

Prehistory in Permafrost

Investigations at the Saqqaq Site, Qeqertasussuk, Disco Bay, West Greenland

by BJARNE GRØNNOW

BACKGROUND – THE FIRST ESKIMO CULTURE

About 4,500 years ago the extensive high Arctic area of America was populated for the first time. Groups of hunters from eastern Siberia and the Bering area began to exploit the rich, but largely inaccessible game resources around the Polar basin. These pioneer groups with an Eskimo way of life did not merely adapt to the demanding arctic environment – they spread in the course of a very few generations from Alaska in the west across Arctic Canada to Greenland in the far east. The archaeological remains deriving from this very extensive palaeo-Eskimo cultural complex are covered by the term Arctic Small Tool tradition (ASTt) (Irving 1968).¹

Our knowledge of ASTt builds for the most part on stone artefacts (inventories of bifacially flaked tools and microblades) and the remains of dwellings – including mid-passage dwellings (Knuth 1967) – which are still preserved in the old settlement areas. Most often, the settlements are located on raised beaches, which only occasionally offer good conditions of preservation for organic material. A number of bone objects are known, for example from Pearyland (Knuth 1967) and Devon Island (Helmer 1986), but we have by no means a reasonable knowledge of the organic tool inventory, let alone of the hunting economies of the times.

It is therefore of great importance that the latest years' work in West Greenland have revealed a couple of localities with exceptional conditions of preservation. There are unique opportunities here for getting to know at close hand the Saqqaq culture (2400–1000 BC cal.) – the West Greenlandic branch of ASTt.

In 1982, the local museums of Disco Bay carried out a small excavation at the settlement Qajaa in Jakobs-havn Isfjord (J. Meldgaard 1983, Møhl 1986). Here the permafrost had preserved thick culture layers from the Saqqaq and the succeeding Dorset culture, and this investigation gave a “foretaste” of the many new, sur-

prising aspects of the palaeo-Eskimo implement inventory in wood and bone.

In 1983, archaeologists from Christianshåb Museum found a further Saqqaq settlement with permafrozen culture layers, Qeqertasussuk, and the following years' investigation at this site will be presented here.

CHRISTIANSHÅB MUSEUM'S PROJECT

The settlement on the island of Qeqertasussuk was found during Christianshåb Museum's mapping and registration of prehistoric sites in the Sydstøbt (the southernmost part of Disco Bay (Fig. 1).

The settlement, which is situated on a small promontory on the northeasternmost part of the island, proved during a pilot investigation to contain quite intact structures and culture layers. In peat-covered permafrozen layers there were large amounts of bone, and even easily perishable objects of wood, feathers, whale-bone and skin were very well preserved. A more detailed investigation could thus contribute considerable new knowledge on the Saqqaq culture, and the local museum, under the direction of Torben Simonsen, entered into collaboration with *the Greenland Museum* on a major interdisciplinary research programme.

In the Qeqertasussuk project, which is directed by archaeologist Bjarne Grønnow (Copenhagen Institute of Prehistoric Archaeology) and quaternary zoologist Morten Meldgaard (Zoological Museum, Copenhagen), emphasis has been placed on an interdisciplinary approach and on Greenlandic-Danish collaboration. Eskimological investigations have been carried out by Hans Lange (Copenhagen Institute of Eskimology) and Maria Stenholdt (Ilisimatusarfik University of Greenland). Pollen and microfossil analyses and quaternary geology are the responsibility of Bent Fredskild (Greenland's Botanical Investigation) and Charlie Christensen (National Museum, Copenhagen). The entomological investigations of the many well-preserved insect



remains have been performed by Jens Bøcher (Zoological Museum). Greenlandic and Danish conservators and photographers, students within a number of disciplines and many interested local people have taken part in the fieldwork. Laboratory analyses of costume remains and human bones are the responsibility of Gerda Møller (National Museum) and Bruno Frölich (Anthropological Laboratory), respectively.

Four years of fieldwork on the settlement have now been rounded off (1987) and a number of finds and a considerable amount of information obtained. In the course of the coming years, the results of the many special investigations will be collated to give a comprehensive picture of conditions of life and activities at the Qeqertasussuk settlement, but the most important finds and a number of preliminary results can already be presented.

THE EXCAVATIONS

Based on the settlement's topography, on the location of the visible structures, on the surface finds, and on trial excavations, we could discern three areas calling for detailed investigation (fig. 2). The sectors investigated in these areas were systematically excavated in quarter or whole metre squares with plotting of imple-

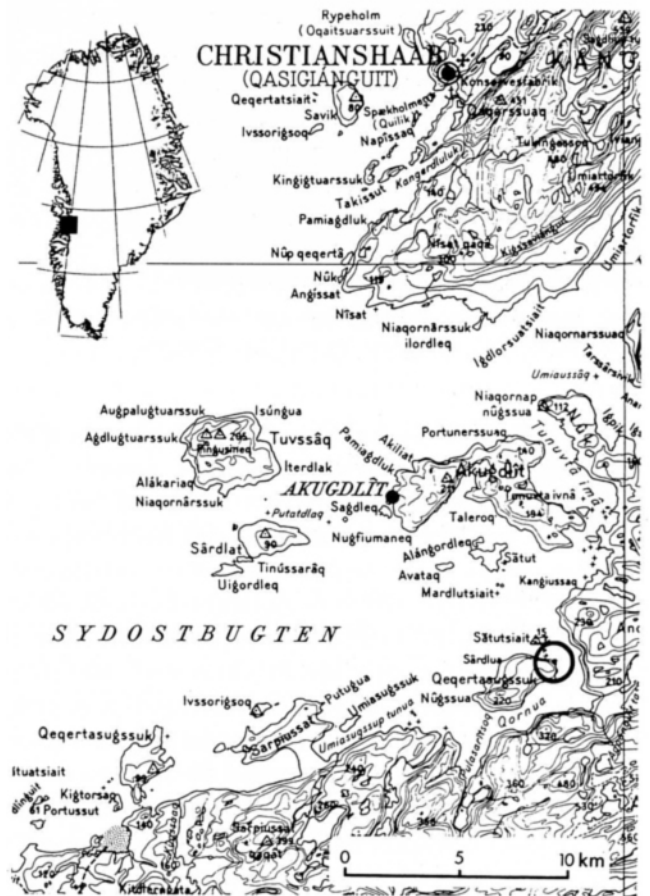


Fig. 1. Map section and photograph (from the east) showing the south-easternmost part of Disco Bay, the Sydostbugten. The settlement on the island, Qeqertasussuk, is marked with an arrow. (Photo: M. Meldgaard).



Fig. 2. The promontory on the east side of the island of Qeqertasussuk. In the background, the mainland is visible. The three most important excavation sectors (A, B and C) are marked. (Photo: Bjarne Grønnow).

ments, plan and profile drawing, and photographic documentation. Numerous sediment samples for sieving and scientific analysis were extracted. Sector A (c. 25 m²) was laid out in an area with freely exposed cooking places in the highest part of the settlement. Sector B originated in the northern erosion bank which transects the thickest midden layers of the site. 10 m² of the midden were systematically excavated. The third main sector, Sector C, covered part of a fossil, now peat-covered, terrace about 15 m south of the midden sector. In Sector C (c. 45 m²), we excavated the remains of two or three “mid-passage dwellings” under midden layers from younger phases of the Saqqaq culture. Through a network of probes covering the whole settlement, and a c. 15 m long profile trench, we have supplemented the information from these systematically excavated sectors.

Location of the settlement

The settlement is, most typical for palaeo-Eskimo localities, situated on a series of fossil raised beaches, which form a promontory with a rocky knoll at its extremity. There are remains of structures and implements all over the promontory.

The view from this point on Qeqertasussuk over a strait to the mainland is very extensive, and the same applies to the archipelago to the north out to Disco Bay itself. There is thus a perfect view of the hunting area.

The strait is merely about 1 km wide and forms a natural migration route for harp seals and whales. Large bird cliffs are found along the coasts. On the mainland side there is good access to the caribou areas of the interior.

Game animals

Morten Meldgaard is in the process of analysing the very extensive bone material, with species, age and season determinations and analyses of cut-marks. Provisionally, it can be said that harp seal (*Phoca groenlandica*) and ringed seal (*Phoca hispida*) were by far the most important game animals (fig. 3). But these resources were heavily supplemented by birds – especially fulmars (*Fulmarus glacialis*), gulls and alcids – and a number of other seals such as bearded seal (*Erignathus barbatus*) and hooded seal (*Cystophora cristata*). Fish, i.a. cod (*Gadus morhua*), and land game, such as arctic fox (*Alopex lagopus*) and caribou (*Rangifer tarandus*), were also exploited. The remains of no less than six different species of whales – bowhead or right whale (*Balena mysticetus/glacialis*) sperm whale (*Physeter macrocephalus*), killerwhale (*Orcinus orca*), narwhale (*Monodon monoceros*), minke whale or sei whale (*Balaenoptera acutorostrata/borealis*) and porpoise (*Phocoena phocoena*) – were found in the midden layers, but it is an open question as to whether the large whales and killerwhales were caught, or whether it was merely stranded cadavers that were used. Also the now extinct great auk (*Pinguinus impennis*) must be mentioned among the comprehensive range of game animals – 45 different species – which were exploited from the settlement.

With a view to placing the resource exploitation of the settlement in broader perspective, we have both mapped the occurrence of game animals in the area on the basis of ethnographical and zoological investigations and undertaken an intensive search for other Saqqaq localities in the area. About 15 Saqqaq settlements (plus a single Dorset locality) were registered in the selected areas in the Sydostbugt. Qeqertasussuk should naturally be seen as part of a larger settlement pattern, though with varying function through the c. 1000 years during which the settlement was used. The layer series in the settlement's midden gives a solid background against which such processes of change and actual changes in resource exploitation can be elucidated (fig. 4).

Man and dog

It is not only the bones of game animals that have been found at the settlement. Also human bones – the oldest known from the Arctic – have turned up in the lower midden layers: four bones comprising two fibulae, a ti-

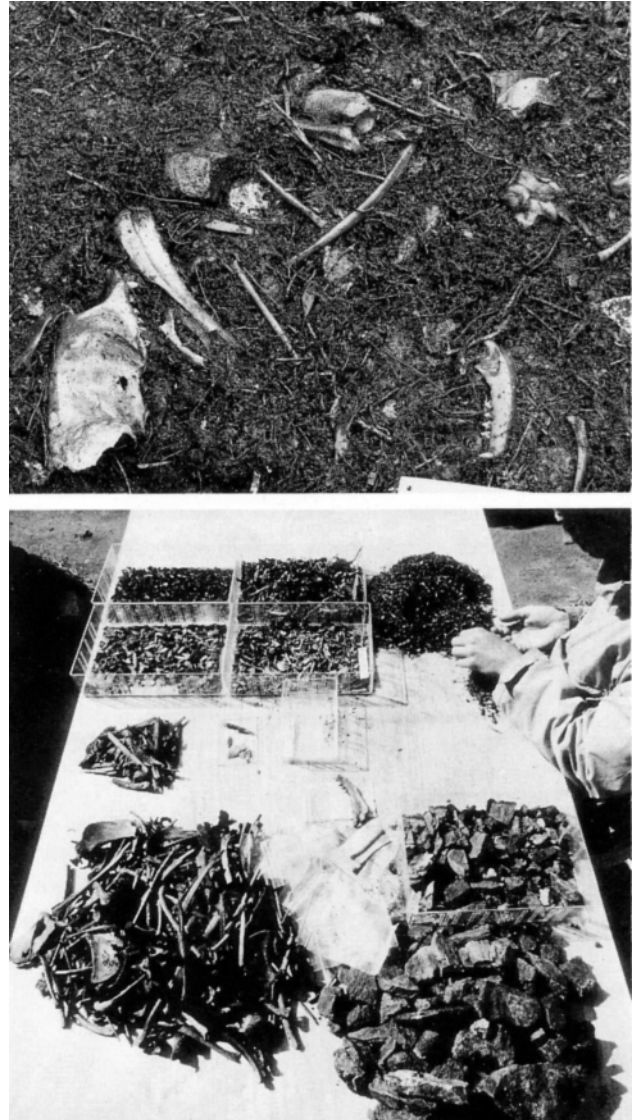


Fig. 3. A section of the surface of the lowest permafrozen midden layer (A) and coarse sorting of its content (B). The largest heap of bones is of harp seal and ringed seal, whilst the smaller comprises bird bones. In the midden layers there are also quantities of cooking-stone fragments, wood shavings, heather (cleared bed and floor covering) and broken implements. (Photo: Geert Brovad).

bia and a fragment of humerus. Anthropologists are at present examining these bones. At this stage the analyses indicate that the humerus derives from an adult male person and that the two fibulae (left and right) belong to an adult female person (age about 30 and about 152.5 cm tall). The tibia seems to derive from another female who was about 151 cm tall and 10 years older than the first mentioned (Bruno Frölich, pers. comm.).



Fig. 4. Morten Meldgaard is measuring the layer series in the midden. The deepest culture layer, about 40 cm thick, has been provisionally C¹⁴-dated: bottom, 2370–2425 BC (cal.) (corresponding to 3880 ± 85 BP (K 4566)); top, 2135–2170 BC (cal.) (corresponding to 3750 ± 85 BP (K 4565)). This oldest culture layer has, then, been formed through a shorter period's "hectic" activity at the site. After this the cultural traces in the midden are more scattered. The latest traces of activity at the site are dated to 1515–1335 BC (cal.) (corresponding to 3150 ± 85 BP (K4820)). (Photo: Bjarne Grønnow).

Several bones of dog have been recovered from the site. The dogs of the Saqqaq culture have been of roughly the same size as the dogs of the present day, but we do not know yet whether they were used as sledge dogs or as pack- and hunting-dogs.

The dwellings

The investigation of an area with preserved dwelling remains was a very complicated and time-consuming operation.

In the excavated area we exposed, under a thick midden from a later Saqqaq phase, an activity surface with numerous structures, including three "mid-passages", provisionally C¹⁴-dated to c. 2000–2200 BC (cal.) (fig. 5). The two mid-passages lying parallel and close together in the northwestern part of the excavation (Structures A3 and A9) seem to be coeval and stratigraphically slightly older than the third, found near the centre of the excavation (Structure A8). The structure and size of the mid-passages is roughly the same.

The passages were c. 2.5 m long and 0.5 m wide frames of flagstones laid on edge. They are divided into

2–3 chambers, and all have a section paved with small stones from the beach, and one or two chambers containing a little charcoal, round, fire-embrittled cooking stones and horizontal flags.

Several phases of use of the mid-passage, Structure A8, could be ascertained. In the frontal (northern) part, one sees a shift from cooking-place to "work-table". On an underlay of small beach stones there were several tools, such as burins, scrapers and whetstones.

The superstructure and outline of the dwelling or dwellings represented by the two mid-passages (A3 and A9) could not be determined, whereas we found stones and ground-set posts and stakes of driftwood as part of the construction of the later mid-passage dwelling (A8). We provisionally interpret this complex as the remains of an over 7 m long and c. 4 m wide tent or tent-house. The mid-passage divides the ground plan into two parts and is surrounded by a small floor surface covered in birch brushwood and crowberry. On either side of the floor was found a slightly raised surface consisting of alternating layers of grass turf and heather. This is probably the remains of the sleeping platforms. Several stakes were also stuck into the ground at the edge and at the end of the mid-passages – perhaps the remains of drying frames.

In connection with the dwelling, a small, round cooking-place and a series of "dumps" of broken cooking-stones were found. The real connection between these structures and the dwelling remains can first be discovered after analysis of the plan and profile drawings and refitting of the many fragments of cooking-stones and flagstones employed in the structure.

The distribution of finds in and around the mid-passages can yield valuable information on the activities in the dwelling. The "work-table" in the later mid-passage has been mentioned, but distinct traces of crafts activities in antler, tooth, skin and wood could also be seen on the floor and in connection with the platforms. In some places heaps of shavings and split pieces of driftwood were often mixed with very small chips from the resharpening of the stone implements. Near one platform a "cache" of complete tools including a hafted double scraper and a burin were found. Household utensils – ladles of caribou antler and tooth, and platters and bowls of driftwood – lay on either side of the mid-passages.

Distribution analyses of this implement and waste



Fig. 5. A: Excavation sector C viewed from the west. It measures 5.5×7.5 m. A settlement surface from the early phase at the site (c. 2200–2000 BC, cal.) has been exposed, and the stone-built structures are seen against the background of the dark peat. At the edges of the sector are seen sections through the culture layers from later settlement phases (still within the Saqqaq culture) at the site.



B: Vertical photograph of Sector C. Same level as in fig. 5A. North up. The three mid-passage structures (A8, A9 and A3) are most clearly seen, of which the two at the northeasternmost edge of the sector are probably slightly older than the centrally placed mid-passage. Structures A2, A6 and A7 are “dumps” of spent cooking-stones, while Structure A1 is a round cooking-place containing cooking-stones, flag fragments, charcoal and charred blubber.

The analysis of this complicated activity surface is not complete. Among other things the find distribution and refitting of cooking- and structural stones is to be included in the evaluation of the relationships of the various structures. (Photo: E. Holm).

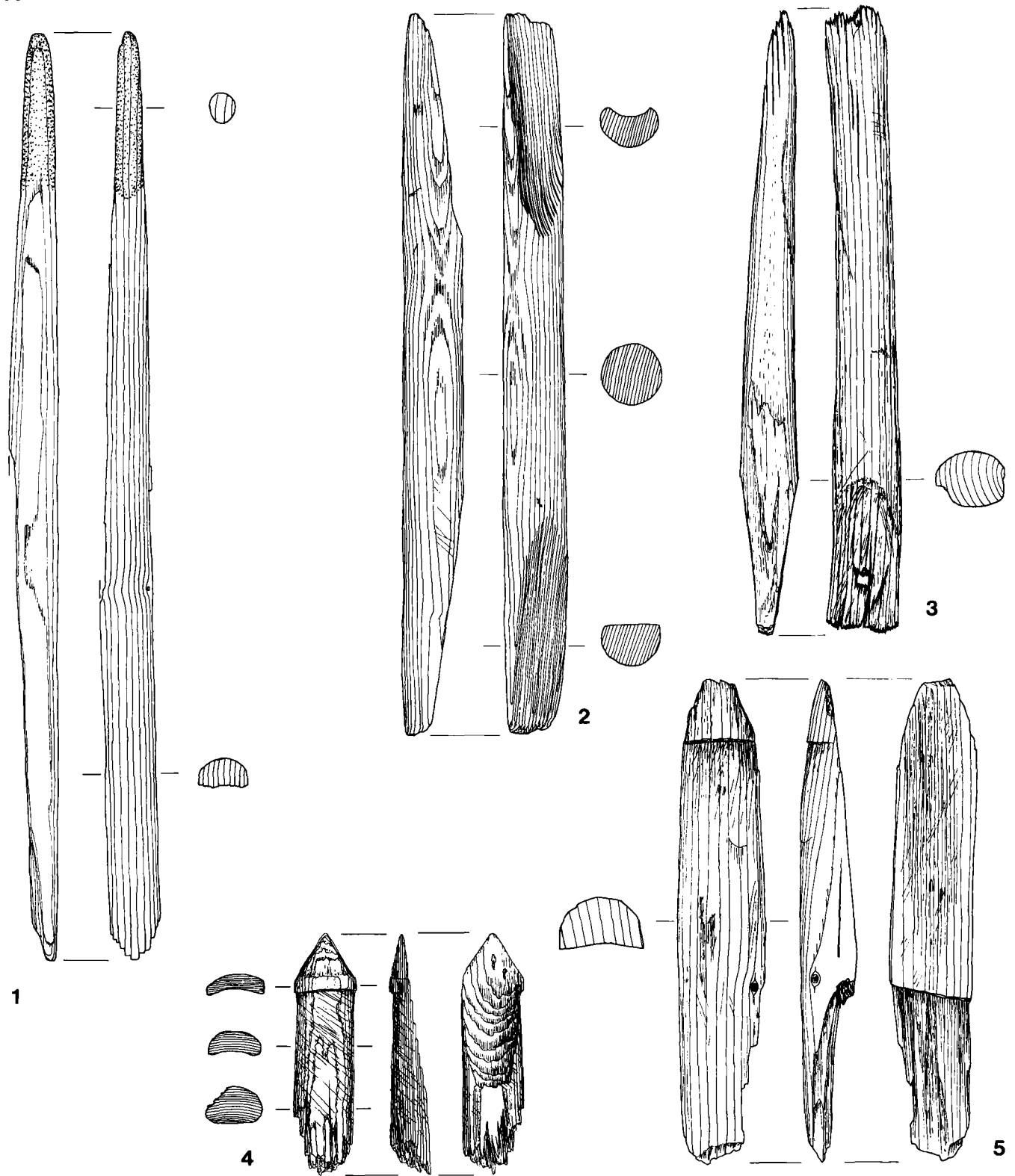


Fig. 6. Foreshafts of driftwood for harpoon (1) and lances (2–5). Note the pieces 2 and 3 with preserved bases, which have been lashed to the hind-shafts. The bases are usually oblique (lashing surfaces), but some foreshafts have, like no. 3, wedge-shaped bases with a rivet-hole. (Drawing: Eva Koch). 2:3.

material in combination with the analysis of the distribution of meal remains (the bone material) in the dwelling area could give us new information on the daily life of the Saqqaq folk, and this work will occupy a considerable part of the aftertreatment of the Qeqertasussuk material.

New information on technology

The excavation of permafrozen culture layers is a lengthy affair. In high summer, when the thaw is at its maximum, a layer 2–5 cm thick can be excavated each day. But this very permafrost has meant that we have now obtained quite new information on the Saqqaq culture's technology. The many well-preserved items of driftwood are of special interest.

HUNTING IMPLEMENTS

The important hunting of marine game animals, especially seals, is manifested in the many pieces of hunting tackle found in the culture layers. These include the driftwood shaft parts of harpoons, lances and spears – both light and sturdy types. The foreshafts (fig. 6) have an oblique or wedge-shaped basal end (lashing surface), and there are often traces of the binding to the hind-shafts. The hind-shafts were originally made of several parts lashed together. All the shafts have been made with great accuracy and are either smooth or with a finely rasped surface – perhaps to furnish a better grip for wet skin mittens. The harpoon foreshafts are made of hardened wood, caribou antler or whale bone, and these materials are also preferred for the harpoon heads (fig. 7). There are common stylistic features, but otherwise the harpoon inventory is characterized by great variation. Open-socketed toggle harpoons were, for example, used concurrently with the “typical Saqqaq type” with tanged base for fitting into the foreshaft. The “Saqqaq type” has a slot for a small harpoon blade at the point and holds the quarry with a double barb. It does not twist in the animal like the toggle harpoon. The harpoon heads are – by present standards – quite small and could reflect an emphasis on seal hunting methods like breathing hole or ice edge hunting or hunting with darts from a boat.

A couple of foreshafts for lances were found with the point still fixed in the blade bed. The bifacially flaked

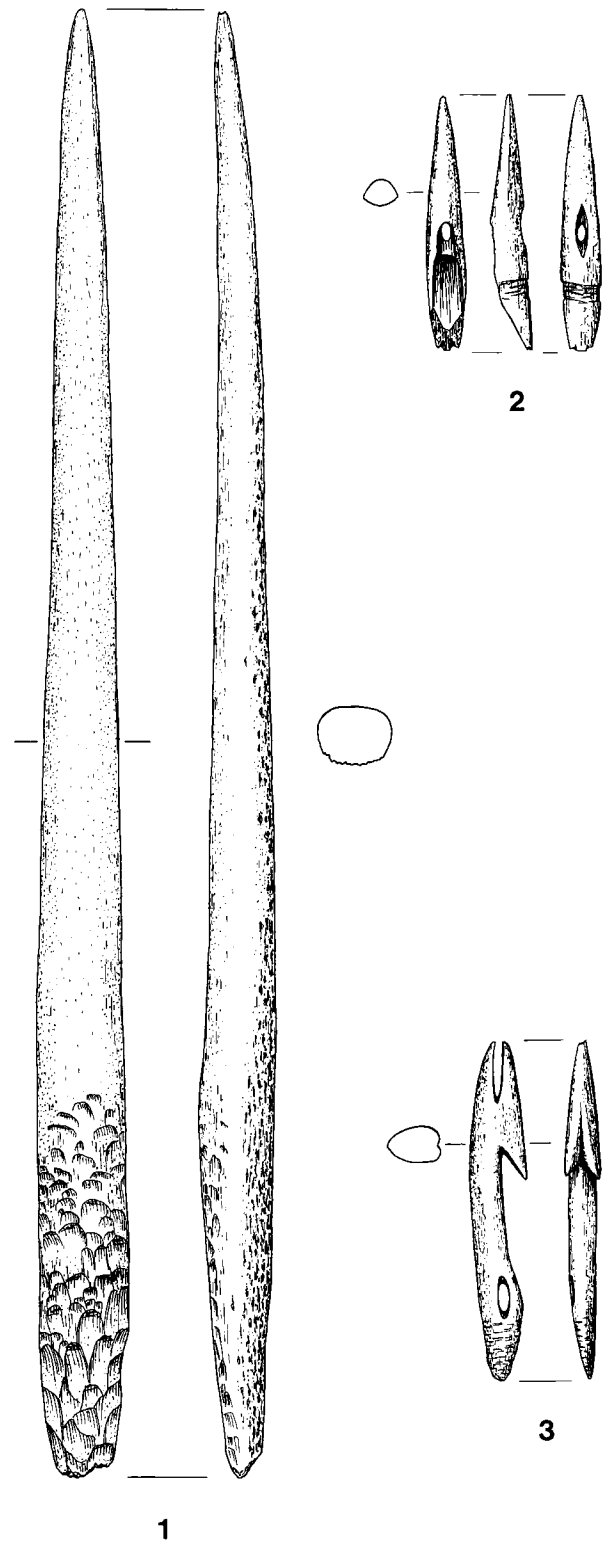


Fig. 7. Sturdy harpoon foreshaft of whale bone (1), a toggle-harpoon head (2) and a “typical Saqqaq harpoon” (3). Both harpoon heads are of caribou antler. (Drawing: Eva Koch). 2:3.

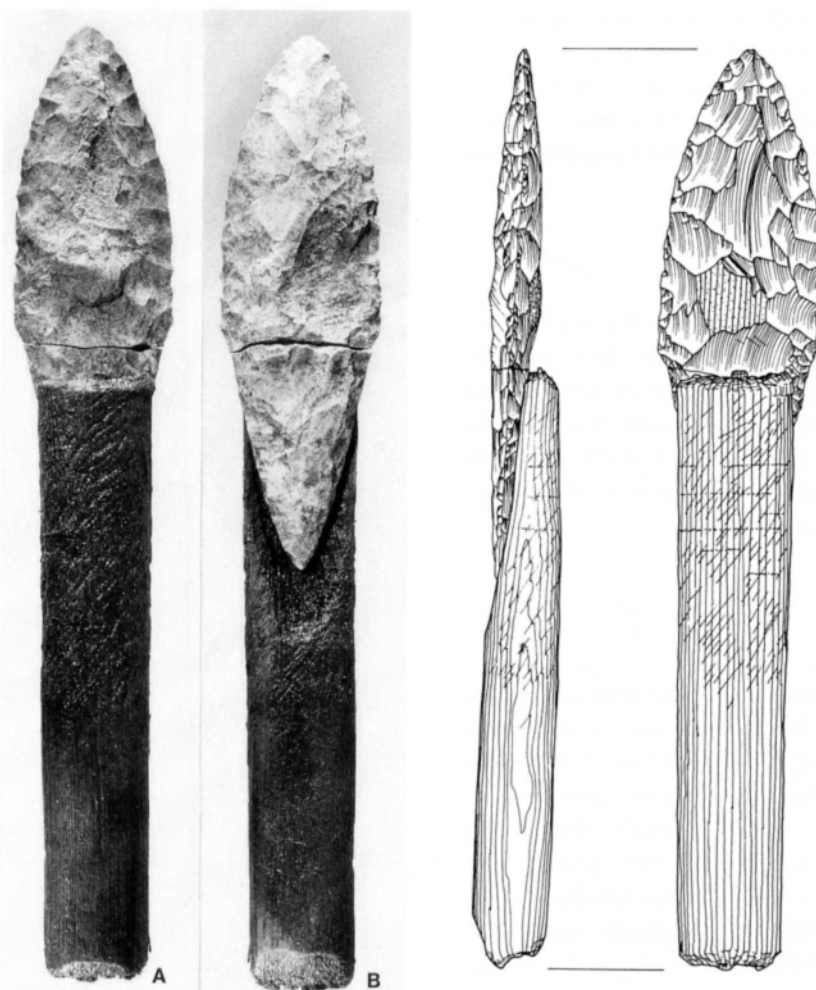


Fig. 8. The outermost broken-off part of a sturdy lance – perhaps for whale-hunting. The bifacially flaked blade of killiaq, which is a typical Saqqaq form, was found with the base still in the blade on the wooden shaft. The broken-off point lay beside it. On one side of the shaft (A), faint traces of lashing cord and a distinct oblique scoring which formed the base for the lashing are seen. (Drawing: Eva Koch).

points of killiaq (a silicified kind of slate) are, unlike knife blades, unilaterally hafted, and were originally fixed into the blade bed with a broad lashing. One of the hafted lances is so sturdy that it could well have been a whale lance (fig. 8).

The spear shafts are often furnished with three grooves for fixing flexible end prongs of whale bone with inward-pointing barbs. These weapons must have been used as light bird spears, as known, for example, from Alaska in historical times (van Stone 1984: 231).

Fishing is only weakly attested, but several sharpened bird bones have been found, with parallels in the fishhook spikes of recent times.

The bow parts found show that the bows of the Saqqaq hunters were strong and composite. A bow piece, which in section has a flat back and convex inner side, has a longitudinal groove revealing a back reinforcement, presumably of sinew. Another type of bow, with broader and flatter cross-section, must have been reinforced (fig. 9). (For ethnographical parallels see Birket-Smith 1916.) The slender arrow shafts, which were about 70 cm long, were often made up of several parts lashed together. The foreshafts are furnished with a blade bed for a lanceolate or tanged point of killiaq or they have a slot for a triangular piece of chert (fig. 10). On the hind-shafts traces of the lashing for the feathers

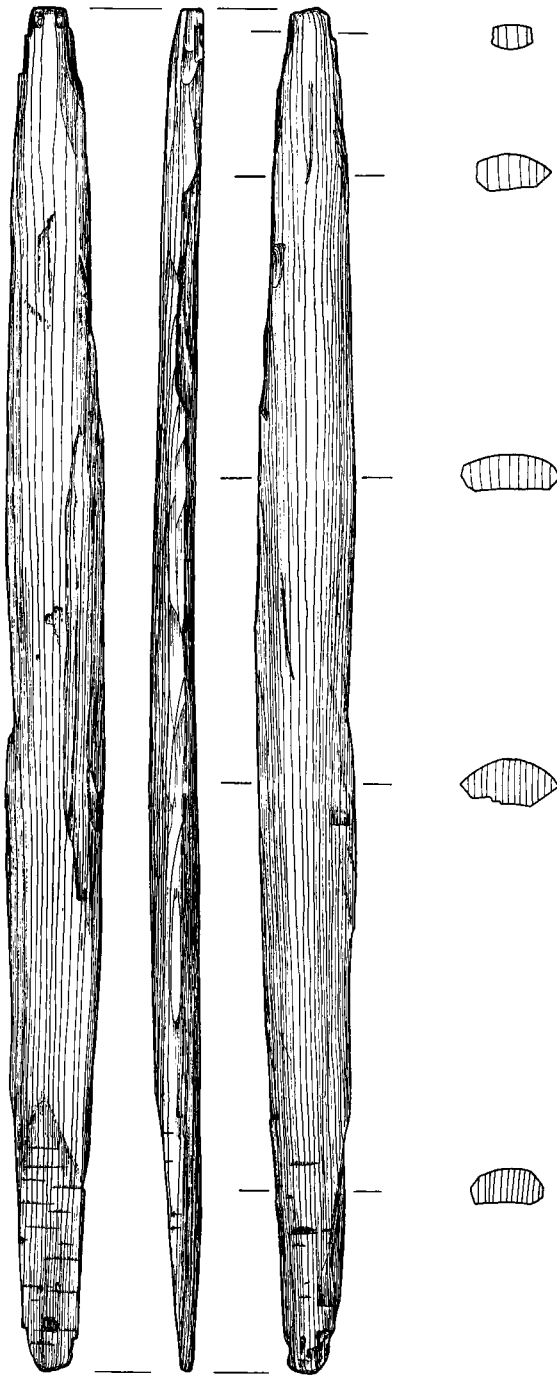


Fig. 9. Part of bow, probably not quite finished. (Drawing: Eva Koch). 2:5.

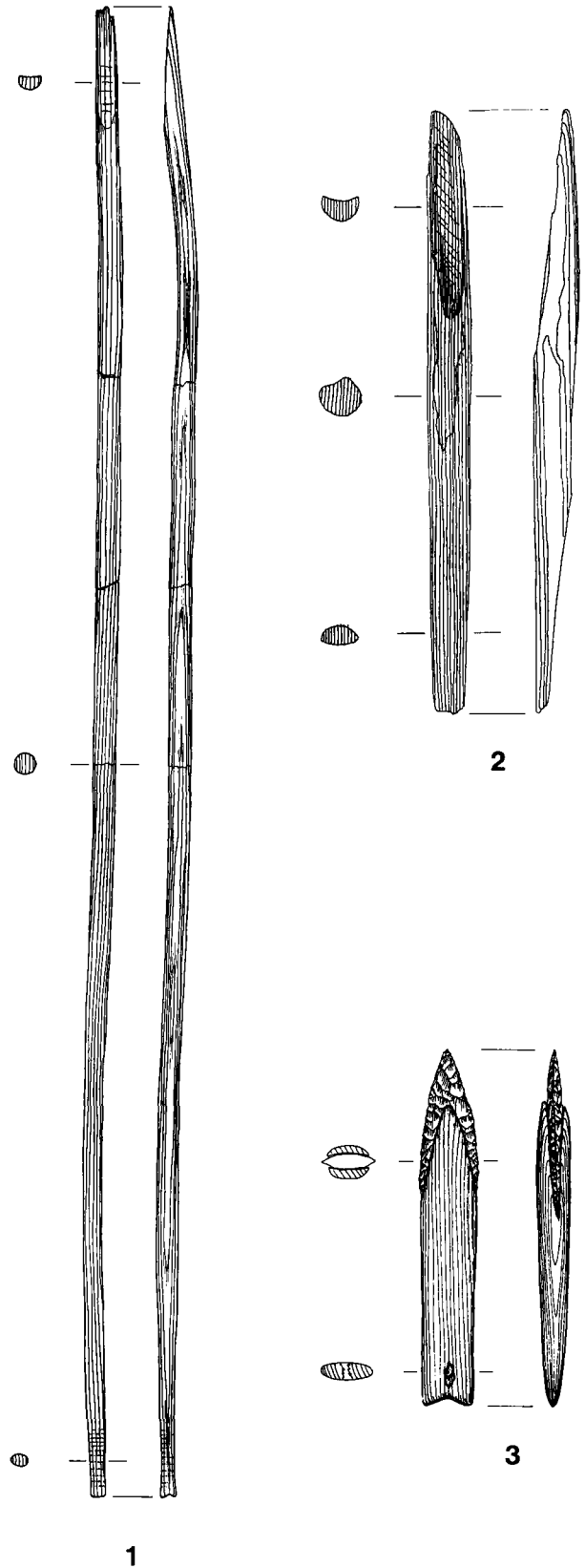


Fig. 10. Hind-shaft of arrow (1) and two different types of arrow foreshaft: one with blade bed (2) and one with a triangular point of chert, stuck into a slot in the foreshaft (3). (Drawing: Eva Koch). (1) 1:3, (2) and (3) 2:3.

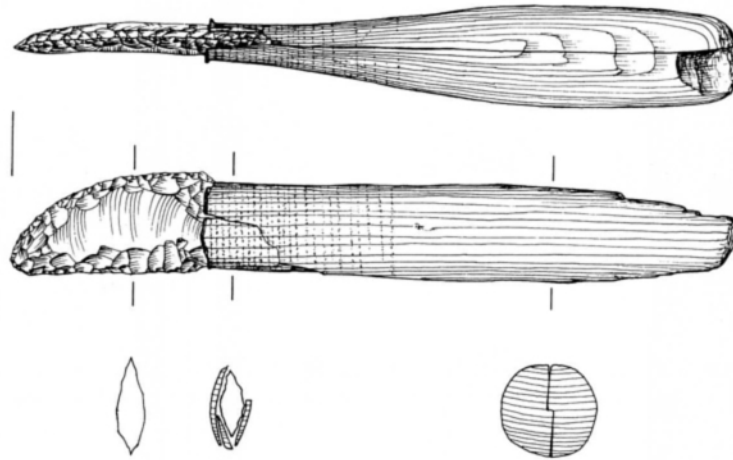


Fig. 11. Hafted knife with bifacially flaked blade of killiaq. The lashing traces are marked on the drawing. (Drawing: Eva Koch; “in situ” photo: B. Grønnow). 2:3.

are still seen above the finely formed notch end. Like the other hunting implements, the bows and arrows of the Saqqaq folk are very carefully made.

TOOLS

Several complete hand tools have been recovered from the permafrozen layers. The hafted tools have been found in particular near the mid-passage structures and must be regarded as sets of tools stored in the dwelling. Among other objects, about ten hafted knives were recovered. Here the bifacially flaked blade of killiaq is fixed at the end of a short shaft consisting of two halves lashed together to hold the blade (bilateral hafting) (fig. 11). The knife shafts were originally closely wound with baleen cords, as seen in a very well preserved specimen.

Burins, microblades of rock crystal, lateral scrapers and end scrapers have also been found hafted. Thus we now have knowledge of the hafting of most of the Saqqaq culture’s stone implements. In particular it must be mentioned that the “fan-shaped” end scrapers – a characteristic Saqqaq type – were hafted in “double handles”. A scraper blade was lashed to each end of a finely formed U- or V-shaped wooden shaft (fig. 12).

The analysis of hafting principles and wear marks of this material promises to yield new information on the use of the stone implements – a knowledge which is relevant for Stone Age research in general.

Finally, flaking tools, mid-pieces and club-heads of antler, tooth and bone for working the flint-like raw materials should be mentioned, and wedges of caribou antler and whale bone for the initial splitting of the driftwood prior to working.

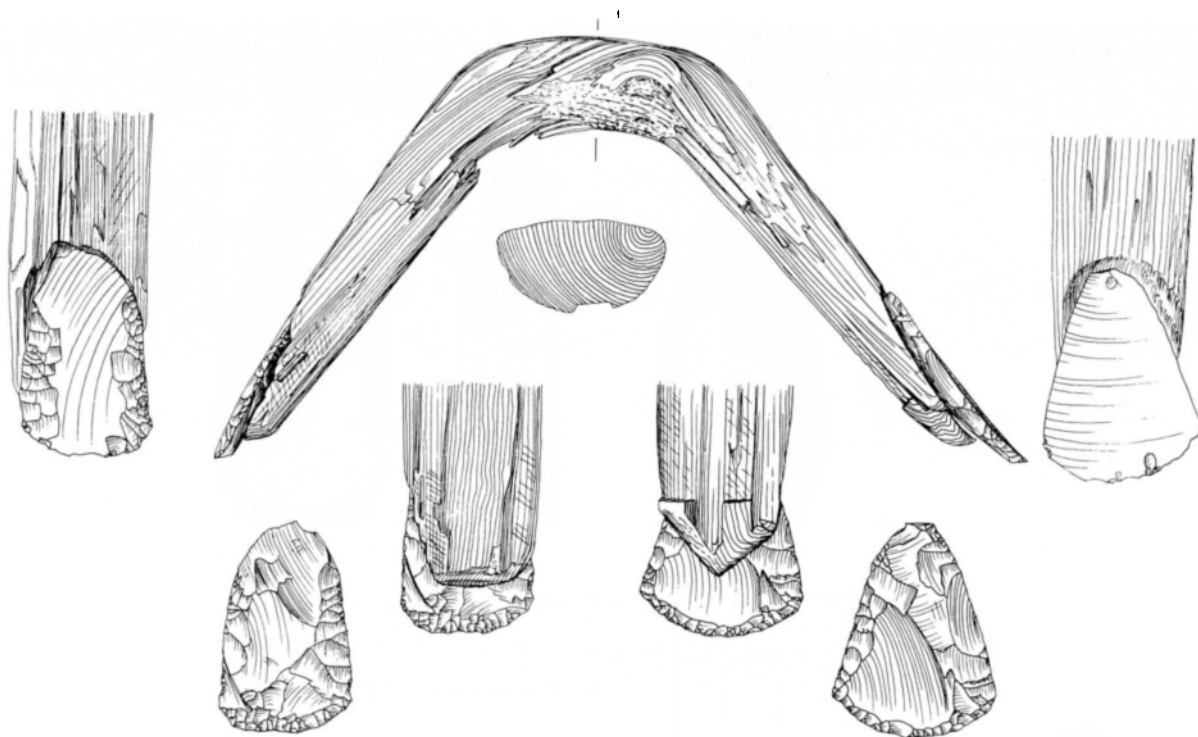


Fig. 12. Double scraper handle. At each end of the curved handle of driftwood, an end-scrapers blade was found. In the drawing, the two scraper blades are seen mounted in their original position, which is apparent both from the find situation and impressions in the blade beds. (Drawing: Eva Koch). 2:3.

HOUSEHOLD UTENSILS

Within the household utensils, it is especially the aforementioned ladles, spoons and bowls which attract attention. The ladles are of driftwood, while the slender spoons are most often made of the broad parts of caribou antlers. In one case, a spoon has been cut out of a large sperm whale tooth (fig. 13). The bowls are of hollowed-out pieces of driftwood. They vary from small, thin-walled oval bowls to over half-metre long, flat specimens, perhaps “blubber trays”. Some bowls have local charring on the inside, which may be the marks of use as a base for fire-making (fig. 14).

Costume remains

Both in the dwelling area and in the midden, various pieces of seal and bird skin have been found. Some have fine sewing and must be the remains of clothing. These skins are now to be identified and examined in greater detail by the conservators, so that we may have infor-

mation on the skin treatment, cut and sewing technique of the Saqqaq culture. One piece could already on excavation be identified as the entire foot of an inner stocking for a kamik – sole, sewing, and “upper” were preserved (fig. 16). They are the hitherto oldest parts of garments from the Arctic – about 3500 years older than the clothing from the Qilakitsoq graves (Hansen et al. 1985). Perhaps the finely cut and ornamented needle case of dog bone symbolizes the Saqqaq woman’s dress. If so, this was furnished with a little end in front and a wide tail at the back (fig. 17).

Boats

The history of Arctic skin boats can now with certainty be traced back to the Saqqaq culture. Six small fragments among the thousands of wooden objects from the culture layers proved to belong together. They could be pieced together into a c. 35 cm wide and 22 cm high frame (fig. 15). The frame is quite thin and probably derives from a slender kayak-like vessel. Parts of thicker

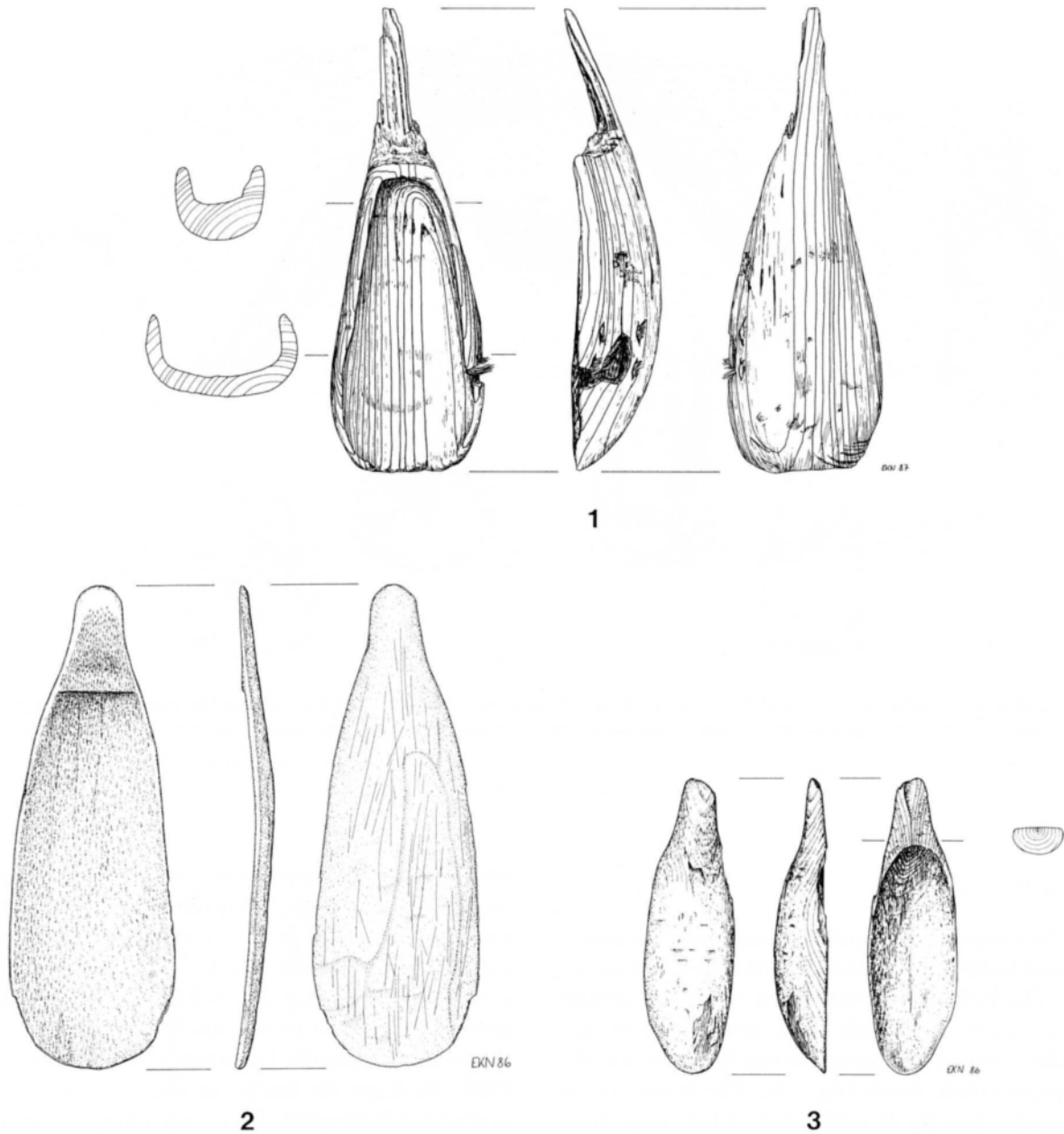


Fig. 13. 1) Ladle of driftwood. Note the repair with baleen thread. 2) Spoon of caribou antler. 3) Spoon of sperm whale tooth. (Drawing: Eva Koch). 1:3.

frames and a part of the blade of a slender paddle have also been found at Qeqertasussuk.

Publication and exhibition

The Qeqertasussuk project has now entered the analysis phase. Plans have been made for a number of publi-

cations in “Meddelelser om Grønland, Man and Society”.

The material has for practical reasons been sent to Denmark for analysis, but will later naturally be returned to Christianshåb Museum where it will form the core of a permanent exhibition. This local museum will then be able to present a material of interest far outside

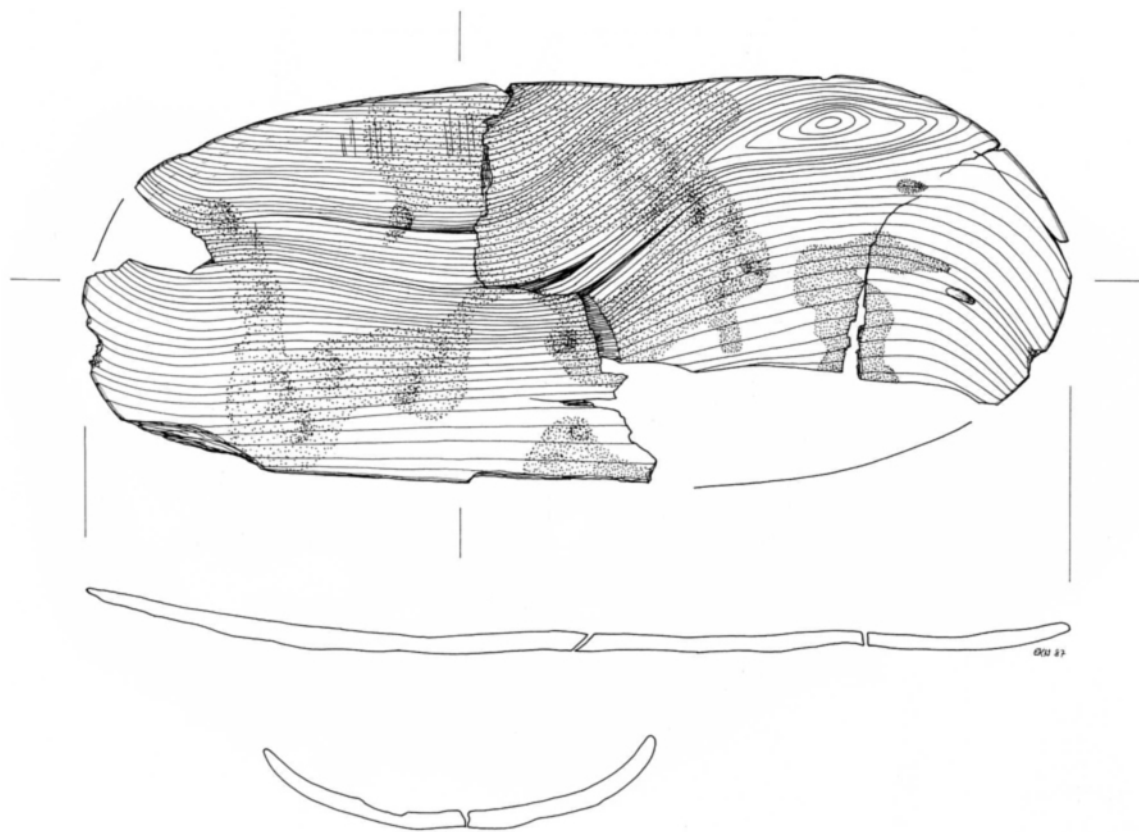


Fig. 14. Bowl or platter of driftwood. Charred parts on the inside are shown with screen tints. (Drawing: Eva Koch). 1:3.

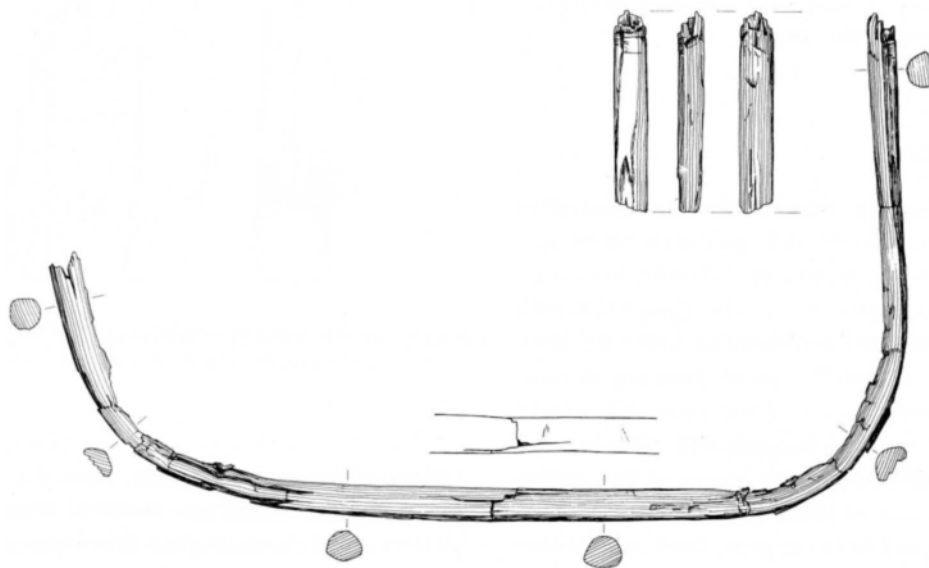


Fig. 15. Frame of kayak-like vessel. This piece is made of what was originally one long piece of driftwood, split, shaped and finally bent into shape. Faint traces of lashing are still seen in the middle of the frame and in the preserved end. (Drawing: Eva Koch). 1:3.



Fig. 16. Foot of inner stocking of kamik, seen from the top. The toe is best preserved. (Photo: John Lee).

Greenland, helping to tie the cultural history of Greenland to that of the rest of the Arctic.

RESEARCH PERSPECTIVES

The picture of the Saqqaq culture – the first hunters in West Greenland – as a distant and “primitive Stone Age culture” can no longer be maintained. With Christianshåb Museum’s investigations at the Qeqertasussuk settlement, which is briefly presented here, we have now obtained the best possibilities of drawing an entirely new, many-sided picture of the material culture and living conditions of the Saqqaq folk. The excavations in the permafrozen culture layers at the settlement have given a mass of information on the production, hafting and use of hunting gear, tools and household utensils. The construction and arrangement of the dwelling and settlement activities are beginning to appear, and we will obtain a detailed picture of the exploi-

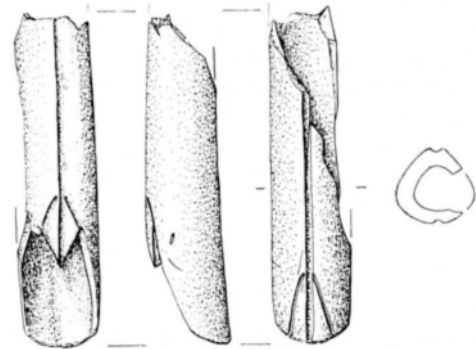


Fig. 17. Small ornamented needle case of dog bone. Perhaps it symbolizes the cut of a Saqqaq costume. (Drawing: Eva Koch). 2:3.

tation of the game animals. Also the research of the coming years within raw material utilization, dwelling patterns and chronological development of the Saqqaq culture can take its starting point in the “fixed point” of Qeqertasussuk. We thus hope that the results of the project will lead to intensified research within the field

of palaeo-Eskimo archaeology, and that the very earliest part of Greenland's cultural history can become a part of the awareness of the present-day hunters and fishermen of the Arctic.

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Acknowledgements

The author and Christianshåb Museum (now directed by Troels Romby-Larsen) are grateful to all – institutions, foundations and private persons – who have supported the Qeqertasussuk project through four years of fieldwork. We wish to thank the town council and other citizens of Christianshåb, who have given the Museum and the excavation team the best possible working conditions.

The institutions are: The National Museum of Greenland, The National Museum of Denmark, The Zoological Museum Univ. of Copenhagen, Institute of Prehistoric and Classical Archaeology Univ. of Copenhagen, The Laboratory of Physical Anthropology Univ. of Copenhagen, The Commission for Scientific Research in Greenland. The foundations are: The Danish State Research Councils for the Humanities and for the Sciences, The Carlsberg Foundation, The Tuborg Foundation, The Nordic Council's Culture Fund, Grønlands Hjemmestyre, De grønlandske Kommuners Arkæologiske Fond, Det Kgl. Grønlandsfond, Bikubenfondet, Dronning Margrethe II's Arkæologiske Fond, Dronning Margrethe og Prins Henriks Fond, Christian X's Fond, Greenex A/S, Dansk-Grønlandsk Kulturfond, Lionsklubbernes Grønlandsfond, Qilakitsoq-Fondet, Grønlandsfly. Besides the persons mentioned in the text, members of the field crews at Qeqertasussuk were: Kim Aaris-Sørensen, Thomas Berg, Geert Brovad, Elisa Evaldsen, Malina Fleischer, Egon Geisler, Keld Møller Hansen, Flora Heilmann, Erik Holm, Arnanguaq Høegh, Gitte Jensen, Axel Jeremiassen, Steen Jeppesen, Aappaa Magnussen, Anne Mette Olsvig, Elisa Petersen, Erik Brinch Petersen, Per Ole Rindel.

NOTE

1. The early part – the “pioneer groups” within ASTt are: Denbigh Flint Complex in Alaska (Giddings 1964), Pre-Dorset in Canada (Meldgaard 1960), Independence I in North Greenland (Knuth 1967) and the Saqqaq culture in the rest of Greenland (Larsen & Meldgaard 1958). The earliest reliable C¹⁴ datings of these groups lie in the period 2500–2100 BC (cal.).

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