comb Ware (authors' unpublished data).

Discussion: migration and local development

The archaeological material from the Lake Saimaa area alone shows differences, which reflect changes in the ways of introduction

and development of Typical Comb Ware in different areas. The new pottery type and especially the new raw material use and reduction technique support strongly the idea that Typical Comb Ware arrives in the southern Lake Saimaa region in the form of migration. In the north its establishment is the result of slower development of limited population movements and of cultural contacts (this view is also supported by the available 14C datings; e.g. Pesonen, 2004 and authors' unpublished data). Flint import in the south further shows, that the migrating population was part of networks through which they upheld connections to their probable source areas further east. The northern Lake Saimaa took part in these connections to a much lesser extent and also the nature of contacts seems to have been different.

The use of local high-quality raw materials reflects also this change. High-quality quartzes had been used already earlier, but their utilization increases alongside the elevated flint use. Thus, significant changes take place in ways of how and what kinds of raw material sources were exploited. As different stones and minerals are found in very different geological formations, the preference towards certain local high-quality lithics tells not only about differences in the reduction traditions, but also in the perception and utilization of environment. However, the fact that high-quality quartzes seem not to have moved very far from their sources suggests that they were signified differently from the widely transported flint.

The abrupt termination in the use of flint after Typical Comb Ware may be seen to evidence rupturing or reorganizing the previous contact networks. Nevertheless, the cessation in the use of local high-quality raw materials indicates that the requirements placed for lithic raw materials changed in general. The scenario demonstrated here is a good example of relatively short-term changes in material culture, which reflect varying contact networks and mechanisms involved in the origins of archaeologically observable phenomena and local variation in their development.

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