

ARCHAEOLOGICAL SHORE DISPLACEMENT CHRONOLOGY IN NORTHERN OSTROBOTHNIA, FINLAND

Introduction

Extensive archaeological field investigations were carried out between 1954 and 1972 in northern Finland in connection with the hydroelectric power station construction projects along the water systems of Oulujoki, Iijoki and Kemijoki rivers; these investigations were mainly sponsored by the construction companies (Erä-Esko 1955 and 1975). Systematic analysis of the vast material has not yet been commenced but some isolated problems have already been touched and several concise site analyses have been presented (Kopisto 1955, Carpelan 1962, 1965 and 1970, Siiriäinen 1964, 1967 and 1968, Kehusmaa 1972, Purhonen 1973). Some minor articles for general reading on the prehistory of northern Finland have also been published (Carpelan 1967, 1975a and 1975b). In most of these articles chronological problems were considered and Carpelan (1975a) has presented a schematic table for a preliminary periodization based mainly on stylistically and technically defined pottery groups. A connection to southern Finland could be established with the aid of pottery groups with wide spatial distributions (Siiriäinen 1969 and 1971) – these also provided evidence towards an absolute chronology derived from studies on shore line displacement in the southern part of the Baltic Sea, Lake Saimaa complex and Lake Päijänne basin (Saarnisto 1970 and 1971). – In this paper my intention is to present a preliminary view on the prehistoric chronology in northern Finland (northeastern Baltic coastline) on the basis of the shore displacement of the Baltic Sea.

Diagram

The method in correlating the archaeological sites with shore line displacement has been presented earlier (Siiriäinen 1969 and 1972). A distance diagram is applied in which the distances of the observation points are measured from a fixed baseline running along the coastline of the Bothian Gulf and following roughly the course of the present land uplift isobases (cf. Kääriäinen 1953 fig. 14) – The baseline has been defined empirically only south of Oulu. As it follows exactly the course of the isobases of the Litorina Sea (cf. Eronen 1974), it is reasonable to assume that the same holds true even further north: thus, for this study, the baseline has been extended to Northern Ostrobothnia following the course of the isobases of the highest Litorina shore according to Eronen (1974) (fig. 1).

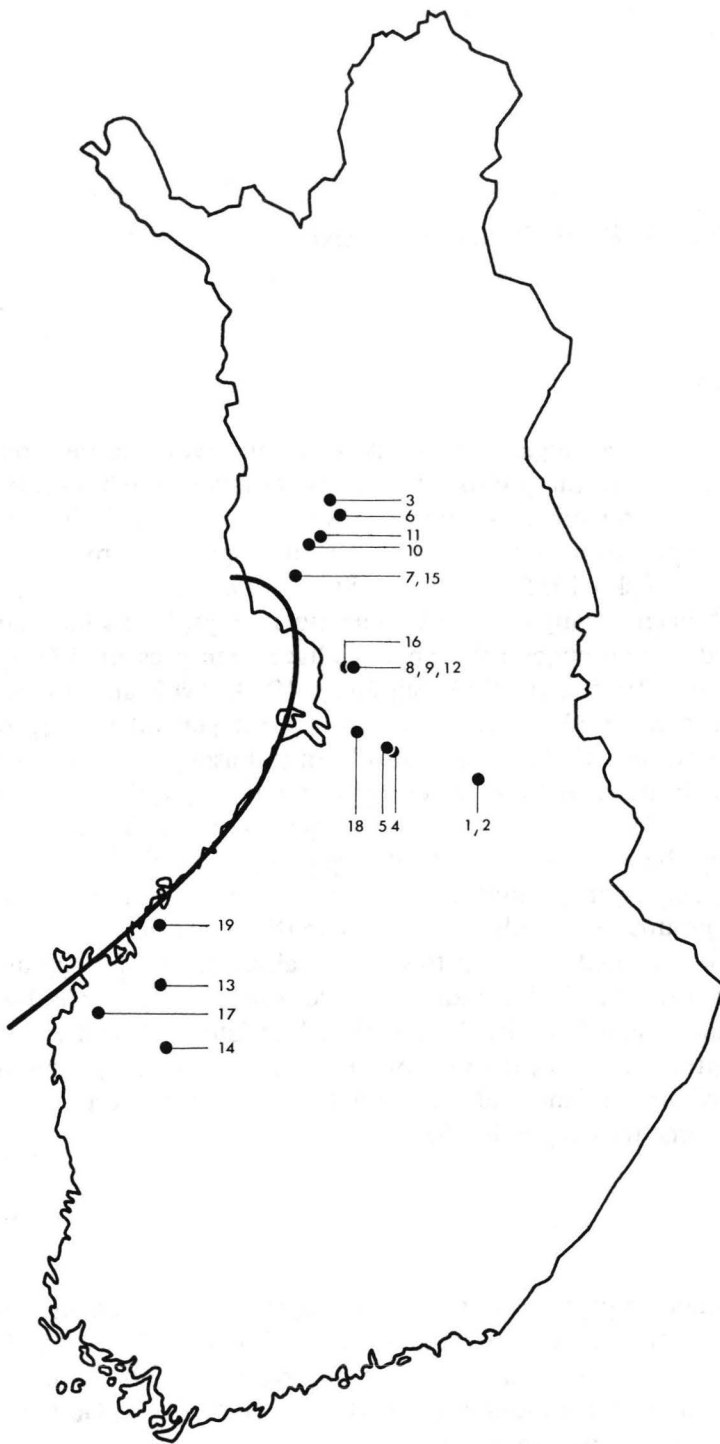


Fig. 1. Baseline for the distance diagram and the dated sites. 1. Kaarre in Paltamo, 2. Kitusenmutka in Paltamo, 3. Lamminvaara in Rovaniemi, 4. Roinila in Utajärvi, 5. Pyhänniska in Utajärvi, 6. Turpeenniemi in Rovaniemi, 7. Törmävaara in Tervola, 8. Kierikki gravel pit in Yli-Ii, 9. Kierikinkangas in Yli-Ii, 10. Jaatila in Rovaniemi, 11. Muurola in Rovaniemi, 12. Kierikki in Yli-Ii, 13. Troihari in Ylistaro, 14. Jokipii in Jalasjärvi, 15. Törmävaara in Tervola, 16. Juutisentörmä in Yli-Ii, 17. Raineäsen in Pirttikylä, 18. Halonen in Muhos, 19. Karkaus in Alahärmä.

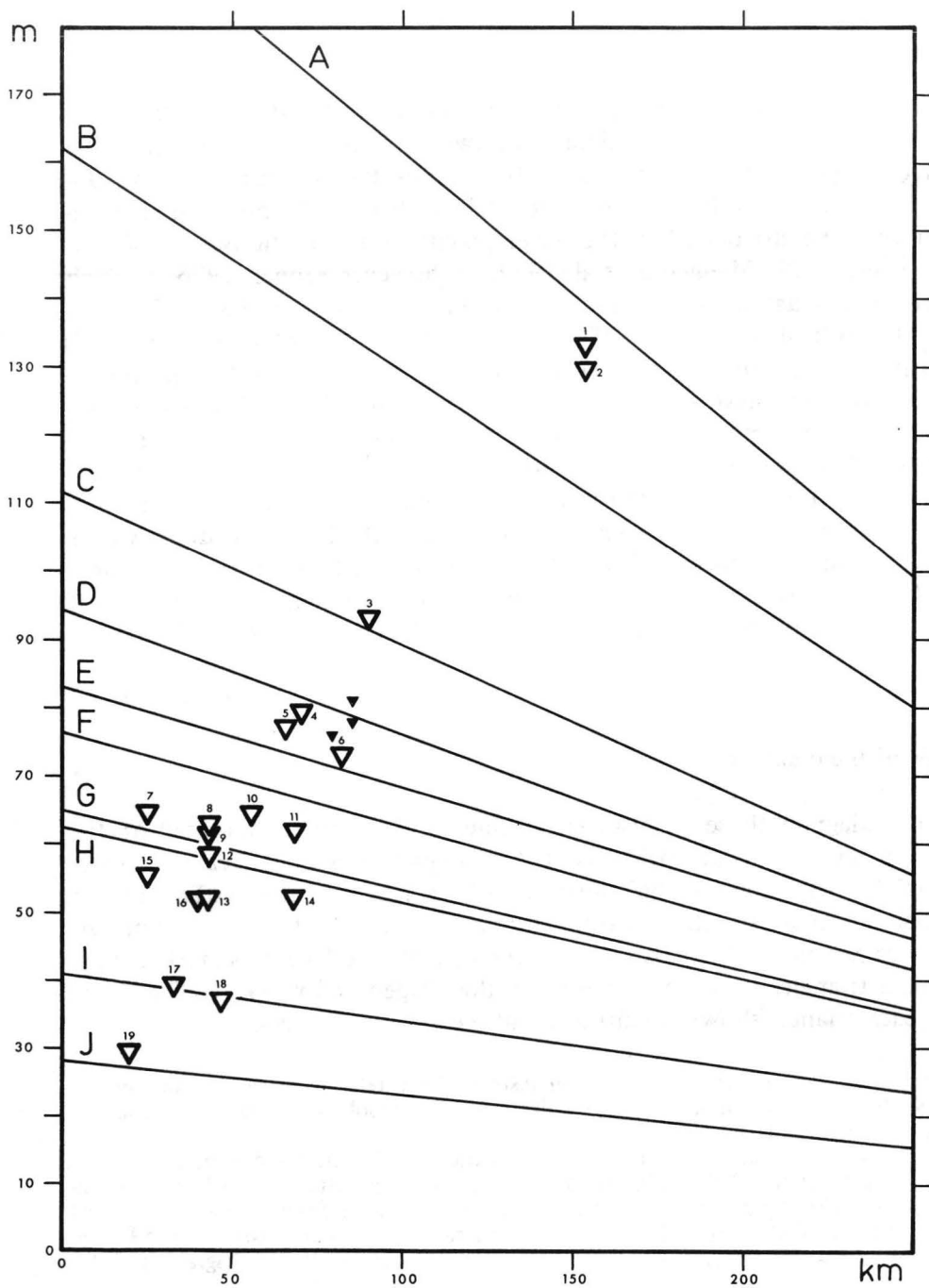


Fig. 2. Distance diagram; shore lines and their datings:

A =	chronozone boundary	Pre-Boreal/Boreal	7000 BC
B =	" "	Boreal/Atlantic	6000 BC
C =	the highest <i>Litorina</i> shore		5300 BC
D =	end of the Suomusjärvi stage		4200 BC
E =	end of the Comb Ceramic stage I 1		3550 BC
F =	" "	I 2	3350 BC
G =	" "	II	2800 BC
H =	" "	III 1	2600 BC
I =	end of the Kiukainen stage		1250 BC
J =	c. 500 BC		

Several previously dated shore lines are marked in the diagram (fig. 2) to divide it into chronological sections. The two uppermost lines represent the shores corresponding the chronozone boundaries Pre-Boreal/Boreal and Boreal/Atlantic which, in turn, roughly coincide with the beginning and termination of the Ancyclus period in the development of the Baltic Sea (9000 and 8000 C¹⁴-years BP; Mangerud et al. 1974; cf. however Eronen 1976 in which Ancyclus lake is dated by new radiocarbon evidence between 9300/9200 and 8500/8000 BP; also Nuñez 1977). They are drawn according to Saarnisto's (1971) results from the Päijänne basin. The shore line for c. 5300 BC is marked according to the highest Litorina shore as it is reconstructed by Eronen (1974), and the others, except the lowermost, according to the archaeological material in southern and western Finland (Siiriäinen 1969 and 1972). The youngest shore line, corresponding to the year 500 BC, has been obtained by calculating the retarding land uplift backwards in time with the recent uplift values as starting point and using 1.5 % per century as retardation rate. – The ages are in C¹⁴ time scale with T 1/2 as 5568 years (the youngest shore dates, if the dendrochronological calibration curve is applied, to c. 2400 BP in C¹⁴-years; e.g. McKerrel 1975)¹.

Analysis of the diagram

In the diagram those prehistoric dwelling sites – either excavated or discovered during the archaeological surveys – are plotted which, because of their topographical situation can be assumed to have lain on the coastline of the Baltic Sea, i.e. those situated far from any present water system and at a niveau which does not imply the existence of any ancient lake (the sites marked with small filled triangles from an exception in this respect, cf. p. 7). – The lower edge of each triangle shows the altitude and the distance of resp. site.

- 1) There are some geological radiocarbon tests available relating to shore displacement in Northern Ostrobothnia which give dates for stratigraphically established isolation niveaux of certain lake basins.

In Lake Mustajärvi in Ylitornio the isolation of the threshold level at c. 70 m a.s.l. was dated to 4820 ± 170 BP (HEL-938; Matti Saarnisto, personal communication). The critical parameters of the site (alt. 70 m, distance from the baseline 35 km) place it between shore lines F and G in the diagram (fig. 2) but closer to shore F. The result is slightly younger than would be expected according to the diagram (c. 3200 BC).

Eronen (1974 p. 139) has published stratigraphical datings from five lake basins within the area relevant in this connection. From these basins only one has a threshold height below the highest Litorina shore (shore line C in fig. 2): Vähä Vuotunki in Yli-Kiiminki (alt. 93.5 m, dist. 70 km). Its isolation took place at 6480 ± 150 BP which is again a date only slightly younger than expected according to the diagram (c. 4800 BC). The other basins are above but not far from shore line C (Kivilompöytä in Ylitornio, Varevuoma in Alatornio and Ahmasjärvi in Utajärvi) and have isolation dates of 5640 ± 230 BC, 6450 ± 190 BC and 6420 ± 280 BC resp. The first date is broadly in agreement with that obtained from the diagram but the other two are c. 1000 years older than expected. This might imply that shore line B in the diagram is considerably older than stated and that the regression of the Ancyclus stage reached levels close to shore line C (cf. Eronen 1974 p. 140).

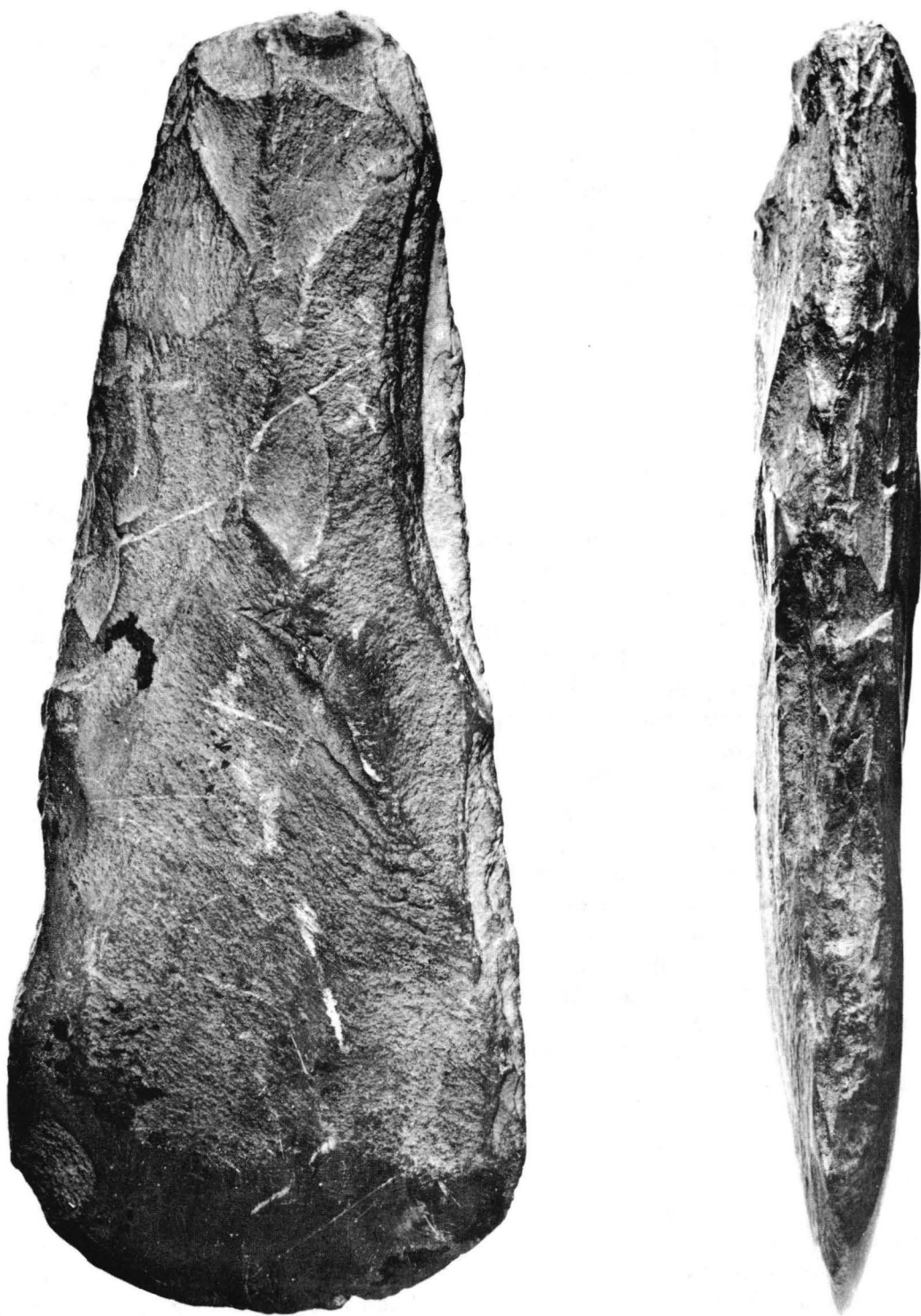


Fig. 3. Bifacially flaked axe from Kaarre in Paltamo (site 1). Length of the axe 21,4 cm.

The two uppermost sites, Kaarre (No. 1) and Kitusenmutka (No. 2) in Paltamo, situated on the shore of the Kiehimäjoki river which flows into Lake Oulujärvi from the north, fall between the shore lines of c. 7000 and 6000 BC. In these high isobases the shore of the Ancyclus lake, dated within this period, was regressive right from the beginning of the stage. The lowering of the shore line was slower in the beginning accelerating towards the end of the stage (e.g. Saarnisto 1971, Eronen 1974). This accelerating regression makes it difficult to estimate the age of the dwelling places, but it seems justified to place them somewhere in the middle of the seventh millennium BC rather than to its former half although they lie closer to the upper dated shore line.

In this connection it might be interesting to have a look at the artefactual inventory of the sites – this, however, remains rather superficial as the archaeological analysis has not yet been accomplished. Three points are worth emphasizing:

- (1) No potsherds were discovered from either site; even in northern Finland, where pottery is not as frequent as in southern Finnish Neolithic sites, this might imply a pre-pottery age.
- (2) In Kaarre a bifacially flaked axe with sparse polishing was found (fig. 3). The main chronological distribution of this type is clearly within the pre-pottery period even if such axes were still in use in the beginning of the New Stone Age. In Kitusenmutka no polished artefacts whatsoever were found.
- (3) The quartz aggregates of both sites appear quite archaic (figs. 4 and 5): the artefacts are clearly larger than those at sites containing pottery and the tool assemblages include frequent burins or burin-like pieces. Among the scrapers there are several examples with blunt retouching not curving upon the upper surface of the flake.

As isolated phenomena these observations would perhaps not have any chronological significance but occurring together in same assemblages they render a basis for accepting the above dating. In addition, from Kaarre a flake of reddish flint-like stone was found which obviously reflects the same flint import as the relatively rich material discovered in the lowermost pre-pottery layers of the stratigraphical site Neitilä 4 in Kemijärvi (Kehusmaa 1972).

As the Mesolithic period of northern Finland has been only briefly dealt with in the literature, some consequences of the above dating of the sites will be considered here. The dating, c. 6500 BC, could be correlated with the appearance of the boreal *Pinus* dominated forest type into the regions south of Kuusamo the spread of which has been shown by Hyvärinen (1972) to be time transgressive in the southeast-northwest direction. The situation is thus the same as further south where the oldest dated find, the fishing net and the associated bone, horn and stone artefacts from Korpilahti in Antrea, has been radiocarbon dated to 9230 ± 210 BP, i.e. approximately to the beginning of the boreal pine period (Siiriäinen 1974; cf. Donner 1971). In view of these findings it would seem that the population representing the Finnish Meso-

lithic Suomusjärvi culture, into which the sites at Paltamo can be assigned, migrated northwards, following the spreading of the pine forest zone during the early post-glacial time.

To the terminal phase of the Mesolithic Stone Age belongs the site at Lamminvaara in Rovaniemi (No. 3) which has been situated on the stratigraphically defined Litorina shore dated to c. 5300 BC. In the rather extensive excavations no ceramics were discovered. The rich quartz assemblage reminds that of the sites in Paltamo although the Lamminvaara material contains relatively more small artefacts. The longish flakes of schist indicate that the special flaking technique applied to the manufacture of the so-called Bothnian axes and adzes was already known.

In the Rovaniemi area the Litorina shore continued lowering still c. 13 m during the Mesolithic period after the Lamminvaara stage, i.e. between c. 5300 and 4000 BC, but no sites from these niveaux have yet been discovered. In the diagram the following complex of sites (Nos 4–6) is between the shore lines representing the end of the Suomusjärvi culture and the end of the older stage of the early comb ceramics (style I 1). These sites are characterized by comb ceramics belonging to a stylistic special group called Säräisniemi 1 or Sär. 1. Relying on shore displacement I have earlier (Siiriäinen 1971) argued for an early dating for the beginning of Sär 1 and suggested that there is at least a chronological contact with style I 1 – earlier it was assumed that Sär 1 is contemporary with the typical comb ceramic (style II). This problem will not

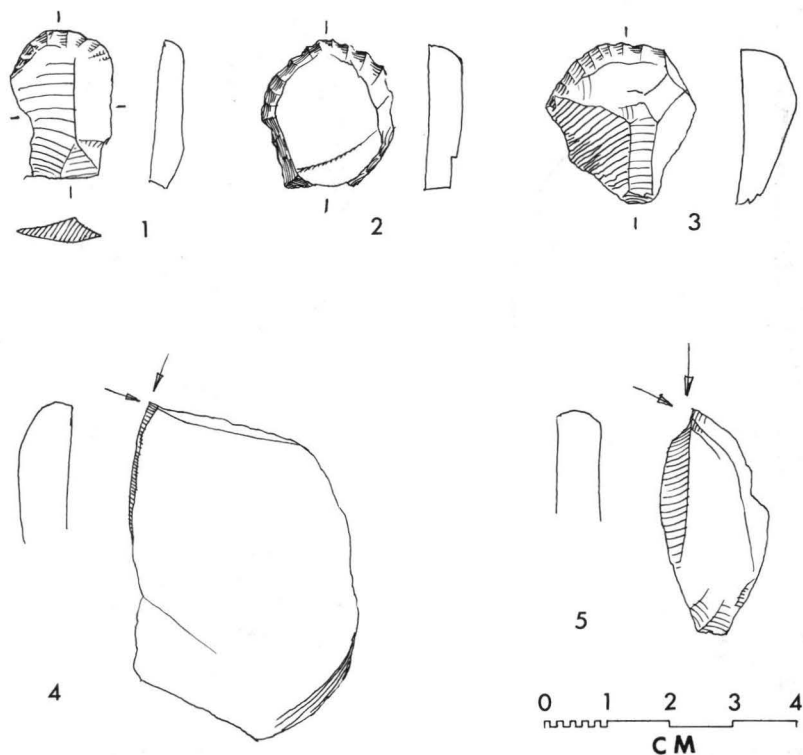


Fig. 4. Quartz artefacts from Kaarre in Paltamo (site 1). 1 to 3, scrapers; 4 and 5, burins.

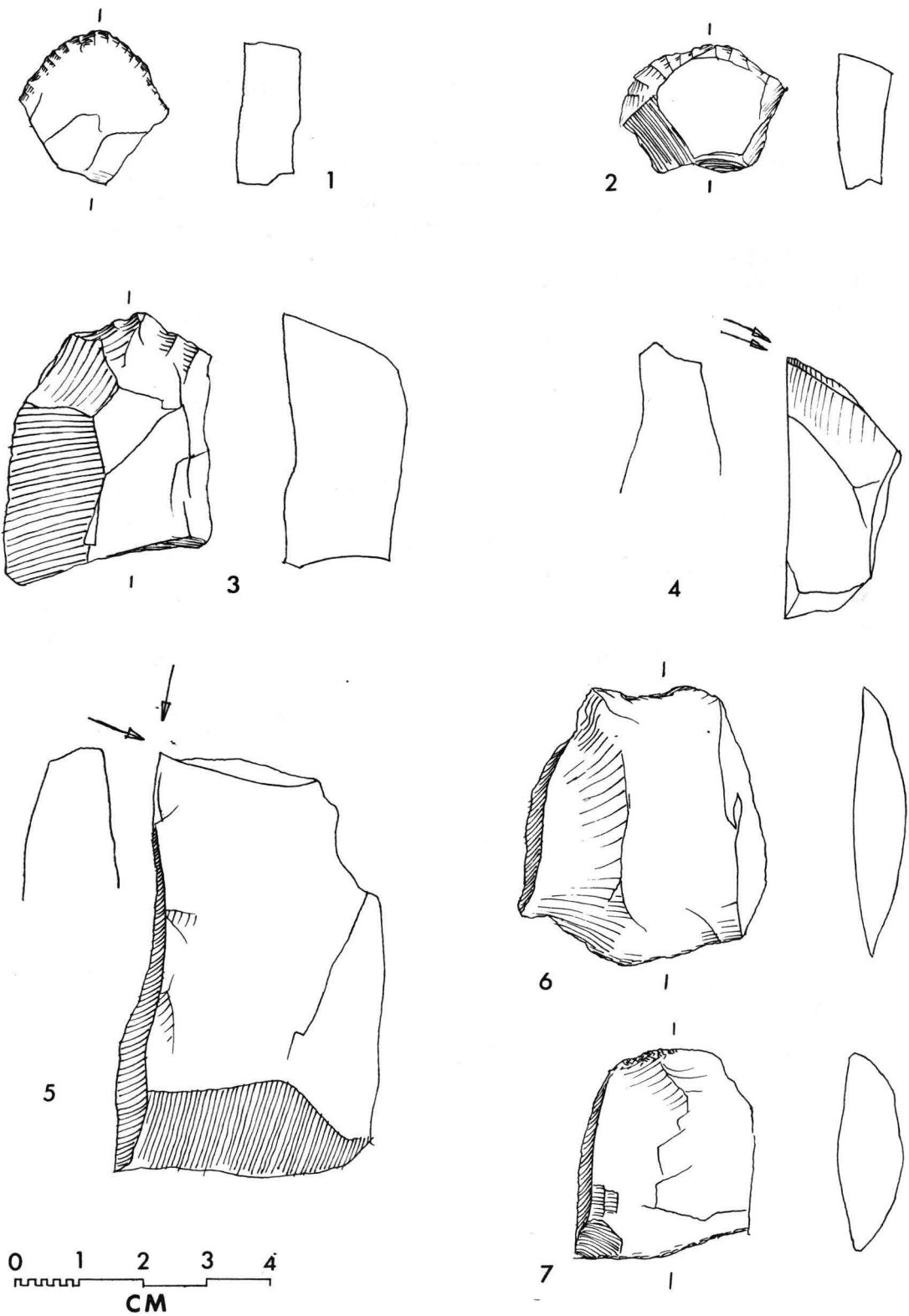


Fig. 5. Quartz artefacts from Kitusenmutka in Paltamo (site 2). 1 to 3 scrapers; 4 and 5, burins; 6 and 7, "splintered pieces".

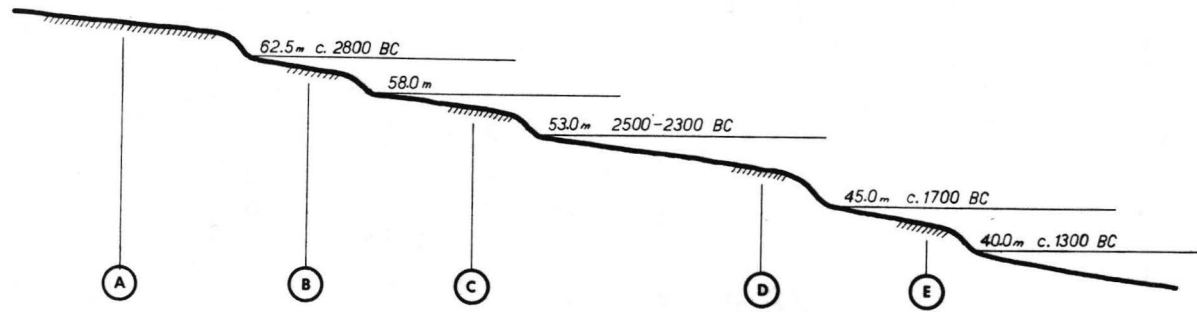


Fig. 6. Schematic diagram showing the main raised shores and the archaeological findings on the slope of the Törmävaara hill in Tervola.

- A* - excavated finds: comb ceramics, style II
- B* - " - : quartz artefacts
- C* - " - : schist and quartz artefacts,
stray find: animal headed dagger of schist
- D* - survey finds: quartz artefacts
- E* - " -

be discussed in this connection but it is worth stressing that there are no sites known in Finland which would indicate that Sär 1 and typical comb ceramics were of the same age but in several sites Sär 1 occurs together with style I 1 as Äyräpää (1930) has defined it. Sär 1 is still a rather vaguely defined group, and it is quite possible that stylistic development might be followed within the group although more sites are required – shore displacement could provide a chronological framework in this effort.

The dating of Sär 1 is particularly important because it is this pottery style which offers the earliest unambiguous link between the Stone Age chronologies of Finland and the Varangian area in northern Norway: it is obvious that period B II or the Nordli phase in Varanger, characterized by Sär 1 pottery (Simonsen 1963), begins c. 4000 BC, and the whole Varangian chronology should be re-worked accordingly (cf. Helskog 1974, Carpelan 1974).

Sär 1 period is followed in the shore displacement chronology by a hiatus which corresponds to the period of the younger phase of the Finnish early comb ceramics (style I 2). It is quite possible that Sär 1 has continued in use until this period. Typical comb ceramics (style II) is, in turn, another chronological link between southern and northern Finland. All the five dwelling places (Nos 7–11), three of which are situated along the lower course of the Kemijoki river and two along the Iijoki river, fall exactly on the Baltic shore line representing style II in the diagram. This is a fair indication that the baseline is placed correctly in the north (cf. p 5). Style II pottery has never been found north of Rovaniemi; there is a possibility that Sär 1 continued in use in the Pasvik river area and Varanger still at the time when style II was spreading in the south (cf. Simonsen 1961, Helskog 1974, Bakka 1976).

In the Saimaa lake basin Saarnisto (1970) has been able to relate shore displacement with Stone Age dwelling sites and thus date style II to around 3000 BC. This result has since been corroborated both by C¹⁴ tests (Meinander 1971) and the shore displacement in the Baltic basin. We date style II now at c. 3300 – 2800 BC (Siiriäinen 1974).

Typical comb ceramics are succeeded in northern Finland by the Middle and Late Neolithic asbestos pottery. Within it two obviously related groups can be distinguished: the Kierikki and Pöljä groups (Siiriäinen 1967, Edgren 1964). It has been thought that the Kierikki group is at least partly later than comb ceramic style II but also partly earlier than the Pöljä group. The shore displacement chronology seems to support this. The Kierikki group, however, is represented in the diagram by only one dwelling site, the eponymous site on the small Kierikkisaari island in the Iijoki river (No. 12), and it should be noted that the island has remained as suitable for habitation even after the Baltic shore had withdrawn further away. Thus the situation of the site in the diagram only gives a *terminus post quem* for it: it cannot be older than the younger phase of the late comb ceramics (style III 2)².

To detect the position of the Pöljä group in the diagram, one has to turn to Southern Ostrobothnia as in northern Finland no sites containing this type of pottery have so far been located which could be connected with the Baltic coast. The dwelling places at Troihari in Ylistaro (No. 13) and Jokipii in Ja-

lasjärvi (No. 14), on which no detailed investigations have yet been carried out (and thus their altitudes must have been estimated from the basic maps in scale 1:20 000), show clearly that they belong to the time of style III 2 and the succeeding Pyheensilta stage. From the site at Troihari also potsherds of corded ware have been found (Edgren 1970).

In the Kemijoki and Iijoki river valleys there are two dwelling sites known which are situated on the same shore niveaux as the above sites containing Pöljä ceramics. These are the sites at an altitude of 53 m above sea-level in Törmävaara in Tervola (No. 15; fig. 6) and Juutisentörmä in Yli-Ii (No. 16). No pottery has been found from these sites – only test excavations have been carried out however – but before investigations both sites have yielded a dagger of red slate (so-called Köli slate) with an elk head sculptured on top of the handle (Meinander 1948, Carpelan 1974, Kehusmaa 1977). According to the diagram the sites can be dated to the former half of the Pöljä stage, c. 2600–2000 BC; this corresponds to style III 2 – Pyheensilta period in more southerly regions (Siiriäinen 1974) and accords well with what has been said earlier by Meinander (1964) about the age of such daggers.

On the slopes of the Törmävaara hill quartz artefacts have been gathered above two abrasion brinks at c. 45 m and 40 m above sea-level (fig. 6). The lower one of these falls almost exactly on the shore line along which the lowermost dwelling sites of the southwestern Finnish Late Neolithic Kiukainen culture gather and which I have dated to c. 1250 BC (Siiriäinen 1974)³.

2. A test excavation in 1975 by Kaisu Anttila in Sandheden in Ähtävä, Southern Ostrobothnia, revealed a dwelling site worth taking into consideration in this connection. The site yielded a sherd from a clay vessel with asbestos and decorated with comb stamps; the sherd could tentatively be assigned to the Kierikki group. The site is at a height of c. 57 m a.s.l. and its distance from the baseline is 28 km; thus it has lain on a shore of phase III 2 which fits into the supposed chronological range of the Kierikki pottery.
3. Farther upstream the Kemijoki river in Tervola three dwelling sites were discovered at 40 and 45 m altitude by Aarni Erä-Esko during an archaeological survey in 1971: Tervola 22, 23 and 29.

From Tervola 23 (45 m a.s.l.; dist. 43 km) a barbed spearhead of red slate has been found – this specimen belongs to a type common in northern Scandinavia during the Late Neolithic Period III in Meinander's scheme for Norrland, Sweden (Meinander 1964). This period succeeds the Överveda period or Period II which is partly coeval with the later phase of style II of the comb ceramics, and thus Tervola 23 is at an expected position in the diagram.

Tervola 29 (the same altitude and distance as Tervola 23) has yielded an axe of diabase with a rectangular cross-section belonging to a "work-axe" type of the Corded Ware culture. The occurrence of Tervola 23 and 29 on the same shore line is easily understandable as the Corded Ware culture is commonly held to be contemporaneous with style III of comb ceramics (e.g. Edgren 1970).

Tervola 22 (40 m a.s.l.; dist. 43 km) falls very close to sites 17 and 18 in the diagram being perhaps a little older than site 17. It lies clearly on a shore dating to the final phase of the Kiukainen culture and has indeed yielded a transverse-edged axe with rectangular cross-section which type occurs on sites of the Kiukainen culture in southwestern Finland (Meinander 1954 p. 93).

The lowermost group of sites plotted on the diagram are between the shore lines for c. 1250 and 500 BC consequently date from the early metal age. The highest of these sites, Raineåsen in Pirttikylä in Southern Ostrobothnia (No. 17), has yielded besides pottery belonging to the youngest phase of the Kiukainen period also potsherds with textile impressions (Meinander 1954). This is the oldest dated occurrence of the so-called Sarsa-Tomitsa type textile pottery in Finland (cf. Carpelan 1975). The Raineåsen site can with confidence be dated to c. 1200 BC. Probably somewhat younger is the site at Halonen in Muhos in the Oulujoki river valley (No. 18). Textile ceramics and in addition pottery tempered with asbestos and hair and with scraped surface have been encountered there. Hair as temper in pottery clay is a technical innovation brought to northern Finland by the so-called imitated textile ceramics which, according to Carpelan (1970 and personal communication), spread from Siberia in the beginning of the first millennium BC and lasted in northern Scandinavia until c. 500 BC. However, there is typological evidence in the textile ceramics of Halonen which connect it with the above-mentioned Sarsa-Tomitsa group⁴.

The lowermost and youngest dwelling site Karkaus in Alahärmä (No. 19) in Southern Ostrobothnia is an unexcavated survey find. It lies very close to the shore line for the year 500 BC. From Karkaus there have been found several small sherds of "Epineolithic" Säräisniemi 2 (Sär 2) ceramics as well as potsherds belonging to the southern and southwestern Finnish Morby group the main part of which has been dated by Meinander (1969) to Pre-Roman Iron Age.

Before leaving the distance diagram, let us have a look at the sites marked with the small filled triangles. These sites would appear to fall on shores of phase I 1 and the Mesolithic Suomusjärvi culture. All three sites are situated in the Kemijoki valley in Rovaniemi, above the rapids of Valajaskoski. The highest site at the 80 m niveau has yielded Sär 1 and I 1 ceramics (Siiriäinen 1971); the second site, Kolpene at the 77 m niveau, contained typical comb ceramics of type II 1 (Kopisto 1955), and from the lowest sites at Niskanperä and Kärräniemi which are at the 74 m niveau, there are asbestos pottery of the Pöljä type and from Niskanperä two sherds of corded ware (Purhonen 1973). The sites clearly lie on "uncorrect" levels in the diagram (cf. Erä-Esko 1955) – the difference between the observed and expected heights is up to 25 m – but their mutual relative order from top down is consistent: Sär 1 – style II – Pöljä ceramics.

If we examine closer the topographical situation of the sites we notice that already following the highest niveau (80 m) an ancient lake basin can be reconstructed the outlet threshold of which has been as narrow as the Kemijoki river above the Valajaskoski rapids just north of the Pahtajanvaara hill (fig. 7). I assume that the threshold has eroded c. 8 m (from 80 to 72 m above sea-

4. Another coastal site with Sarsa-Tomitsa pottery was found in 1970 from Laitila in Finland Proper by Anna-Liisa Hirviluoto (Lalla; excavated in 1973 and 1974 by Eino Rönkkö). The parameters of this site (alt. 23.5 m, dist. 202 km) place it on the same or slightly later shore as site 18 of our study area.

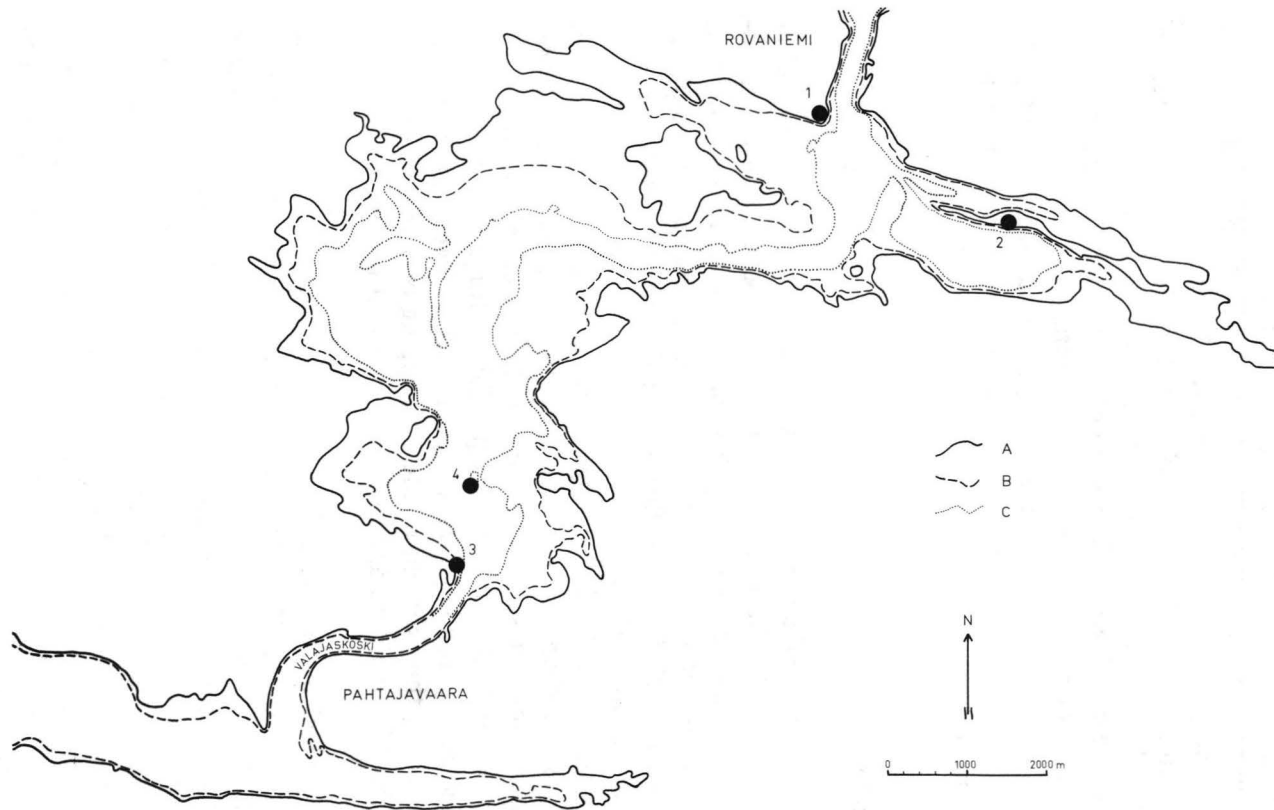


Fig. 7. The ancient lake at Kolpene in Rovaniemi.

A = 80 m stage
 B = 77 m "
 C = 74 m "

The sites:

1. Tapulipelto (Sär 1 ceramics)
2. Kolpene (comb ceramics, style II)
3. Niskala (Pöljä ceramics, corded ware)
4. Kumpuniemi (Pöljä ceramics)

level) as indicated by the prehistoric sites. The Sär 1 population (Tapulinpelto) found its way onto the shore of a small lake which had isolated from the Litorina Sea during the end phase of the Mesolithic Stone Age – such a topographical location of dwelling sites on shores of small lakes flowing through short channels into larger bodies of water has been quite common in Stone Age along the Baltic coast even further south and also in the lake district of central Finland. In the slopes of the esker at Kolpene there is a clear abrasion scarp visible at a height of 77 m above sea-level denoting the shore during style II, and not later than at the termination of the Pöljä phase the threshold had eroded to the height of 74 m. – No systematic stratigraphical investigations have yet been carried out in the sphere of the presumed ancient lake at Kolpene but preliminary borings have revealed an extensive lake deposit (mud) one to two meters thick. Stratigraphical and palynological analyses and radiocarbon datings are needed for the final solving of the problem of this ancient lake and its development.

Concluding remarks

The schematic diagram, fig. 8 (p. 23), sums up the prehistoric chronological evidence gathered so far in the area under discussion. Some purely archaeological criteria, mostly according to Carpelan, have been taken account, too, especially concerning metal ages. Due to chronological overlapping the phases do not form clear-cut periods and in this respect the situation is the same as in the Varanger area (Helskog 1974).

In fig. 8 also the available C^{14} datings from the study area are marked (Appendix). The radiocarbon datings are clearly too few, and in many cases problematic too, to form a solid basis for an integrated chronology. The thermoluminescence method should give a possibility for a direct testing of the shore displacement chronology presented in this paper, and eventually replace it. In particular, the problem of the overlapping of some of the phases (as assumed in fig. 8) should be approached by a direct dating method such as is TL.

The method applied in this work is based on an analogue model derived originally from Quaternary geology and geophysics, then modified according to archaeological observations in southern Finland and finally extended into northern Finland using the same construction principles as further south. Thus both the southern and northern Finnish diagrams have the same value as a "predictive instrument": it is possible to calculate the niveaux for different periods even for areas where no direct observations are available. The southern Finnish diagram (Siiriäinen 1969 fig. 11) has been tested several times in this way and so far these tests have given corroborating results whenever new sites have yielded archaeologically datable material.

APPENDIX

The archaeological radiocarbon datings from northern Finland before 1974 (T1/2 5568 years, one sigma):

1. Lehtojärvi in Rovaniemi; a wooden sculpture representing an elk head (possibly a prow figure of a boat):

7740 ± 170 BP (HEL-168).

The sculpture has been dated by pollen analysis to the beginning of the Litorina period and archaeologically to the Mesolithic period which datings are supported by the C¹⁴ result.

Erä-Esko 1958, Hyyppä 1958, Carpelan 1974.

2. Neitilä 4 in Kemijärvi; three datings from a stratigraphical dwelling site:

7310 ± 180 BP (HEL-250)

6750 ± 170 BP (HEL-191)

1320 ± 100 BP (HEL-251)

The first two samples are from the pre-pottery levels (pre-Sär 1) of the site. The dates are mutually consistent according to stratigraphy and in accordance with the archaeological evidence. Sample HEL-251 was taken from a construction of stones and wood found from outside the dwelling site; its purpose and association to the site remained unknown. Kehusmaa 1972.

3. Haveri in Kemijärvi; a dwelling place with a lower cultural layer containing Sär 1 and style I 1 pottery, and an upper one with Pöljä type pottery:

6050 ± 170 BP (HEL-273)

6070 ± 170 BP (HEL-274)

6760 ± 240 BP (HEL-275).

As the dated samples originate from a hearth in the lower stratum the first two are in keeping with the shore line evidence for the age of the pottery but the third must be regarded as too old possibly because dead tree has been used as fuel; as the same factor could well affect also the other datings they cannot be regarded as independent indicators of the age of the hearth.

4. Tormua in Suomussalmi; a dwelling place with archaeological material from a long period of habitation (Sär 1, style II, "Epineolithic"):

4190 ± 140 BP (HEL-188).

The result falls into the Pöljä phase and could be taken to show that the site was inhabited during that period although no archaeologically datable material exists.

5. Juikenttä in Sodankylä; an ancient Forest Lapp dwelling site which has been used during the Sär 2 phase and again from c. 1200 up to the 17th century AD:

2720 ± 145 (HEL-331)

2570 ± 145 (HEL-332).

The results will be discussed by Carpelan in another context. Carpelan 1966.

6. Jatulinsaari in Kemijärvi; a small island in lake Kemijärvi on top of which the dwelling site is situated – this has yielded archaeological material from the Early Iron Age (potsherds from an asbestos tempered and undecorated pot, socketed axe of iron and a spiral ring of silver) as well as stone and quartz artefacts:

1610 ± 150 BP (HEL-277), a pit dwelling?

1800 ± 120 BP (HEL-278), a cooking pit?

2220 ± 110 BP (HEL-279), a cooking pit?

The first two datings fall to the very end of the Sär 2 phase, i.e. to the period indicated by the metal objects – the pottery could thus represent a "degenerate" final stage of the asbestos ceramic tradition in northern Finland which at the same time mark the end of pottery manufacture there in general. The earliest dating could be taken as "too old" (dead tree fuel, cf. above) of as indicating earlier habitation on the island to which at least part of the lithic artefacts could be assigned.

Siiriäinen 1964.

7. Törmävaara in Tervola; an extensive dwelling site with several successive habitation periods (cf. p.):

470 ± 120 BP (HEL-554)

580 ± 140 BP (HEL-555)

680 ± 140 BP (HEL-556).

The datings are from charcoal of three hearths discovered in the site of style II pottery. This is the only case where the shore displacement dating could be tested by C¹⁴ evidence but this is rendered impossible by the severe discrepancy of the results. The charcoal obviously belongs to a different period than the archaeological finds at the site.

Sarvas 1973.

8. Sotaniemi 3a in Kemijärvi; a Neolithic dwelling site with asbestos pottery:

"recent" (HEL-270)

200 ± 100 BP (HEL-271).

The same comment applies here as concerning the "too young" dates of Törmävaara.

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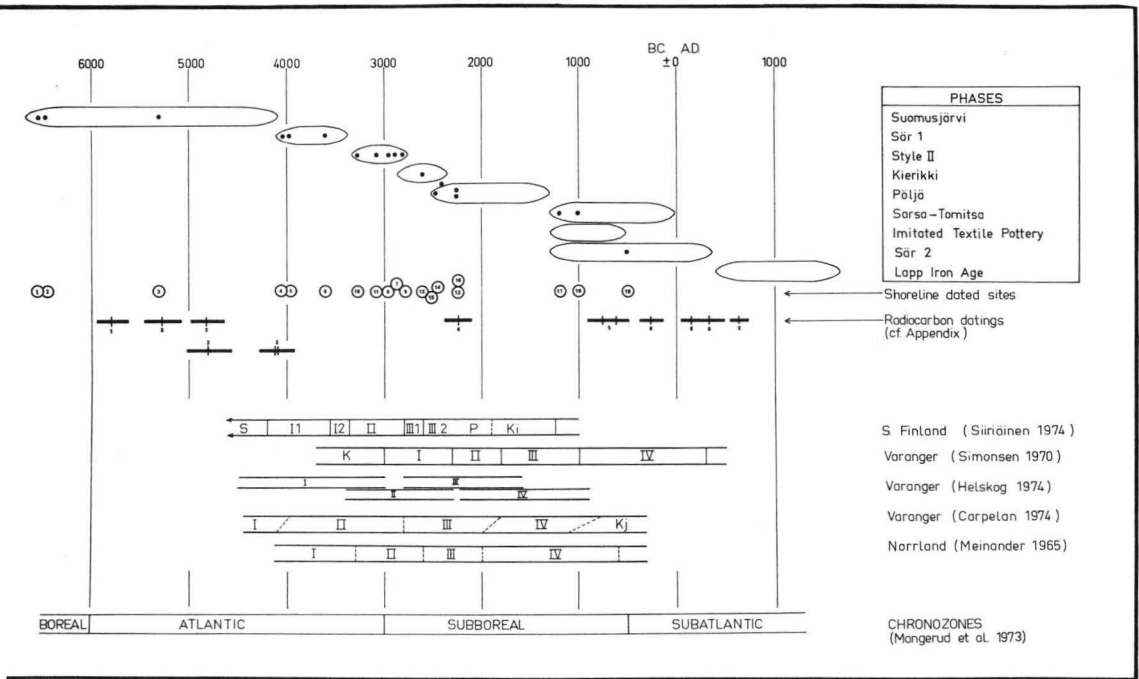


Fig. 8. Diagram showing the proposed periodisation for the prehistory of northern Finland. Compiled using different sources, mainly Carpelan 1974 and Siiriäinen 1974. Radiocarbon datings and previously published chronologies for some adjacent areas marked for comparison. Time scale in C 14-years (T1/2 5568 years, no calibration).