

Joakim Donner

ON THE LACK OF EVIDENCE OF ARTIFACTS IN THE SUSILUOLA CAVE IN FINLAND

Abstract

A number of pebbles and rock fragments found in the Susiluola Cave in western Finland were described by Schulz et al. (2002) as artifacts and associated with sediments interpreted as having been deposited during the last, Eemian, interglacial. This led to the conclusion that Neanderthals inhabited the cave. A study of a rounded siltstone pebble described as a side scraper showed that there is no reason to assume it to be an artifact; its chipped marks on one edge show that the pebble has been mechanically worn by impacts against its edge, possibly during deposition and later re-deposition of the littoral cave sediments. Similar conclusions have been reached in previous studies of 'artifacts' found in the cave. There is therefore no conclusive evidence of Neanderthals having inhabited the cave.

Keywords: Susiluola Cave, Neanderthals, last interglacial

Joakim Donner, Pohjoisranta 12 A 1, 00170 Helsinki, Finland. E-mail: Joakim.Donner@kolumbus.fi.

INTRODUCTION: GEOLOGICAL SETTING

On the northern slope of Susivuori Hill, reaching 130 m above the present sea level, there is a cave several hundred square metres wide with a maximum height of 2.2 m, in a horizontal fracture in gneiss, with the entrance at 116.5 m a.s.l. (Schulz 2002; Schulz et al. 2002). The cave, known as Susiluola Cave (the cave of wolves), is located nearly 15 km from the coast in South Ostrobothnia, 2 km west of Karijoki, close to Kristiinankaupunki in western Finland. As a result of the land uplift after the last glaciation, Susivuori Hill emerged from the Baltic as an island in the Ancylus Lake about 9000 years ago, the cave being above the level of the Litorina Sea already a few thousand years later (Kakkuri & Virkki 2004).

After a first excavation of the sediments in 1996, systematic archaeological and geological excavations were undertaken in 1997–2000 and continued in 2003 until 2006. The reason that it became an archaeological excavation was that some of the pebbles and rock fragments found in

the cave sediments were interpreted as being artifacts. Detailed descriptions of the results of the excavations 1997–2000 were given by Schulz (2002), who was responsible for the archaeological investigations, and also in a fuller joint publication with other participants in the study of the cave (Schulz et al. 2002).

The sediments in the cave were divided into seven major units (Schulz et al. 2002). The top-most layer (I) consists of littoral sediments with boulders formed when the cave entrance was at the level of the Ancylus Lake. Layer II, a partly stratified gravel, was also interpreted as a littoral sediment. In part of the cave a pebble gravel with large rocks (III) was identified. On top of a well-sorted littoral pebble gravel (V) a layer (IV) described as a paleosol, formed during interglacial conditions, was identified. The lowermost layers consist of gravels, the upper layer (VI) being a littoral deposit and the lower (VII), including sand and silt, is of unknown origin.

The above-mentioned interpretation that some of the sediments are interglacial was supported by

luminescence measurements of samples from the cave (Schulz et al. 2002). Both IRSL and TL ages were obtained, the IRSL ages taken to be closer to the real age of sedimentation because the IRSL signal bleaches faster than the TL signal. On the basis of the three dated samples it was concluded, using the IRSL ages, that Layer II is younger or equal to ca. 35 ka, and that Layer V is younger or equal to ca. 90 ka. For Layer IV an older apparent date of 128 ka was obtained, which was explained as a result of very poor bleaching of the material. The results of the luminescence dating, showing that some of the cave sediments were deposited before the Weichselian glaciation, are in agreement with results from the surrounding areas of Ostrobothnia, where till-covered sediments are from the last interglacial, the Eemian, as pointed out by Schulz et al. (2002). The age of 90 ka from the Susiluola Cave is, however, too young for the Eemian.

The sites with Eemian marine sediments at the coast of Ostrobothnia show that the level of the Baltic during the interglacial climatic optimum was above that of the Holocene climatic optimum of the Litorina Sea (Donner 1995). Hence the Susiluola Cave did not rise above sea level until the end of the Eemian interglacial. During the greatest extension of the Eemian Sea Norway, Sweden, Finland and parts of north-western Russia, including the Kola peninsula, formed an island when the Baltic was connected with the ocean, both to the North Sea in the west and White Sea in the north-east. This connection may not have been as wide as earlier assumed (Grøsfjeld et al. 2006).

The results of the studies of the sediments in the Susiluola Cave presented by Schulz et al. (2002) were interpreted to show that littoral sediments were deposited in the cave both during the Eemian interglacial and the Holocene. Thus, in addition to the wave action during these two periods, the sediments would have been affected by frost action during the Weichselian, assuming that the above-mentioned interpretation is correct; no till was found inside the cave.

ARCHAEOLOGICAL EVIDENCE

Susiluola Cave was well known locally and as the gravel contractor Kalervo Uusitalo 'thought that evidence of pre-Ice Age occupation might be found in the cave' a clearing of sediments from

the cave was organised in 1996 (Schulz et al. 2002). In connection with the clearing a 'local rock enthusiast Mauno Aro found a strange-looking red rock that, judging from morphological features apparently related to reduction, had been intentionally shaped'. This then led to the excavations mentioned in the introduction.

The pebbles and rock fragments described as tools represent, according to Schulz et al. (2002), side scrapers, denticulates, notched tools, re-touched flakes and hammer cores, in addition to a coarse pebble tool; 4.3 % of the artifacts show modification of retouch, percussion or use. They consist mainly of red siltstone and fine-grained quartzite. The artifacts found in four of the seven layers, without a detailed description of their stratigraphical distribution, were linked to Layers IV and V described as interglacial. This led to the conclusion that the artifacts are Palaeolithic and that Neanderthals inhabited the Susiluola Cave during the Eemian (Schulz et al. 2002).

In addition to an uncertainty about the exact age of the sediments in the Susiluola Cave, there is the question if the described artifacts could represent geofacts, naturally shaped worn and knocked pebbles and rock fragments, which have been subject to wave action at an open coast when the littoral sediments were formed, as well as to frost action. When at the end of the 19th century the possibility of identifying primitive tools was considered, some stone objects from the Tertiary were taken to represent primitive tools known as eoliths (Oakley 1950). But later studies showed that they had been shaped by natural agencies. Several examples of these pseudoartifacts have been described and illustrated, such as flint eoliths from England formed in periglacial conditions (Oakley 1950; Nilsson 1983) and similarly from France with also an example of a subglacially shaped quartzite pseudoartifact (Bourdier 1967). By the time of the last interglacial the tool-making technique was, however, already comparatively advanced and it should therefore be possible to identify any finished tool from that time.

Of the stone objects from the Susiluola Cave described as artifacts (Schulz et al. 2002), an about 10 cm long stone of sandstone described as a 'chopper' was described by Kinnunen (2005) on geological grounds as a naturally rounded stone, chipped at various times during deposition and redeposition. He further concluded that shapes of all stones described as artifacts can be explained

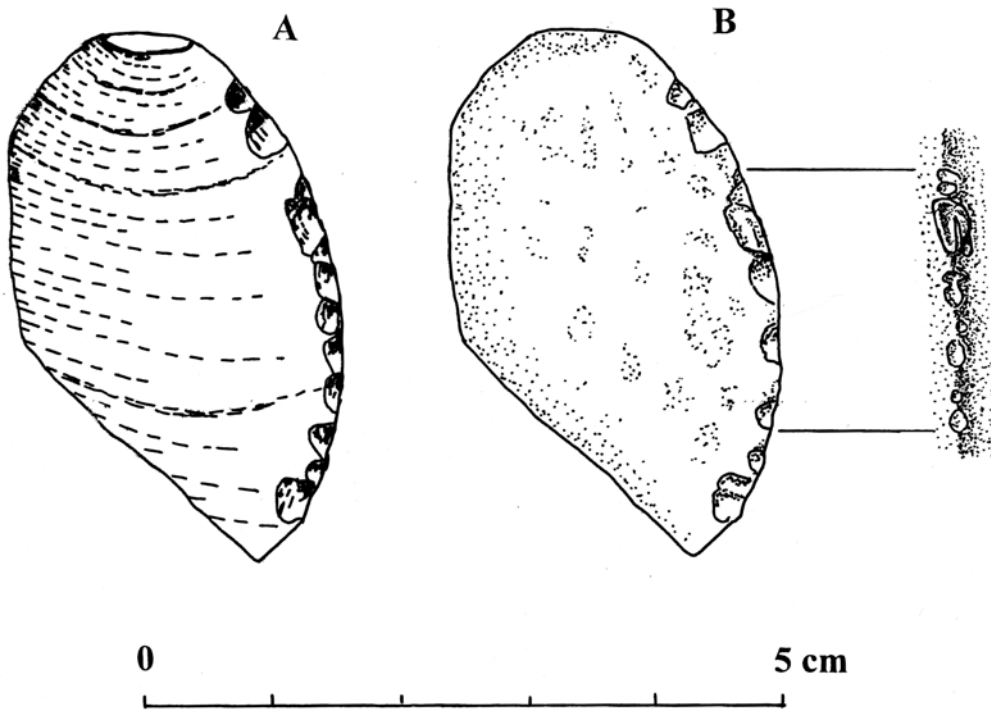


Fig.1. (a) siltstone pebble depicted as a side scraper by Schulz et al. (2002, Plate I:1 as corrected from III:1), (b) same pebble drawn by the author on the basis of the study of its details.

as being the result of geological processes. In addition to Kinnunen's contribution no details of any of the described artifacts by Schulz et al. (2002) have been published. But, on the other hand, many critical remarks about the possible use by Neandethals of the Susiluola Cave were recently made locally in Finnish (Forsström 2005; Matiskainen 2005; Pettitt & Niskanen 2005; Saarnisto 2005; Taavitsainen 2005), based on the evidence presented by Schulz et al. (2002), which Schulz defended in replies to this criticism (Schulz 2005a; 2005b). Even before the above-mentioned exchange of views a discussion about the cave and its possible artifacts had taken place, as described by Rydman (2004a).

As a contribution to the study of the Susiluola Cave one of the pebbles classified as an artifact, and on display in the National Museum of Finland in Helsinki, was studied in detail in order to see if additional information could be obtained about the origin of the marks interpreted as being caused by retouch.

A translation of the present contribution into

Finnish was published in a slightly modified version (Donner 2006), resulting again in a lively and mostly irrelevant discussion in various newspapers, summarized by Rydman (2007), without adding any new evidence about the cave.

PEBBLE DESCRIBED AS A SIDE SCRAPER

The 4.3 cm long rounded pebble of red siltstone, with a triangular cross-section, was depicted by Schulz (2002, Plate I:1) and by Schulz et al. (2002, Plate III:1 corrected to Plate I:1). The drawing is shown in Figure 1 (A) together with a new drawing (B) based on a detailed study of the pebble, including photographs, of which one is shown in Figure 2. The drawing of the pebble in the above-mentioned publications indicated that it has a striking platform and ripples at the surface of the broadest flat side of the pebble. Furthermore, a retouched edge was shown.

In the study of the pebble no clear striking platform could be identified, nor any ripples at the surface; all sides were similar surfaces of a



Fig. 2. Photograph, taken in the National Museum in Finland, of chipped marks on the edge of the studied pebble. Photograph by the author.

rounded pebble, with a chipped scar on one side, different from that illustrated by Schulz et al. (2002). The edge, described as retouched, has fewer chipped marks (Fig. 1B) than depicted in Figure 1A. They are at irregular intervals, with at least one mark (Fig. 2) fresher than the others. The shapes of the marks show that the impacts producing them came straight against the edge. This produced a blunt edge instead of a sharper edge typical for retouched artifacts. It could therefore not have served any purpose as a tool and can consequently not be considered to be a side scraper.

In the drawings of the studied pebble the marks described as retouch are exaggeratedly clear (Fig. 1), whereas in fact they are less clear in reality (Fig. 2). The chipped marks are similar to marks on pebbles found on present beaches, as observed, for instance, on some sandstone pebbles collected from a beach in Bromarv in south-western Finland, studied for comparison. The retouch on Palaeolithic artifacts of quartzite is, on the other hand different, as seen on tools from South Africa, used for comparison. The problem of identifying tools made by man has, as mentioned, been

widely discussed, for example by Oakley (1950), and increasingly detailed archaeological studies of the manufacture of prehistoric tools have been made, as reflected in, for instance, the general summary by Piel-Desruisseaux (1986). The finer details of tools made of flint were not discussed in the present study, as no flint objects were recorded from the Susiluola Cave.

CONCLUSIONS

The siltstone pebble from the Susiluola Cave described as a side scraper (Schulz et al. 2002), with its chipped edge, may have acquired its present shape as a result of mechanical wear during the deposition of the littoral cave sediments, after first having been rounded under different conditions outside the cave. Similarly the stone described as a chopper was described by Kinnunen (2005) as having been shaped naturally. In the discussion of the evidence from the Susiluola Cave, Pettitt and Niskanen (2005: 86) concluded that 'there is *not one single item* among the illustrated lithics that bear unambiguous signs of human authorship. In fact, most of the pieces can be rejected straightaway, and no piece bears *multiple* indications of human manufacture'. In mentioning the siltstone pebble depicted in Figure 1A, Pettitt and Niskanen (2005) described it as 'the only piece with a fairly regular retouch out of a regular convex edge' and that the status of the piece 'stands or falls on this retouch'. As shown in the study of the piece the retouch was misleadingly depicted as being more regular than it in fact is.

The sediments in the Susiluola Cave are undoubtedly geologically interesting, but it seems on the basis of what has been found in it so far that there is no stone of any shape which is without doubt an artifact, and what is more interesting, no object which can clearly be identified as a Palaeolithic implement. There is thus, on the basis of the interpretations presented in the present study, no evidence for Neanderthals having inhabited the Susiluola Cave.

ACKNOWLEDGEMENTS

The author is grateful to Hanna Forssell and Päivi Pykälä-aho for making it possible to study the described pebble in the National Museum of Finland in Helsinki.