Adventures on the crown of Finland 1984–1990: The Teno drainage survey and the Ala-Jalve excavations

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Abstract
This paper provides a review of my archaeological research in Utsjoki, the northernmost municipality of Finland, starting in 1984. The fieldwork consisted of excavations at the Stone Age and Early Metal Period Ala-Jalve site over the field seasons of 1984–1987, sporadic archaeological surveys during the excavation periods and larger scale surveys in the summers of 1988–1990. Starting with the surveys, an outline of the fieldwork is presented and its results and scientific impact are discussed.

Keywords: Utsjoki, Lapland, prehistory, excavation, survey, Ala-Jalve, lithics, stratigraphy

Introduction

For a young archaeologist newly returned from Britain with a second Master's degree, the 1980s presented the usual challenge: how to continue being an archaeologist even though no permanent positions were in sight? Being an archaeologist was key to my existence, and my whole career seems to have been punctuated by rather miraculous strikes of luck – or of perseverance – that allowed me 'to continue being an archaeologist for just a little bit longer.'

The first strike of luck came at Christmas 1983 when, my luggage still half unpacked, I received a phone call from Christian Carpelan from the University of Helsinki Department of Archaeology, offering me a part-time job as project secretary of their newly-developed *RASI* project.

Although the Iron Age had never been among my top interests, I accepted, starting work in January 1984. I also began to plan my Lic. Phil. research, which was part of the deal. The job was for four years, which was great, but as it was only half-time, other employment was necessary. This materialised in the form of fieldwork for the National Board of Antiquities (NBA), followed by the usual report writing period, as well as taking part in field schools and teaching courses on field methods at the Department of Archaeology. As both employers were flexible, I divided my time between them for the next four and a half years.

Written like this, it sounds like a smoothly running engine. In reality, it was a period of utter insecurity, where working months alternated with periods of unemployment, and it was impossible to know from one year or even month to the next whether excavations would continue, funding applications would be accepted or, indeed, written, and where the money for next month's rent would come from.

When I started working at the Department of Archaeology in 1984, I had had little contact with Lapland. For my introduction to the archaeology of Lapland, as well as for survival skills in the wilderness, I am indebted to Christian Carpelan. His excavation and field school at the Nukkumajoki 2 site in Inari in June 1984 was my initiation to Lapland proper. During a weekend trip to Varangerfjord in Norway, the staff stopped to spend a night by the Teno (Deatnu) river near Nuorgam

(Njuorggán). I climbed the steep bank up to the fell plateau, looked around, and decided then and there that this would be my research region.[1]

By the time of the Nukkumajoki excavation in 1984, the Department of Archaeology and the NBA had arranged for me to direct an excavation at the Ala-Jalve site in Utsjoki (Ohcejohka) later that summer together with Kaarlo Katiskoski. The financing of this excavation came from government employment funds and was channelled through the NBA, so for the duration of the excavation and the post-excavation work I was their employee. The 1985 field season at Ala-Jalve was financed similarly, with me as a sole director. In 1986, however, the NBA unexpectedly dropped the site from its excavation programme. As the Department of Archaeology considered continued excavation important, professor Ari Siiriäinen was successful in securing funds from the Academy of Finland for 1986–1987. I continued as field director, with Siiriäinen as Principal Investigator.

By the time the first excavation season at Ala-Jalve ended, I knew this was what I actually wanted to write my Lic. Phil. thesis on. I remember returning to the department in September 1984 with a one-litre plastic bag full of quartzite flakes, placing it on Siiriäinen's desk, and saying: 'I want to change the topic of my thesis.'

As the field of my future research crystallised in my mind, I knew I had to learn more about the area. During the excavations, time for visiting other sites or looking for new ones was in short supply. Some survey work was, however, possible over the weekends, and field seasons were followed by intensive reading. After the last excavations had been completed in 1987, I had learned enough to be able to write a successful grant application to the Academy of Finland and start my three-year period as Academy Research Assistant in August 1988. As the Ala-Jalve assemblage was all about lithic technology, I had made sure to learn about that, too – a pleasant task, since it had always interested me. A significant part of that process was the Nordic Council Research School in Copenhagen in 1987, titled *Stenalderflint i Norden* (Stone Age flint in Scandinavia), that I was lucky enough to participate in. The objective of my research project was to study landscape utilization and subsistence patterns during different stages of prehistory. Subsistence and survival had crystallized as my main research interest during the severe cold spell in January 1987 when the temperature in Helsinki stayed below -25°C for ten consecutive days (for a week below -30°C), below -15°C for fifteen days, and when power stations providing warmth for citizens started breaking down. I would stand at the bus stop, wrapped in my long sheepskin coat with several layers underneath, thinking about how modern people would survive without all the conveniences we are used to and how large a population the country would actually sustain if, suddenly, we were pushed back to the Stone Age. The fieldwork during my Academy Research Assistantship consisted of intensive surveys in the Teno river drainage in Utsjoki and Inari municipalities during the summers of 1988–1990. I also participated in NBA excavations at the Siuttavaara site in Inari and at the Kenesjärvi S site in Utsjoki and did some surveys in their vicinity. In late August 1990 I moved to Brown University in Providence, Rhode Island, USA, to continue my graduate work and write, as it turned out, both my Lic. Phil. and my PhD theses, both concentrating on the archaeology of the Teno drainage and the Ala-Jalve site.

In this paper I shall first discuss the survey work and its results and then go on to discuss the Ala-Jalve research, both the fieldwork and the subsequent data analysis and its results.

The archaeological survey

The geographic setting

For understanding the archaeological survey work in the Teno drainage, it is important to realise that this is essentially a wilderness region that covers approximately 6000 square kilome-

1 As this paper is not a scientific paper *per se*, but rather a summary of published research spiced with personal memories, references are, with a few exceptions, not used in the text. A list of source literature is, however, provided, separately for the survey work and for the Ala-Jalve research.

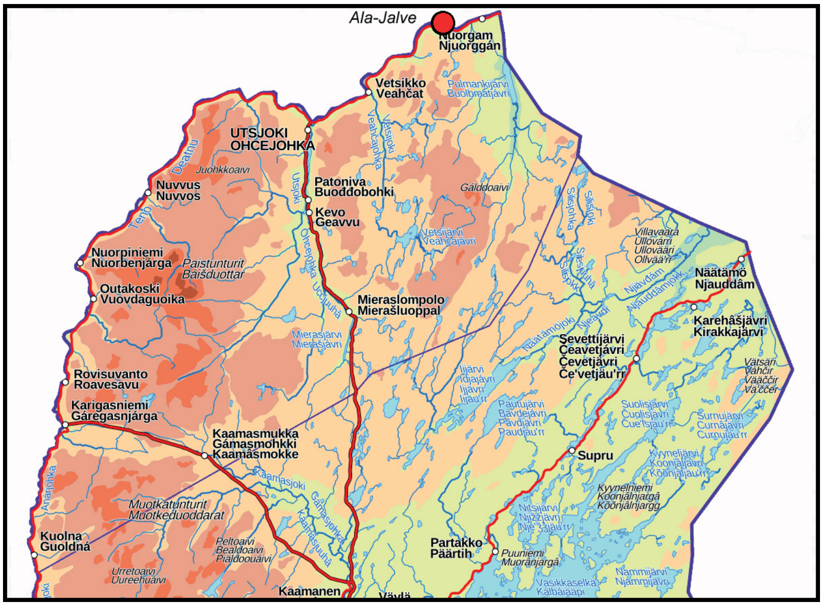

Figure 1. Topographic map of the Utsjoki municipality with the location of the Ala-Jalve site.

tres of fell plateau, mires, and river valleys, with a few major lakes thrown in (Figure 1). There are three main roads: one that runs at the western and northern edge of the area along the bank of the Inarijoki (Anárjohka)/Teno, which forms the border between Finland and Norway, one that runs straight north from Inari and meets the riverside road at Utsjoki village having crossed a fell range and followed the course of the Utsjoki river, and one that veers north-west from the Inari–Utsjoki road at Kaamanen (Gámas) and meets the riverside road at Karigasniemi (Gáregasnjárga) village. A fourth road runs south from Nuorgam village at the very north-eastern corner of Utsjoki – and of Finland – to the southern end of Lake Pulmankijärvi (Buolbmatjávri) c. 20 kilometres away and ends there.

The area west of the Inari–Utsjoki road is called the Paistunturit (Báišduottar) region. It includes the Kevo Strict Nature Reserve. The area east of the road is the Kalddoaivi (Gálddoaivi) region. The Paistunturit region consists of higher fells, with its highest point at Kuivi (Guivi), 641 m above sea level. The Kalddoaivi region is more low-lying, with its highest point c. 400 m above sea level. In its western part, Lake Vetsijärvi (273 m above sea level) is surrounded by a wide flat plateau with dozens of bogs, lakes, and ponds. Most of the Paistunturit and Kalddoaivi regions are today designated as protected wilderness areas. This was not the case in the 1980s.

In the Paistunturit region, the distance between roads is c. 70 kilometres south to north and c. 52 kilometres west to east. In the Kalddoaivi region the maximum west to east distance is c. 51 kilometres if one stays within the borders of Utsjoki municipality. The south to north distance from the border of Utsjoki municipality to the Teno river in the north is up to 60 kilometres. Due to the local geography, much of the archaeological work in the 1980s concentrated on the main river valleys, at a reasonable walking distance from the roads.

The surveys

The limited survey work during the excavation seasons (1984–1987) consisted mostly of checking out tips from local people. Sites were occasionally also discovered during free time fell trips by excavation staff. Little of this work was planned or structured. One major expedition deserves to be mentioned, however. This was the four-day trek across the Paistunturit region from Lake Kenesjärvi (Ganešjávri) west to Outakoski (Vuovdaguoika) village on the upper Teno river in 1986 by Aki Arponen and me. The purpose was to locate and map a group of rectangular stone settings of which we had received a tip from local knife smith Josef Laiti the year before. As the trek led us through the Kevo Strict Nature Reserve outside the marked path, we had to secure special permit for it. Eight stone settings were duly located by a little stream called Roavvepohkaja, about one kilometre east of Koddehvarri (Gottetvárri) fell and c. 26 kilometres east of Outakoski village, and a site map was drawn (Figure 2).

A total of 21 new sites discovered by the University of Helsinki archaeologists were added to the Utsjoki site list during the excavation seasons. During the same period, fieldwork was also done by NBA archaeologists Markku Torvinen, Hannu Kotivuori, Eeva-Liisa Schulz, and Jarmo Kankaanpää, so that while the number of registered sites in 1983 was 36, in 1987 it had risen to 109. Kankaanpää's survey of the Teno river valley was especially important. Due to the fact that Utsjoki is a Sámi region, and that many of the sites were considered to date to the historical period, data concerning the area had been kept in three separate archives at the NBA: not only the archive

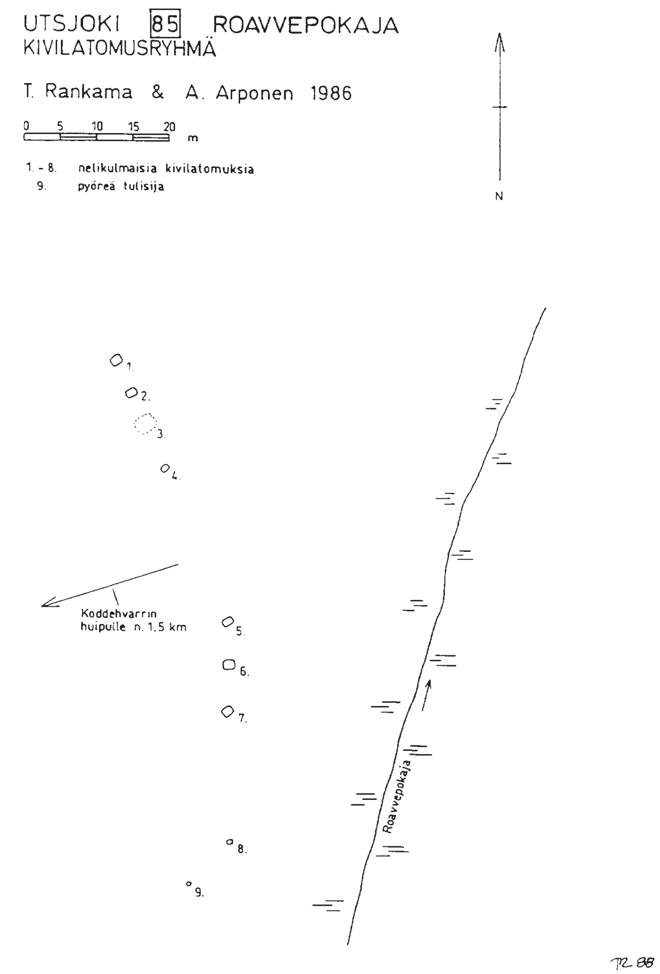

Figure 2. Map of the Roavvepokaja site. Drawing: Tuija Rankama.

of the Archaeological Department, but also those of the Ethnographic and Historical Departments. Kankaanpää combined most of these data before heading to the field and proceeded to inspect and survey them, making a more complete list with up-to-date location data and mapping several sites. In Utsjoki, as in most of Lapland, archaeological surveys have not been restricted to sites considered prehistoric, partly because the date of the beginning of the historical period is fluid, and partly because the focus has been not only on prehistory but also on the early history of the Sámi and landscape use as a whole. The work done in the area during the early 1980s, and Kankaanpää's in particular, thus formed a useful base line on which to start building my own surveys starting in 1988.

1988

The survey in 1988 was done mostly within easy walking distance from the roads. It should be remembered that in the 1980s there were no mobile phones, nor was there e-mail or the Internet. Treks into the wilderness, especially alone, were thus somewhat risky, since in case of an accident, e.g., a sprained ankle, there was no quick way to get help. If I wanted to contact anybody while in the field, I had to take the time – and be able – to drive to the post office to use the telephone.

The map in Figure 3 shows the distribution of sites in Utsjoki in 1987, as well asthe first version of the site classification I had developed. I started in 1988 by visiting known sites, taking photographs, getting a feel of locations, and add-

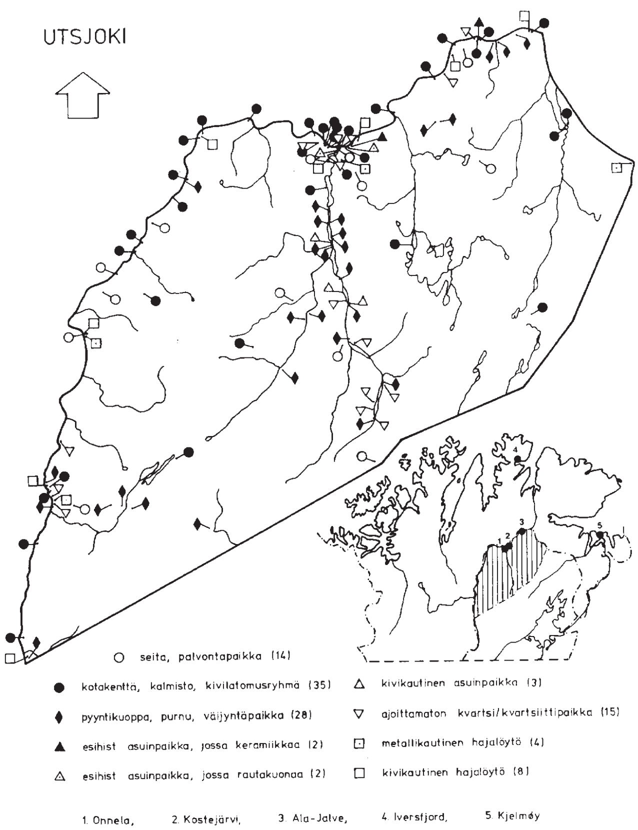

Figure 3. The distribution of registered sites in Utsjoki in 1987. Drawing: Tuija Rankama.

ing to earlier data, where I found new features or artefacts in the field. Test pitting was not done; instead, artefacts were discovered on tracks, paths, blowouts and the like. Usually only a few representative artefacts were collected, leaving the rest for future research. For the first time, I incorporated surveys of pitfall systems carried out by Oula Näkkäläjärvi in 1961 into the archaeological site register of Utsjoki. The results and maps of Näkkäläjärvi's surveys were stored at the archive of the Ethnographic Department of the NBA. Visiting these localities in the field was necessary for recording grid references, since at the time of Näkkäläjärvi's original surveys, the basic map series had not yet been extended to Utsjoki. I also incorporated six other localities from the Ethnographic archives, originally studied by Christian Carpelan, Aarni Erä-Esko and Liisa Pesonen.

New features and additional finds were discovered at 17 of the known sites, increasing the size of some of them considerably. The new features included a total of 17 hut bases at five localities – six at the Lohikoste site alone – eight pitfalls at three localities, and a hearth. In addition, Stone Age/Epineolithic artefacts, such as quartz and quartzite tools and flakes, and pot sherds were collected at eight previously known localities.

38 new localities containing a total of 47 sites were also added to the site register. A locality is defined as an area with one site, or several different sites, e.g., pitfalls and dwelling remains, in close proximity to one another. Of the new localities, five were pitfall groups already included in Näkkäläjärvi's study. The rest were completely new discoveries, albeit some, such as the group of 53 pitfalls at Kuolleitten kuolpuna (Jámežiidguolbba), were found after receiving tips from local residents (Figure 4). Most of the new localities were encountered en route to previously known sites. Especially in the Utsjoki river valley, where many of the pitfall groups recorded by Näkkäläjärvi were located, a fair amount of walking was necessary and new sites were found in almost every bay and promontory. The new localities included 17 pitfall groups, 11 Sámi type gieddi sites with hut bases, two undated dwelling remains, two groups of rectangular stone settings, one cemetery, and 12 sites with finds of Stone Age/Epineolithic character.

Notable new discoveries in 1988 include the sites around Lake Cuokkajávri, i.e., the Epineolithic site at Tsuoggalompola, pitfalls on a small island in the lake, quartz flakes at Ollilan valkama and an old, deserted but well-preserved farmyard with 19th century houses as well as hutbases at Ollila. I am indebted to District Nurse Kaarina Kolehmainen for aid in locating these sites, one of which was discovered on the shore next to her summer cottage. Added to the already known Stone Age site at Korretoja (Gorretat), these sites are all within c. 2 km of each other.

A trek to the western side of the Utsjoki river starting at the bridge at Patoniva (Buođđobohki) resulted in the discovery of one

Figure 4. The author in August 1988 at Kuolleitten kuolpuna, where a group of 53 pitfalls and three hut ruins were discovered. Photo: Tuija Rankama.

of the richest Stone Age sites in the area, dubbed Jomppala kämppä. Hundreds of quartz artefacts were strewn on the surface of a track leading to a cabin and around the cabin itself, in an area c. 50 metres long and 10–20 metres wide. A largish sample collected included 14 well-made and well-worn scrapers, several other quartz tools, seven platform cores of quartz, one fragment of a bipolar core of quartz, and flakes, two of them of quartzite. The quartz is of very good quality and the assemblage, which includes thumbnail scrapers, has an archaic character. Unfortunately, no burnt bones were encountered. Radiocarbon dating of burnt bone was not possible in 1988, but could have been done when the technique was developed. It is a pity an excavation at the site has never been possible.

In September 1988 I took part in the excavation of some rectangular stone settings at the Siuttavaara site in Inari. The site lies c. 12 kilometres downstream (north) from Angeli (Áŋŋel) in the Inarijoki river valley, which is one of the headwaters of the Teno river. During the excavation, several tips were received from local residents about sites in the area. Nine of these, as well as one site already recorded by Erä-Esko and Pesonen in 1972, were inspected. The sites included five with rectangular stone settings, two with pitfalls, and three with fairly recent evidence of habitation. It is notable that the short stay in the area resulted in the recording of multiple groups of rectangular stone settings; prior to this fieldwork only two groups had been known in the whole Inarijoki river valley, which covers c. 60 km from Angeli to Karigasniemi.

1989

The 1989 survey was more aimed at locating new sites, especially in the fell areas farther from the roads. For this purpose, potential localities had been identified on maps on the basis of location or place name, which could indicate Sámi use of the landscape. For example, the word goahti as part of a place name potentially indicated a hut site.

The surveys were done in two parts, first in June together with Aki Arponen during the excavation of the Kenesjärvi S site for the NBA, and then in July and August, when I was in Utsjoki on my own. Especially the Karigasniemi region and the western shore of the river Utsjoki close to Kenesjärvi were targeted in June. My own treks took me to the Utsjoki river valley, as well as to the fell areas both in the Paistunturit region and around Lake Pulmankijärvi. The work resulted in the discovery of 38 new localities containing a total of 43 separate sites. The discoveries included, among others, 18 groups of pitfalls, six Sámi dwelling sites, three Stone Age/Epineolithic dwelling sites, seven undated dwelling sites, one hunting blind, one cairn and some stray finds.

A few expeditions in 1989 deserve special mention. One was the trek with Kaarina Kolehmainen to Lake Vuokojärvi (Vuogojávri), west of the Utsjoki river. This involved crossing the river by boat at Vuolit Cuokkajávri and a c. 8.5 kilometre walk to the south-eastern corner of the lake. The significant discovery of this trek was that although the lake shore was covered by bog deposits half a metre in thickness, quartz artefacts were found on the sandy lake bottom right next to the shore, under some 10 cm of clear water. This suggested that the water surface of the lake had been lower in prehistory than today, and that the bog deposits had grown on the shore after the prehistoric occupation – an observation significant for future surveys in the area and one that has subsequently been borne out by geological studies that suggest that lake surfaces in Lapland have in general risen after the Postglacial Climatic Optimum.

There is one notable exception to this rule in Utsjoki, viz. Lake Vetsijärvi (Veahčajávri) in the western part of the Kalddoaivi region. Here, uneven isostatic uplift has resulted in the shift of the outflow of the lake. Its first postglacial outflow was from the southwestern corner of the lake southwest towards Mieraslompolo (Mierašluoppal) in the Utsjoki river valley. With isostatic uplift stronger in the southwest, the outflow shifted to the northwest corner forming the river Vetsijoki (Veahčajohka), which joins the river Teno at Vetsikko (Veahčat). This shift was violent enough to drain much of the former lake basin, which is today covered by bog deposits. As a result, evidence of earlier prehistoric occupation was not covered by rising water, but left 'high and dry', next to the earliest shoreline. This phenomenon facilitated one of the most significant Mesolithic discoveries of the last twenty years, that of the Sujala site (see Kankaanpää & Rankama, this volume).

A Midsummer walk from Utsjoki village towards Lake Kuoppilasjärvi (Goahppelašjávri) was significant for two reasons. Although I did not reach the lake, the trek strengthened my understanding of landscape use. Earlier treks had taught me that evidence of temporary camps, for example hearth rings built of stones, could be found strewn all over the terrain, and especially in places that to me, too, looked like good camp sites. This has subsequently been a good rule of thumb for locating archaeological sites.

Walking back towards Utsjoki church along the shore of the river Badjeseavttet, I discovered a rectangular house depression c. 13 m in length and 9.5 m in width, with turf walls that reached c. 70 cm higher than the floor level and c. 30 cm higher than the surrounding ground surface. The width of the walls was c. 150 cm and the corners of the rectangle were slightly rounded. On the basis of shape and apparent method of construction I interpreted this as a Late Iron Age stalotomt site, the first one to be found in Finnish Lapland. A test excavation by Manninen in 2006 unearthed quartz artefacts (Utsjoki Badjeseavttet, kyppi.fi) prompting a dating to the Stone Age or Early Metal Age. However, while the shape of the feature is very similar to stalotomts found in Sweden and Norway, it does not resemble any known Stone Age of Early Metal Age features, and the quartz found could be linked to earlier occupation at the site.

A third trek took me west from the old wilderness cabin at Petsikko (Beazet) fell, first along a path to the deserted Sámi farm at Rávdoskáidi and on to Lake Cuokkágoahtejávri, a.k.a. Ivvár Goahtejávri. These are some of the lakes that form the Cuokkájohka lake and river chain that drains into Vuolit Cuokkájávri, part of the Utsjoki lake and river chain, near Korretoja. This was one of the survey areas selected on the basis of the place name, which clearly indicates at least Sámi occupation.

The trek was successful: evidence of both prehistoric and recent occupation and resource use was discovered both along the way and on the shores of both Upper and Lower Lake Cuokkágoahtejávri. The lakes are connected by a short stream, at the lower end of which a stone weir blocking much of the stream was discovered. Only a c. 80 cm wide gap at the western edge allowed water to flow freely. The weir was built of rounded boulders of about the size of a human head, which were covered by moss. The weir construction is so far unique in Lapland, although weirs constructed from wood are known to have been used. Therefore, it was not possible to assign it a date.

A short trip to the Angeli region in the Inarijoki river valley in 1989 resulted in the site register for Inari being augmented with three new localities: a Stone Age occupation site, a locality with evidence of Stone Age occupation, pitfalls and a deserted Sámi house site, and a group of pitfalls, apparently part of a system c. 1.3 km in length. The pitfall systems were included in Näkkäläjärvi's survey but required a fresh inspection and a grid reference.

1990

The summer of 1990 was the last of the survey seasons before my move to the United States. This field season was short: only about a week and a half before midsummer. The first week was dedicated to Utsjoki, while the three remaining days were spent in the Angeli region. The purpose of the surveys was to photograph some known sites and to check a few tips received earlier from local inhabitants. In addition, some pitfall groups surveyed by Näkkäläjärvi and A. Paulaharju were inspected. As always, potential localities were inspected en route to known sites, which led to the discovery of new sites.

The survey resulted in the addition of six new localities in the Utsjoki site register. Four where of Stone Age or Epineolithic character, while one was a Sámi hut ruin. One locality consisted of more than one feature, viz. some pitfalls, two stone circles representing hearths of tepee-like Sámi tents, and three rectangular stone settings. In the Angeli region, six localities were also added to the site register. Five of them were pitfall groups, two of which had been found by Näkkäläjärvi and Paulaharju, respectively, but not included in the site register. One was a group of five rectangular stone settings.

The surveys of 1988–1990 added 105 new localities in the site register for the Utsjoki municipality. Only ten of these were previously known. These include the pitfall groups registered by Näkkäläjärvi. As several localities included

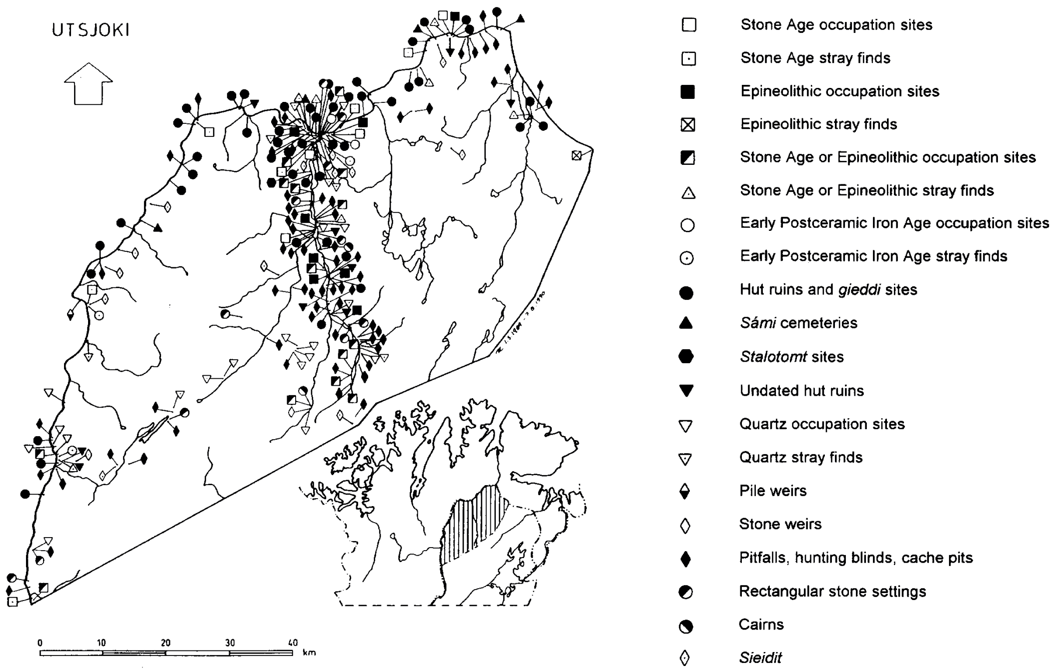

Figure 5. The distribution of registered sites and localities in Utsjoki in 1990. Drawing: Tuija Rankama

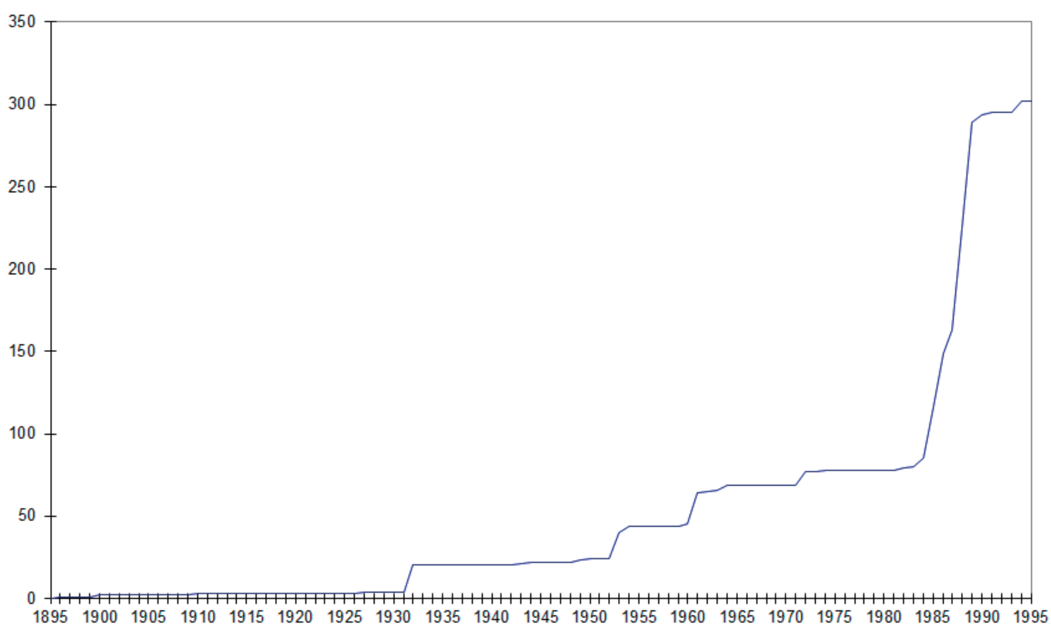

Figure 6. Cumulative graph of site and stray find accumulation, 1895–1995. By Tuija Rankama.

more than one individual site, the total number of new sites was 129. In addition, the Inarijoki river region in Inari, including Angeli, yielded 17 new localities, five of which were pitfall groups discovered by Näkkäläjärvi and Paulaharju and 12 were previously unknown.

Survey results: Summary and discussion

Figure 5 shows the distribution of registered sites and localities in Utsjoki in 1990. It includes the results of both my surveys and those of the others mentioned above. As can be seen the number of sites/localities has increased manifold from 1987 to 1990 (c.f. Figure 3). The key to the symbols shows the development of the site classification system after 1987. Figure 6 shows the accumulation of sites and stray finds during the hundred-year period 1895–1995. The intensive fieldwork from 1985 onwards is clearly illustrated.

The surveys gave a wealth of information about landscape and resource use at different stages of prehistory that I was able to use in my Ph.D. research. It is not possible to go through all of that here, but some observations about the results of the surveys can be made.

There are some clear patterns that emerge from the maps (Figure 3 & 5). The first is that known sites concentrate in the valleys of the main rivers, Utsjoki and Teno. This is, however, an artefact of survey focus. As the roads run by the rivers, it is easy to drive along and make shorth forays by foot from the car to inspect potential sites. Most of the current and recent occupation in Utsjoki also concentrates along the rivers, which means that most stray finds reported by local inhabitants over the decades derive from the narrow strip of fields and farmyards by the riversides, and even deserted hut sites concentrate there.

The treks into the wilderness beyond the river valleys, however, provided ample evidence that this landscape has always been used in its entirety. Hut sites, temporary camps, pitfall systems, and other evidence of resource use and reindeer husbandry can be found everywhere (Figure 7). Their dates vary from the earliest Mesolithic to the present century. One major lesson learned from the surveys was, thus, that the idea that occupation has always concentrated by the riversides is simply false. Even though it might be possible that larger prehistoric occupation sites were located by the rivers, the fell region has always been an integral part of the resource use area, not an unused hinterland.

Another pattern that emerges from the maps is that sites are much more numerous in the Utsjoki river valley than by the river Teno. This looks curious, but its explanation can probably be found in river dynamics. The Teno is a large river that experiences significant flooding every year as the winter's ice breaks up. It is also fast flowing and subject to severe bank erosion especially during the flood season. The Utsjoki river, on the other hand, is a series of lakes connected by short stretches of rapids. Flooding is less severe and even when it oc-

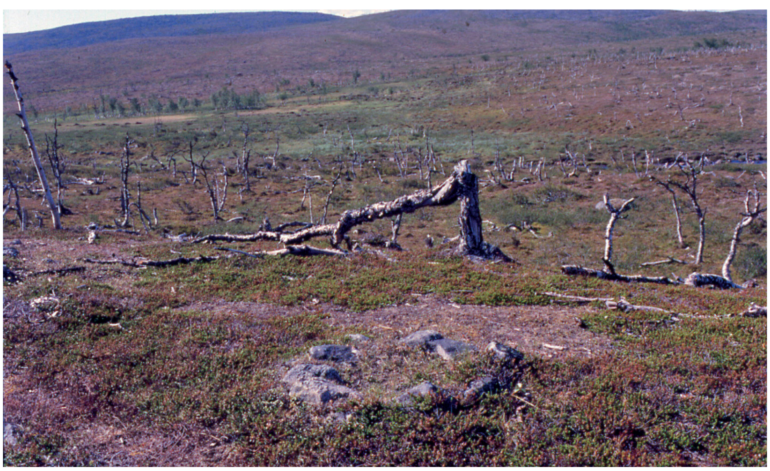

Figure 7. A solitary hearth in the fells attests to landscape utilisation through times. Photo: Tuija Rankama.

curs, it does not cause as much erosion of the lake shores as the floods in the much bigger Teno. Consequently, the course of the Utsjoki river has not changed significantly and good camps sites today have been good camp sites several thousand years ago. Many more sites have, thus, survived in the Utsjoki river valley than by the eroding banks of the river Teno.

Even the pattern that the Utsjoki river valley looks more intensively used than the Teno river valley, is thus false. We know that the Teno has been a significant salmon river almost since it emerged from under the continental ice sheet. It follows that its banks have been occupied throughout prehistory, but evidence of it has been obliterated by river erosion.

The second major lesson learned from the surveys was, thus, that site distribution maps should not be taken at face value, but studied with an aim to explaining and understanding the patterns that emerge, be it through research history, landscape use, or geological phenomena.

A notable exception to the obliteration of prehistoric sites along the river Teno is the Ala-Jalve site by the Alaköngäs (Vuollegeavŋŋis) rapids. Here, the survival, not the obliteration, of the site is the result of river dynamics. At the time of the occupation of the site, Alaköngäs formed the mouth of the river, with the head of a long fiord washing the base of its sandy terraces. With isostatic uplift the sea receded, and the river's course straightened, leaving the lowest terrace dry and out of the reach of river erosion, and preserving the site on the terraces above. It is the research of this site and its artefact assemblage that I shall now turn to.

Ala-Jalve

The site

The Ala-Jalve site is unique among the Stone Age and Early Metal Period localities in Finland. Situated on the bank of the Teno river at the Alaköngäs Rapids, it is not only an occupation site, but a virtually industrial level manufacturing site for bifacial points. As a result, the cultural layer is saturated with flakes from every stage of biface production, as well as bifaces, their preforms, other lithic artefacts, and pottery. The amount of lithic waste in the soil offered exceptional challenges for excavating the site, as flakes would bounce out of the sandy matrix at every draw of the trowel.

The site lies on two south-facing terraces formed on thick deposits of glaciofluvial and aeolian sand, with the river Teno to its north and east. The vertical distance from the upper terrace down to the river at the lower end of a 4.5 km stretch of rapids, is c. 20 m. The middle terrace is c. 5 m lower than the upper, and below it, c. 10 m down a steep slope, lies the Ala-Jalve farm on a largish level area that was under water during the time the site was occupied. This was the head of a long fiord, and the rapids formed the mouth of the river. This was doubtless a major salmon fishing location in prehistory, as it is today.

Figure 8. The Ala-Jalve site as seen from the south. The main site is located on the middle terrace between the roads, above the house on the lowest terrace. Photo: Tuija Rankama.

The old road built in 1900 to allow land passage past the rapids and now designated as a Museum Road rises from the lowest terrace in the south-east and cuts through the archaeological site (Figure 8).

The excavations

The site was excavated over four field seasons in 1984-1987. The excavation offered challenges not only because of the matrix saturated by artefacts, but also because of difficulties in obtaining work force. The first two seasons were financed through government employment funds, but the number of unemployed available was limited, not least because of the small population of the Utsjoki Municipality and the long distances between the major villages. The site lies only 10 km from Nuorgam, but 35 km from Utsjoki and 135 km from Karigasniemi. The local way of life, where salmon fishing and the needs of reindeer husbandry often took precedence over paid employment also brought challenges in day-to-day work force availability. This increased the pressure on the few archaeologists (both professionals and students) on site.

During the two final field seasons, which were financed by the Academy of Finland, but on a shoestring budget, the work force consisted of archaeology students, both Finnish and international. This increased the dependability of the excavation team and had a positive influence on what could be achieved.

The first three field seasons were dedicated to site evaluation and surveying its extent. In 1984 a soil phosphate survey covering 3.5 hectares was carried out, along with drawing a plan of the area and its surroundings. Two areas were excavated, a larger one on the northern edge of the road and a smaller one on the terrace edge south of it (see Figure 9). The locations of the trenches were decided on rescue grounds. There was severe erosion on the upper, northern bank of the road, resulting in artefacts found scattered in the ditch. There was also a landslide area on the slope of the middle terrace where cattle and sheep were accustomed to climbing up from the farm

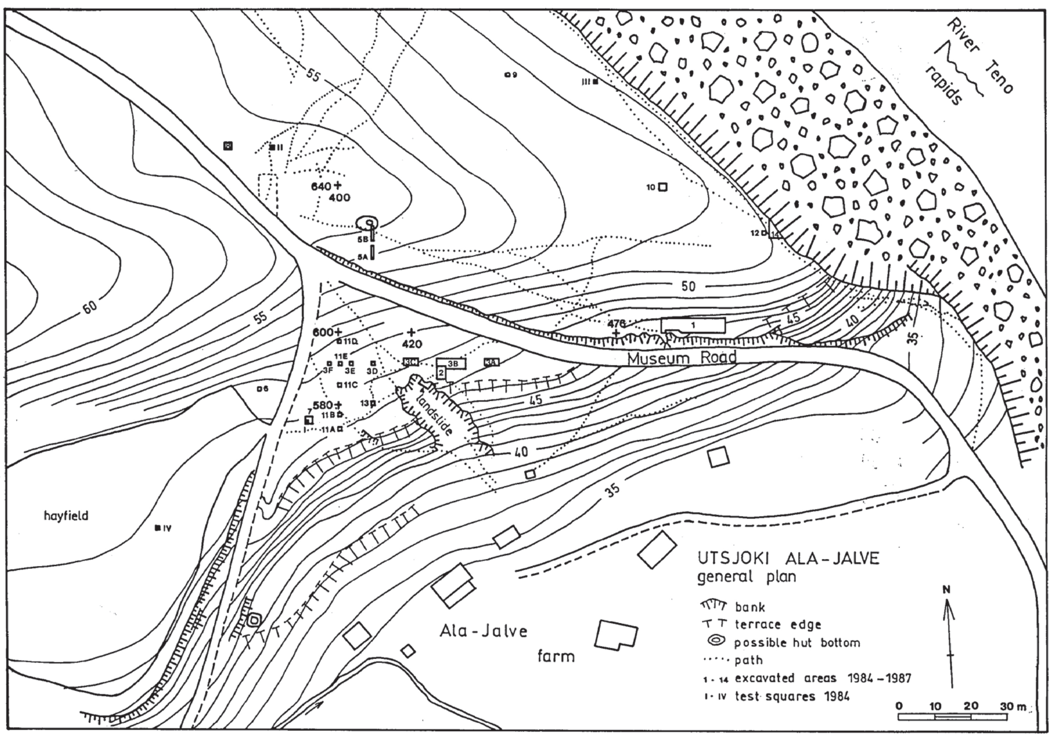

Figure 9. General plan of the Ala-Jalve site, with excavation areas indicated. By Tuija Rankama.

Figure 10. Ala-Jalve. The hearth at level 6. Photo: Aki Arponen 1987.

below. Numerous artefacts were found here and a small trench was placed on its upper edge. Four 1x1 m test squares were also scattered around the suspected occupation area to test its limits.

Of the trenches excavated in 1984, the smaller one on the edge of the middle terrace yielded the largest number of finds. Consequently, the fieldwork in 1985 was concentrated in its vicinity. An east-west trench was laid out on the middle terrace immediately north of the earlier excavation area and partly excavated to test the extent and depth of the cultural layer. A rescue trench on the edge of the landslide was also excavated where some red ochre and stained sand had become visible, resulting in a vertical section c. 80 cm in depth. This was to be significant for analysing the formation of the cultural layer.

The 1986 field season was dedicated to testing the phosphate anomalies discovered in 1984, as well as locating the edges of the main concentration of finds. Fourteen test squares mostly 1x1 m in extent were excavated: five in areas of high phosphate concentrations, many of which were located far from the central area of the site, three in an east-west line continuing the 1985 main excavation area to the west, five in a north-south line along the western edge of the middle terrace, as well as an extension of one of the test squares from 1984. A one-metre-wide test trench was also run through the wall of a possible hut floor on the upper terrace north of road and the main occupation area. Although artefacts were recovered from all of the test pits, the excavation confirmed that the main occupation area was on the middle terrace to the north, east, and west of the large landslide. None of the phosphate anomalies contained a significant number of artefacts.

The objective of the 1987 field season was to extend the continuous excavation area on the middle terrace and to find an undisturbed hearth that could yield charcoal samples – radiocarbon dating of burnt bone was not possible in the 1980s. As probing indicated the presence of subterranean rocks on the middle terrace west and north of areas already excavated, the main trench was placed here. A large hearth, covering an area of at least 1 x 2 m and containing enormous pieces of charcoal from aspen towards the bottom, was encountered deep in the cultural layer (Figure 10), but the radiocarbon dates obtained proved controversial (below). In addition, a small area was excavated on the upper terrace next to the eroding riverbank, where interesting surface finds had been discovered.

The matrix on the site consists of fine sand that underneath the cultural layer shows clear signs of glaciofluvial deposition. A grain size analysis of six samples has shown that the grain size is fine enough to have allowed being blown

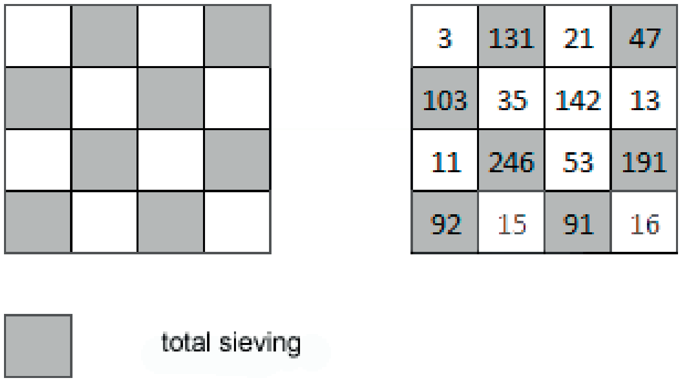

Figure 11. The results of the total sieving experiment. The numbers show the quantity of finds in each quadrat. By Tuija Rankama.

with the wind and, indeed, there is evidence of aeolian deposition both on top of the cultural layer and, as shown by detailed analyses of the vertical distribution of the finds, within the cultural layer between episodes of occupation.

The number of artefacts in the matrix is unparalleled in Finland. The total number of recovered finds probably reaches 500,000, with the richest part of the site yielding 20,000–25,000 finds per square metre, i.e., at least 130,000–160,000 finds per cubic metre. Due to the number of recovered finds and the fact that sufficient funding for cataloguing was not granted, part of the assemblage is still uncatalogued.

Because of the density of the finds in the matrix it was necessary to develop new methods of excavation and finds recovery. The standard excavation unit at the time of the excavations was 2 x 2 m with a 10 cm spit removed at a time. It was estimated that, given the density of finds, excavating one square like this would have taken a person the whole field season. Therefore, it was necessary to use smaller units of excavation and recovery. The method was to a large extent devised by Christian Carpelan, who acted as an adviser in the early stages of the fieldwork. Having become familiar with the character of the cultural layer, I embraced the method whole-heartedly.

The basic unit of excavation at Ala-Jalve was a 1 x 1 m square, which was excavated in 2.5 cm spits. In low-density areas finds from an area the size of one's palm were bagged and plotted together. In the areas of highest find density recording the find locations like this would have been impossible. There, each square was divided into sixteen 25 x 25 cm quadrats, which were the basic recording units for the artefacts.

4 mm square mesh sieves were used to sieve the whole matrix in order to speed up excavation, as hand picking each individual find would have been extremely slow. This ensured the recovery of artefacts larger than the mesh size, but inevitably meant losing the smaller fractions. To test and illustrate the recovery rate/loss of artefacts, a total sieving experiment was carried out in one spit of one square in the central area of the site. Here, eight of the sixteen quadrats were excavated in the normal fashion using a 4 mm mesh sieve, while eight were sieved using a series of sieves with meshes ranging from 22.4 mm to 2.24 mm and keeping the sand collected in the bottom tray as soil samples.

The total of catalogued finds from the square was 167 for the quadrats sieved with the 4 mm mesh and 1,043 for the totally sieved ones (Figure 11). The total sieving thus increased the number of finds by 520 %. It also emphasized the fact that the average size of artefacts in the Ala-Jalve cultural layer is very small.

Going through one of the soil sample bags from the bottom tray of the sieve series under a microscope further highlighted the wealth of artefacts in the matrix. What went through the 2.24 mm sieve from one 25 x 25 cm quadrat, 2.5 cm spit, was the following:

Quartzite flakes	2177
Pottery/burnt clay fragments	766
Burnt bone fragments	414
Asbestos fragments	34
Red ochre of slag fragments	127
Other (e.g., pumice) fragments	7
Total	**3525**

Since the screened spit was below the richest deposits in the square in question, these numbers represent the minimum of potential finds lost in each 25 x 25 cm quadrat. If this is the rate of loss of cultural material at a site where extremely careful excavation and recovery methods are employed, one can only imagine the loss at sites excavated with less meticulous methods, the unusual richness of the Ala-Jalve cultural layer notwithstanding. Of course, it can be claimed that artefacts in this size group rarely offer any significant information. I would not agree, especially when it comes to lithics, where refitting, for example, benefits from the presence of every possible flake in the recovered assemblage.

This method of excavation and recovery was found unacceptable by many archaeologists at the time, and whispered about behind my back. I still think it was the only feasible way of dealing with this extraordinary site. As a result of it, it was subsequently possible to carry out a range of analyses that had never before been attempted in Finland. These encompassed lithic analyses, including an early type of *chaîne opératoire* (below), as well as detailed analyses of artefact distributions, which would never have been possible, had more conservative methods been used. These analyses were, among other things, able to throw light on the process of lithic reduction, as well as processes of site formation and post-depositional disturbance, and establish the deposition of sand between episodes of occupation and, for the first time, the existence of vertical stratigraphy at a Finnish Stone Age or Early Metal period site.

The assemblage

As indicated above, the Ala-Jalve assemblage consists, for the most part, of debitage from bifacial point production (Figure 12). Some platform reduction is also present, especially among the larger flake size group and in the excavation area north of the road. There is also slight a tendency of platform flakes to have been found deeper within the cultural layer than bifacial flakes.

The raw material of the lithic artefacts in the central area of the site is almost exclusively quartzite: in the analysed excavation areas the proportion of quartzite varied between 91 % and 98 %. North and west of the central area, i.e., on the north side of the road and in a test pit in the western periphery, quartz was dominant – the latter possibly because a single episode of quartz reduction had taken place exactly where the test pit happened to be dug. This was confirmed through refitting by Kjel Knutsson of Uppsala University. Analyses of the vertical distributions of the lithic artefacts have shown that there is a tendency of quartz to concentrate lower in the cultural layer than quartzite, which points towards a time-dependent difference in raw material usage.

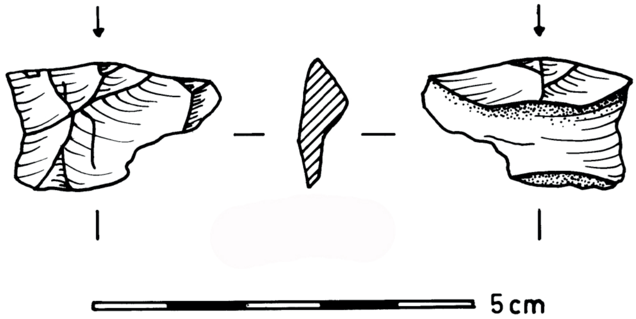

Figure 12. Ala-Jalve. A bifacial edge removal flake – a knapping mistake that illustrates well the shape of a bifacial flake "platform", i.e., the preform edge. Drawing: Tuija Rankama.

The quartzite is exotic to the site. It is a metamorphosed very pure cerisite quartzite of a type common to the interface between the Fennoscandian Shield and the Scandes mountain chain. The location of the quarry from which the Ala-Jalve quartzite derives – if an actual quarry has existed – has not been found. Single rocks have been found, for example, among moraine deposits to the south-east of the mouth of the Pulmankijoki river, some 15 km to the east of the site.

The colour of the rock varies from green to white; both colours can be found as veins in one chunk of raw material. The green colour is dominant and is specific to the artefacts at this site: the Ala-Jalve green can be distinguished from the other greenish colours of quartzites found at North-Norwegian sites.

As a raw material the quartzite is of an even, fairly fine grain size without inclusions, which makes it ideally suitable for lithic reduction – and for learning about and studying lithic reduction techniques. The main product of the lithic reduction is the slender bifacial point with a straight or slightly concave base (Figure 13). At least 75 of these points, mostly fragments, but including seven unbroken examples, have so far been identified within the assemblage (Taipale 2010, table 1). In addition, at least 329 preforms, mostly fragmentary, for points are included in the assemblage (Figure 14; Taipale 2010, Appendix 4). The presence of preforms, along with the number of flakes present, emphasises the fact that points were manufactured on site. At the same time, the number of discarded, and especially snapped, preform fragments may indicate that there were some difficulties in mastering the raw material, but also that the raw material was not in short supply.

The shape of the finished, unbroken Ala-Jalve points is very uniform, as ingenuously illustrated by Noora Taipale (Figure 14), and identifiable among other points of the same type found in Finland and Norway.

In addition to the bifaces and preforms, the lithic assemblage includes various small tools made mostly on quartzite flakes, such as scrapers and edge-retouched knives (Figure 15). Platform cores are extremely rare. Most of them are amorphous, with several striking platforms. Only a couple of conical single platform ones are known, possibly representing a separate occupation phase not linked to the biface production. The scarcity of cores indicates that during the main occupation phase the need for small tools was for the most part satisfied by the flakes produced by biface manufacture. It also strongly suggests that the initial shaping of blanks for bifaces took place at the source of the raw material. It is possible that

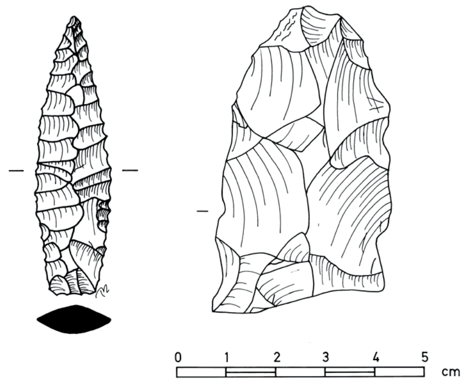

Figure 13. A finished point and a point preform from Ala-Jalve. Drawings: Tuija Rankama.

Figure 14. A photograph of point KM 22897:1468 (see Fig. 13) overlain by an outline drawing of point KM 22897:2575 illustrates the identical shapes of the unbroken points form Ala-Jalve. Picture from Taipale 2010, fig. 4.

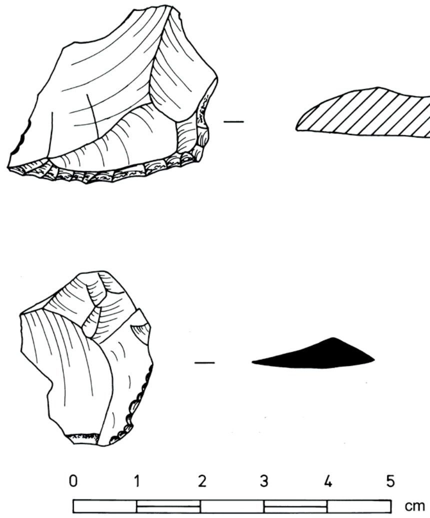

Figure 15. A scraper and an edge-retouched knife from Ala-Jalve. Drawings: Tuija Rankama.

the blanks came to the site in the form of large flakes struck from chunks of quartzite at the source, as also suggested by Taipale (2010).

A Schifferian flow model of the behavioural elements present in the quartzite assemblage was created early during the analyses of the site material (Figure 16). This represents an effort not unlike the chaîne opératoire approach developed in France, of which I did not yet know at that stage. It illustrates the stages the lithic material went through during its life within the systemic context, i.e., while it was being handled, used, and shaped by prehistoric people, and also in what shape it entered the archaeological context, i.e., was lost or discarded. No evidence of intentional deposition, as, e.g., caches or grave goods, was found.

The assemblage also includes a quartz component, in which bipolar reduction is well represented. Although platform cores are rare on the whole, bipolar quartz cores, thus, are well represented. A small element of chert, flint, and jasperoid is also present.

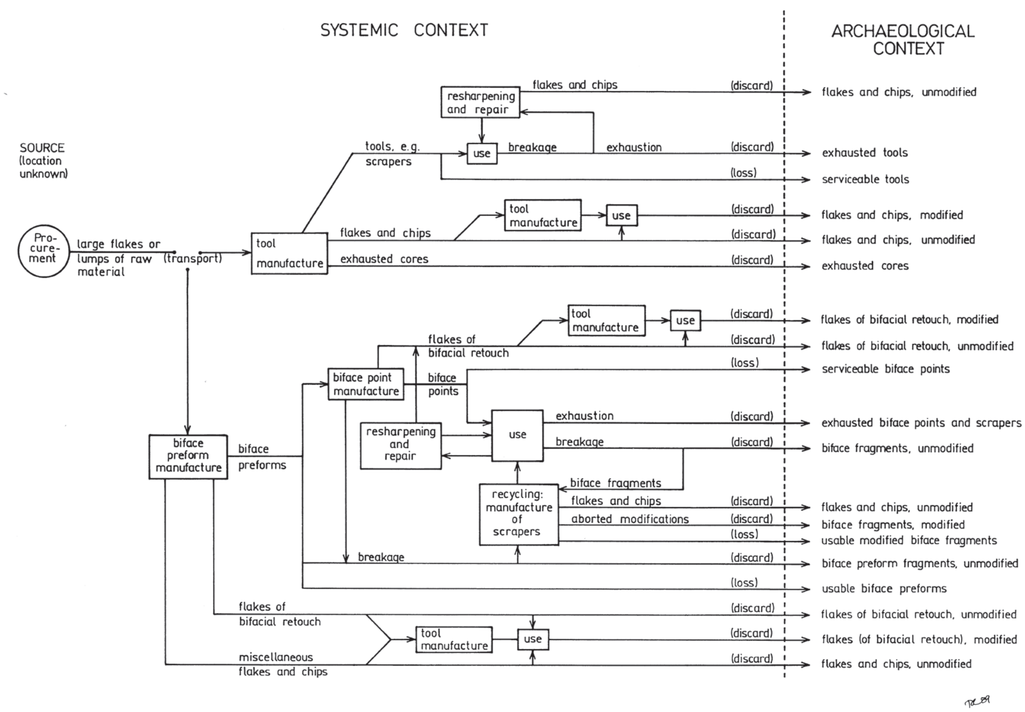

Figure 16. A flow model of the quartzite assemblage at Ala-Jalve. Inspired by Schiffer (1972; 1976). By Tuija Rankama.

Slate has been used for arrowheads of the Sunderøy type; at least 42 unbroken or fragmentary ones are included in the assemblage (Figure 17). This type of point is common also on Norwegian sites of comparable date. A few morphologically earlier slate spearheads are also included. The slate employed is exotic to the site the same way as the quartzite. It derives from the Barents Sea coast, as does the pumice used for arrow-shaft smoothers (Figure 18b). The assemblage also includes a few line sinkers made of slate (Figure 18a), as well as at least one net sinker rock.

The non-lithic assemblage consists mostly of asbestos- or hornblende-tempered pottery of the Lovozero type of the Sär2 group (Figure 19), often decorated with an incised net pattern or mere striations below the rim. A typical feature of this pottery is that the rim has been reinforced by baking a ring of asbestos or hornblende in the clay just below it. Sherds of at least 25 pots have been identified, and the number will no doubt increase with continued cataloguing.

Bone finds are very rare and consist mostly of unidentifiable fragments of burnt bone. Only eight fragments have been identified to the species level and include European elk, hare, reindeer, and pine marten. The species composition suggests a more forested environment than today. Salmon bone has not survived, although the site lies next to what is even today one of the most prolific salmon fishing locations of the Teno river. The model in Figure 20 represents an effort to illustrate the archaeological assemblage recovered from Ala-Jalve in a succinct form. This was created already in 1988 and does not include information about the frequence or affiliation of the elements mentioned.

Dating of the site

Typological dating of the principal part of the assemblage points towards the Early metal Period as the main phase of occupation. Elements supporting this date include the pottery, the straight- or concave-based bifacial points, and the Sunderøy points of slate. All of these elements are present also at nearby coastal (Norwegian) sites of similar date. This date is confirmed by the first AMS radiocarbon date on Finnish material: hafting glue

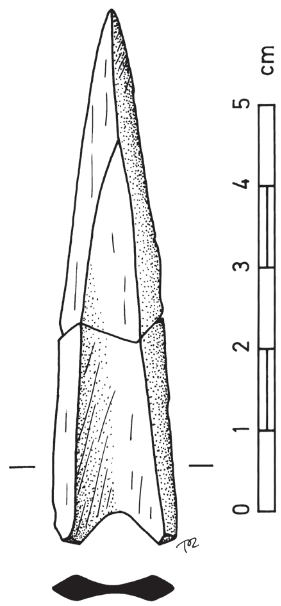

Figure 17. A Sunderøy type slate point from Ala-Jalve. Many of these points had remains of glue still attached from fixing the arrow shaft. It was clear that they had been hafted so that only the narrow facetted edges and the tip was visible. Drawing: Tuija Rankama.

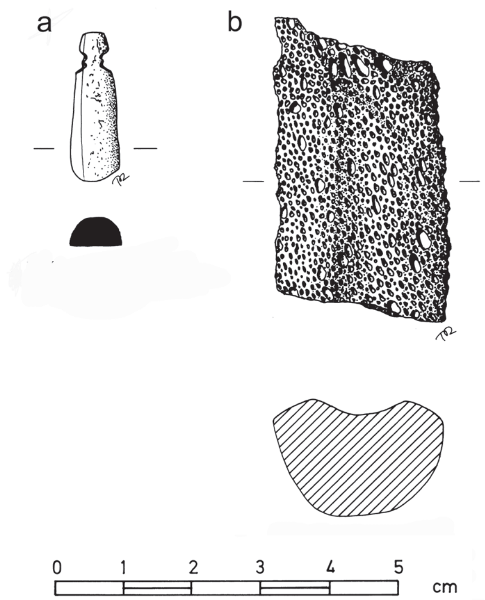

Figure 18. A slate line sinker (a) and an arrow shaft smoother made from pumice (b) from Ala-Jalve. Drawings: Tuija Rankama.

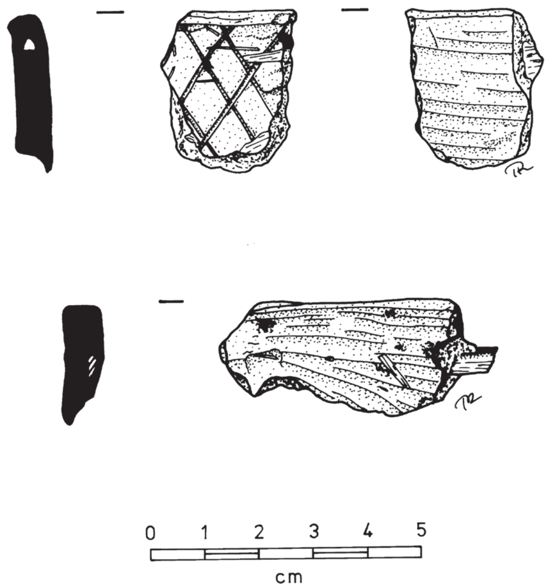

Figure 19. Asbestos/hornblende-tempered pottery of the Lovozero type from Ala-Jalve. Drawings: Tuija Rankama.

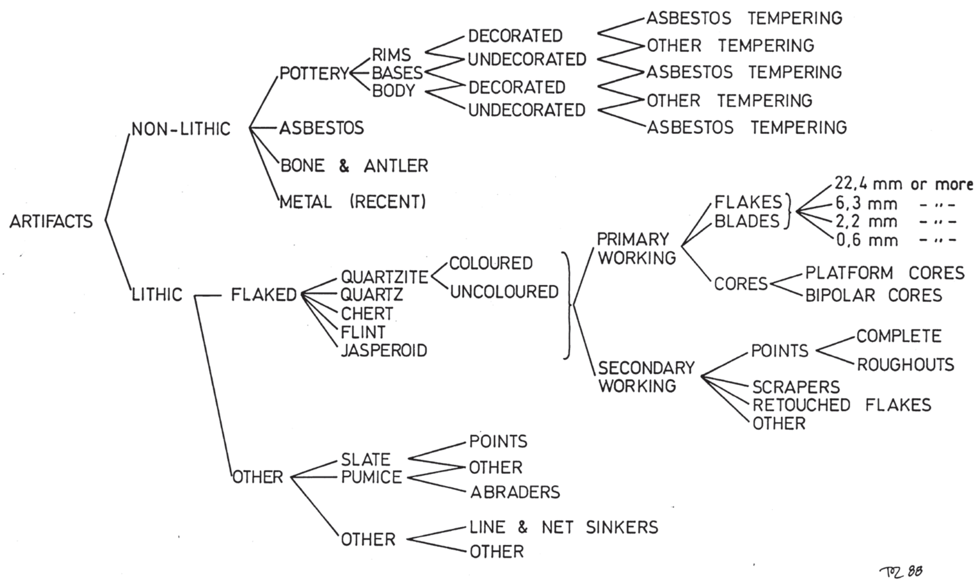

Figure 20. A model of the Ala-Jalve assemblage. By Tuija Rankama.

from the base of a Sunderøy point was dated at the Uppsala radiocarbon laboratory and gave the result 2860±95 bp (Ua-1119), which with the current Oxcal program calibrates to 1286–815 cal BC.

However, the rest of the radiocarbon dates differ considerably from this expected value. The series of eight dated samples from the large hearth gave consistent results that place them at the Mesolithic–Neolithic boundary, i.e., around 6200 bp, or c. 5300–4900 cal BC. Three dates from the excavation area north of the road gave results around 4000 bp, or c. 2800–2400 cal BC making this area Late Neolithic. Three dates from the middle terrace, but higher in the cultural layer than the hearth, gave results around 2000 bp or c. AD 0–130.

The problem now was that there were no obvious elements in the finds assemblage that could be tied to any other chronological phase than the Early Metal Period. This called for detailed techno-typological analyses of the lithic assemblage for distinguishing different technological components. A large series of both horizontal and vertical distribution analyses, together with statistical analyses to test their validity, was also carried out in an effort to see if spatial differences between elements of the assemblage arose.

None of these analyses would have been possible if less exacting and more conservative methods of excavation and finds recovery had been followed. The wealth of recovered finds also ensured that the analysed samples were large enough for reliable statistical analyses. The matrix grain size analysis mentioned above was also part of the efforts to throw light on the mechanisms of site formation. These analyses are presented in their entirety in my Lic. Phil. thesis, published as BAR International Series 681. Only the most salient results are outlined here.

Results of the analyses

The technotypological analyses of the debitage revealed that although the assemblage had seemed almost uniformly composed of remains of bifacial reduction, a component of platform reduction was also present. This was true especially as regards the larger size groups of flakes. Spatial analyses showed that platform reduction was dominant in the excavation area north of the road. This tied in with the radiocarbon dates from that area, which suggested that occupation there had taken place before straight- or concave-based bifacial points became a prevalent typological form.

Platform flakes were shown also to be more common towards the bottom of the cultural layer both in the area north of the road and in the central area of the site. The same pattern applies to quartz flakes: they are more common in the area north of the road (as well as in the test square to the west of the main occupation) and in the bottom part of the cultural layer.

The differences observed in the vertical distributions of some elements of the assemblage led to more detailed analyses of stratigraphy. It had always been assumed that vertical stratigraphy was non-existent or at least could not be detected at Finnish sites deriving from the activities of foraging groups. Ala-Jalve turned out to prove this assumption wrong.

The vertical distribution analyses showed a bimodal distribution of several categories of artefacts in most of the studied excavation areas, i.e., there was a statistically significant tendency of certain artefact groups to concentrate deeper in the cultural layer than others, or form a distribution curve with two peaks, a higher one towards the top of the cultural layer and a lower one deeper down. Thus, for instance, although there was overlap, quartz was concentrated deeper than quartzite (Figure 21). Larger flakes, as well as platform core flakes, also showed a tendency to be more abundant in lower spits than smaller ones and bifacial ones regardless of the studied excavation area (Figure 22).

Vertical stratigraphy within the cultural layer was, thus, indicated. To test if the observed patterns could have been caused by post-depositional processes, a trampling experiment was carried out. This showed that in a matrix comparable to that at Ala-Jalve trampling was only able to cause vertical movement of lithic artefacts down to c. 15 cm. Cultural layers deeper than that, thus, have to have been formed through deposition of matrix on top of the cultural layer. The grain size analysis at Ala-Jalve indicated that the most probable mechanism of deposition was wind action. Although evidence of cryo- and bioturbation was

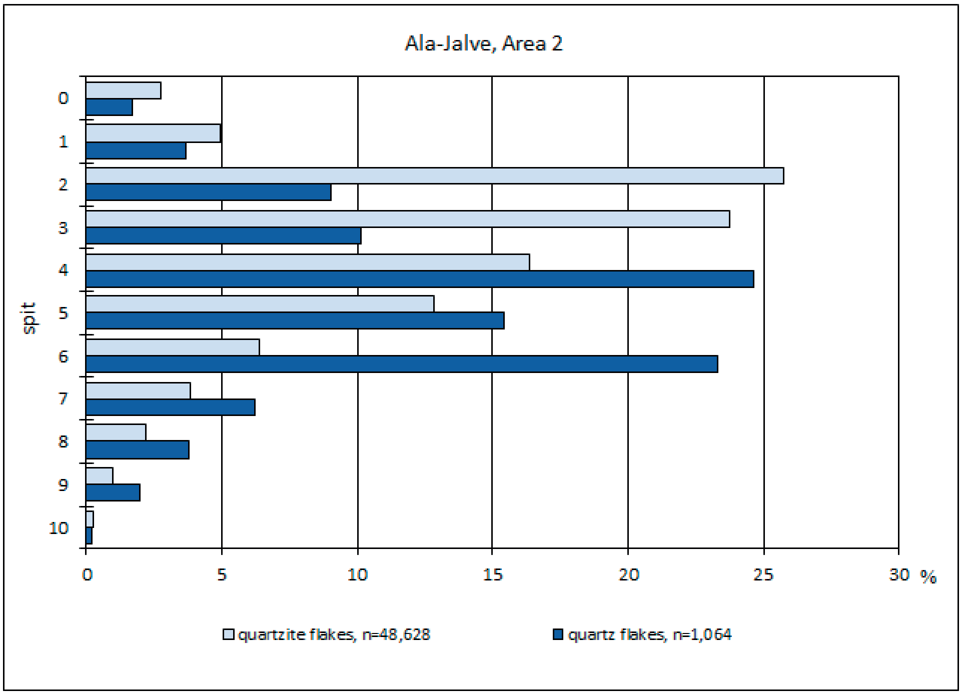

Figure 21. The vertical distribution of quartz and quartzite flakes at Ala-Jalve, Area 2. By Tuija Rankama.

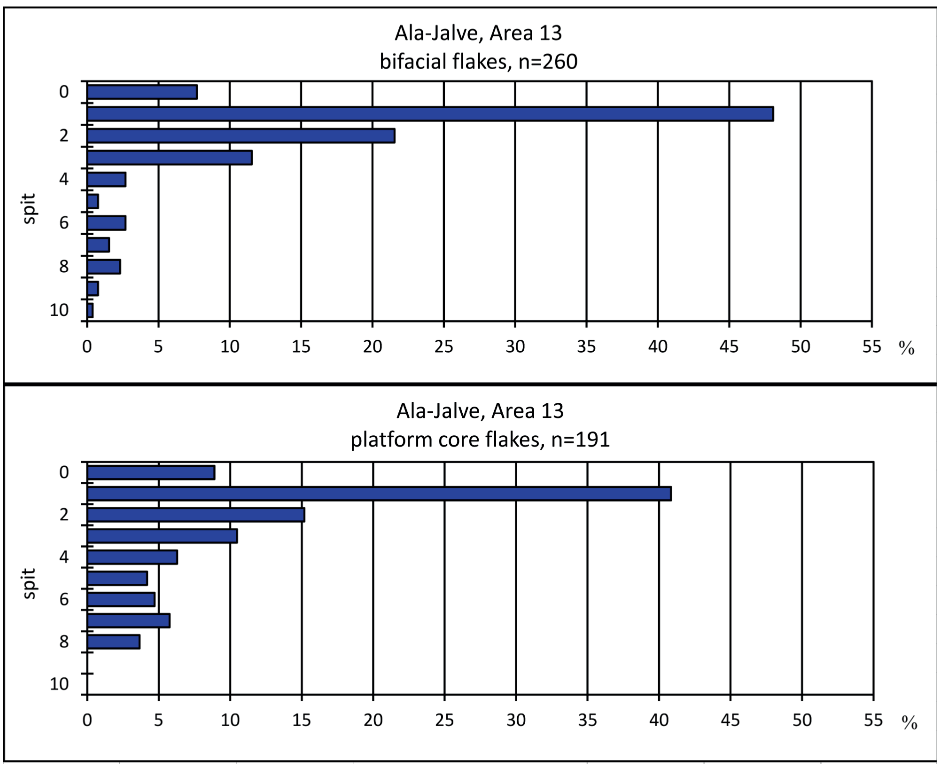

Figure 22. The vertical distribution of bifacial and platform core flakes in Area 13 at Ala-Jalve, showing a distinct bi-modal distribution of the latter. By Tuija Rankama.

present, they could not account for the observed patterns. The vertical stratigraphy, thus, had to be accepted as real.

The analyses of the cultural layer and the artefacts at Ala-Jalve indicated the presence of at least two, probably three, prehistoric occupation episodes at the site, separated by enough time for a significant aeolian layer to have been formed on top of the remains from the previous episode. The radiocarbon dates from the hearth indicate an additional, much earlier episode, although it has not been possible to tie this to any particular components of the artefact assemblage. Another candidate for earlier occupation is the area excavated on the top terrace next to the riverbank, but as the hearth is in the middle of the early Metal Period occupation area, Late Mesolithic/Early Neolithic activity also took place there.

The archaeological finds from the site show that the location has been profitable for occupation throughout the prehistoric period – as it is today. As regards the most prolific occupation phase, the Early Metal Period, the interpretation is that this was a summer camp site for complete family units, where salmon was fished from the river while preparing for the fall reindeer hunt by mass-producing bifacial arrowheads and, judging by the shaft smoothers, complete arrows.

Conclusion

The archaeological fieldwork carried out in Utsjoki in the 1980s proved scientifically very profitable. It gave rise to several publications and two academic theses in which the results of both the excavations and the survey work were used successfully. Even though the models I created about the development of occupation in the region have been partly disproven by (my own) subsequent research, such is the character of archaeology: we can only pronounce on the basis of extant evidence and be prepared to be proven wrong by new.

As regards my personal development as an archaeologist, the period of fieldwork in Utsjoki was of course pivotal. It led my way to developing into an expert in circumpolar archaeology as well as lithic technology, and these specialisations have followed me throughout my career.

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