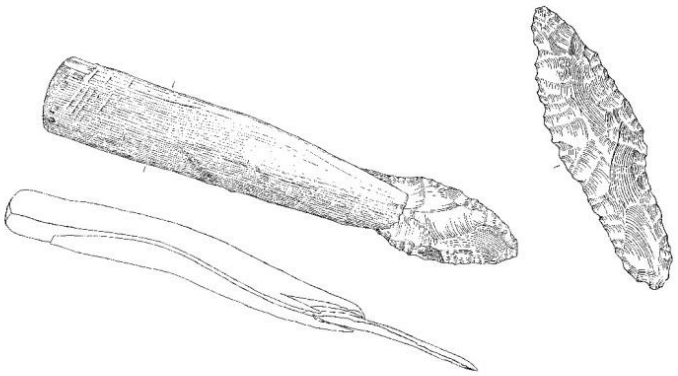
Qajaa Excavations 1981 and 1982

A West Greenland Saqqaq site with preserved wood and bone

Report prepared for the Carpenter Meldgaard Endowment

Jens Fog Jensen



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Front page: top left: Drawing of hafted knife and knife blade of killiaq.
Drawing Pia Breinholt.

top right: View from Qajaa towards the confluence Tasiusaq and Kangia.
Photo: Jeppe Møhl

bottom left: Jørgen Meldgaard xcavating mid-passage hearth in area F.
Helge Larsen standing to the left. Photo: Jeppe Møhl

bottom right: Saqqaq harpoon head and tanged point.
Photo: John Lee and Jens Fog Jensen

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Preface and acknowledgements

This report is an account of excavations conducted in 1981 and 1982 by Jørgen Meldgaard (1927-2007) The National Museum of Denmark at the Qajaa site in West Greenland. A total of 388 wooden objects, 255 bone artefacts, 696 lithic tools and more than 4000 flakes have been excavated and are presented here in their archaeological context.

The processing and presentation of materials excavated by other colleagues is always challenging and full of shortcomings. In particular when the excavator has passed away as Jørgen Meldgaard unfortunately did in 2007. Many questions and details of recovery have remained unanswered, however the field notes (fig. 1), diaries and photo documentation form a good basis for the presentation of data in their archaeological context although the exact stratigraphic context of many organic artefacts have been lost.

The description and analysis of the material was made possible by a donation from the Carpenter Meldgaard Endowment allowing me to process the material in collaboration with Bjarne Grønnow between 2009 and 2013. The wooden objects were thus registered by Grønnow and Jensen during a joint trip to the Greenland National Museum and Archives in 2010, whereas the bone and lithic artefacts have been described and analysed at the National Museum of Denmark, where these items had been kept in Jørgen Meldgaard's custody.

The description and analysis of the artefacts involved identification of function (type), raw material, sketch drawing, numbering, and for selected objects professional drawing was carried out by Pia Breinholt and photography by John Lee. X-ray photography of one antler tube was carried out by Signe Nygaard, at the Conservation department. In addition to these directly involved colleagues, warm thanks for inspiring support also goes to all other colleagues at SILA, The National Museum of Denmark as well as to the Rock Foundation, which made ter entire project possible.

All plan drawings and drawings of sections have been redrawn, and 630 photographs from Jørgen Meldgaards fieldwork in 1981 and 1982 have been digitized. Analytical work involves a detailed scrutiny of Jørgen Meldgaards comparative study of the sections in the different parts of the Qajaa site, where the sections have been evaluated in relation to the radiocarbon dates (fig. 58).

Qajaa was one of the earliest archaeological sites to be investigated in Greenland, when the Swedish explorer A. E. Nordenskiöld initiated excavations there in 1870. Nordenskiöld's notes and a sketch map of the Qajaa site in his diary provides evidence of the shoreline erosion which also will be discussed. The archival material from Meldgaards investigations amount to 6 note books with diaries and field notes by Jørgen Meldgaard, Helge Larsen and Torben Simonsen, 20 plan drawings and sketches of sections which in addition to being redrawn in some cases also have been rearranged in the present presentation, so that for example the mapping of the different excavation units are presented in relation to their location on a new site map that was produced in 2009.

From the very beginning it was decided to compare and publish the organic material with the comparative material excavated by Grønnow at the Qeqertasussuk site (Grønnow *in press*). The unique tools, weaponry and household utensils from Qajaa are thus presented in a functional context and the relevance of the finds discussed by Grønnow in relation to a broader Saqqaq context. A technological study is presented in Jensen and Grønnow (*in press*) where the *'Chaîne opératoire'* of selected tool categories are outlined in relation to transport of the raw materials (antler, gull bones and whale bone), and finally the archaeological context of the finds – the basic data with discussions of selected themes such as 'stratigraphy', 'site formation' 'radiocarbon dates' and 'ornamented objects' are presented in the present report. In addition to these scholarly publications, popular dissemination has also been part of the project in the form of a temporary (flex) exhibition at the National Museum of Denmark as well as in print (Jensen 2011). Independently of this project the Greenland National Museum and Archives and the National Museum of Denmark initiated new investigations at Qajaa in 2009. This new project focuses on the preservation of the Qajaa site and includes a multiyear monitoring of the effects of climate change on the permafrost and thus the conditions for preservation of organic materials. For a project summary and references see Matthiesen og Hollesen 2014.

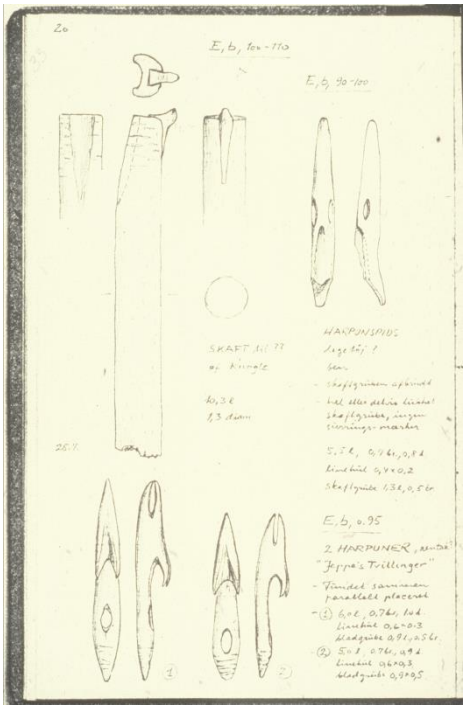


Fig 1. Sketch drawings in Meldgaards notebook from excavations at Qajaa in 1982.

Fig 2. View from Qajaa towards the confluence of Tasiusaq and Ilulisat Icefjord, Helge Larsen is seen between tents. Photo: Jeppe Møhl.

Introduction

Qajaa is a unique Palaeo-Eskimo, Thule culture and historical Inuit camp site situated on a promontory at the confluence of the Kangia (Ilulissat Icefjord) and the fjord Tasiusaq branching off the southern shore of the Kangia icefjord approximately midway between the ice front to the east and the fjord outlet to Disko Bay to the west (fig. 2 and 3).

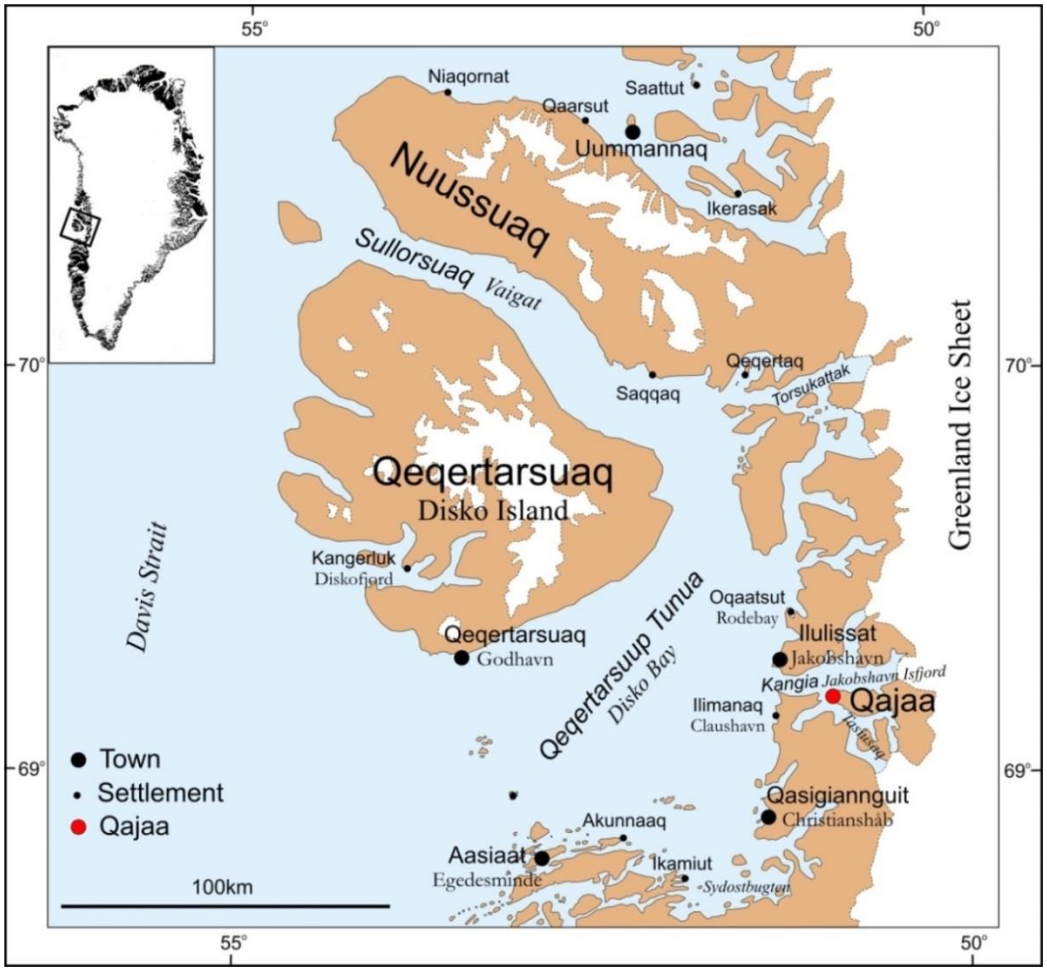


Fig. 3. The location of Qajaa.

The tidal flow and the troubled waters caused by the calving ice front and icebergs breaking up makes the Ice Fjord highly productive, and throughout many winters the outlet of the fjord remain partially ice free even when the rest of Disko Bay freezes up. The outlet of Kangia has thus been attractive to human settlements ever since the first people arrived here approximately 4500 years ago. In the eastern part of Disko Bay local topography and modest relative sea level changes throughout millennia have sometimes resulted in repeated occupations of the same places, whereby thick stratified deposits have formed (Rasch and Jensen 1997). At some of these sites - and Qajaa may be the most well preserved one - there are stratified deposits from all three principal settlement episodes known in this part of Greenland; Saqqaq, Dorset and Thule culture - evolving into historic Inuit. Such overlapping episodes of settlement literally allow the archaeologists to excavate their way back in time by digging deeper. However, the wonder of Qajaa does not stop here.

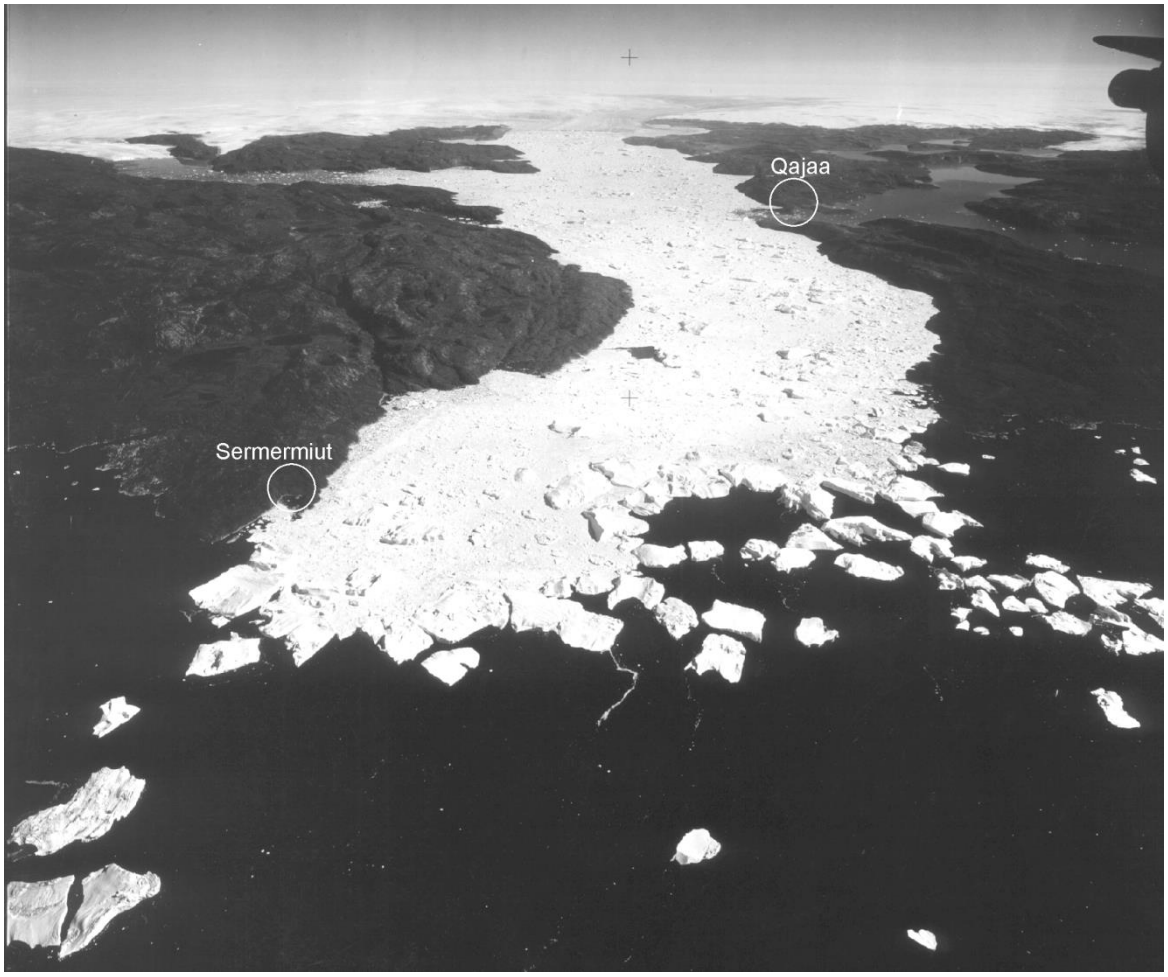


Fig. 4. View from west towards east over Kangia (Jakobshavn Isfjord). The large settlements of Sermermiut and Qajaa are marked with circles. Photo: Kort og Matrikelstyrelsen.

Permafrost has added yet a spectacular dimension to the preservation of ancient relics, since Qajaa is one of just two known localities with thick perma frozen culture layers from the Saqqaq culture - the first people settling West Greenland. The other one is the Qeqertasussuk Site in Sydostbugten approximately 80 km south of Qajaa (Grønnow 1994, 1997, in press). The extraordinary conditions for the preservation of organic artefacts and faunal assemblages left by the first people settling this part of the planet makes Qajaa a tremendously important site for the understanding and study of long term trends in the culture history of Greenland as well as for the understanding of human adaptions and settlement in the Arctic on a global scale.

Discovering the Qajaa site and history of research

In the age of great discoveries many arctic expeditions heading to northernmost part of Baffin Bay stopped in Disko Bay to hire assistance and dogs for traction. The colony of Jakobshavn now Ilulissat, was one of the favored places, here explores and scientists could admire the Icefjord, and a relatively large population of able hunters could supply the desired need for dogs and assistants. The colonial master and doctor welcomed these visits from abroad and often they would treat the foreign 'celebrities' with dinner and excursions to nearby sights and natural phenomena. The archaeological site of Sermermiut with its magnificent view of the Ice fjord was one such compulsory excursion for visitors to Ilulissat, as it is today. In Ilulissat Doctor C.G. E. Pfaff (1823-1881) was an eager antiquarian. He collected numerous artefacts from ancient as well as more recent periods. When the Swedish explorer Nordenskjöld (1832-1901) visited Ilulissat in 1870, they also went to Sermermiut and from Dr. Pfaff they purchased a large collection of stone tools collected from Qeqertaq in northern part of Disko Bay. The more scientific part of Nordenskiöld's visit to this part of Disko Bay consisted of excavations carried out at the Qajaa site. Curiously, in Nordenskiöld's description it comes natural to use the term 'Stone Age' when designating the oldest cultural deposits. Later during the early part of the 19-hundreds when Mathiassen (1892-1967) established archaeology firmly in Greenland, the association of the term Stone Age with pre-Inuit cultures became disputed (Meldgaard 1996). Mathiassen believed that Thule represented the first people, and that there were no earlier migrations into Greenland.

Being a pioneer in natural history, Nordenskiöld had his focus on glaciology and geology and his explorations at Qajaa are an early example of the use of archaeological sources as proxy data for climatic reconstructions (Niemi 2013). Nordenskiöld thus noticed, that the species composition represented by the fauna material from Qajaa diverted from the composition of the hunting species available in the vicinity of Qajaa, when he visited the place, and he accordingly suggested, that the climate and ice conditions formerly had been different enabling different animals to live there as well as the settling of humans at the

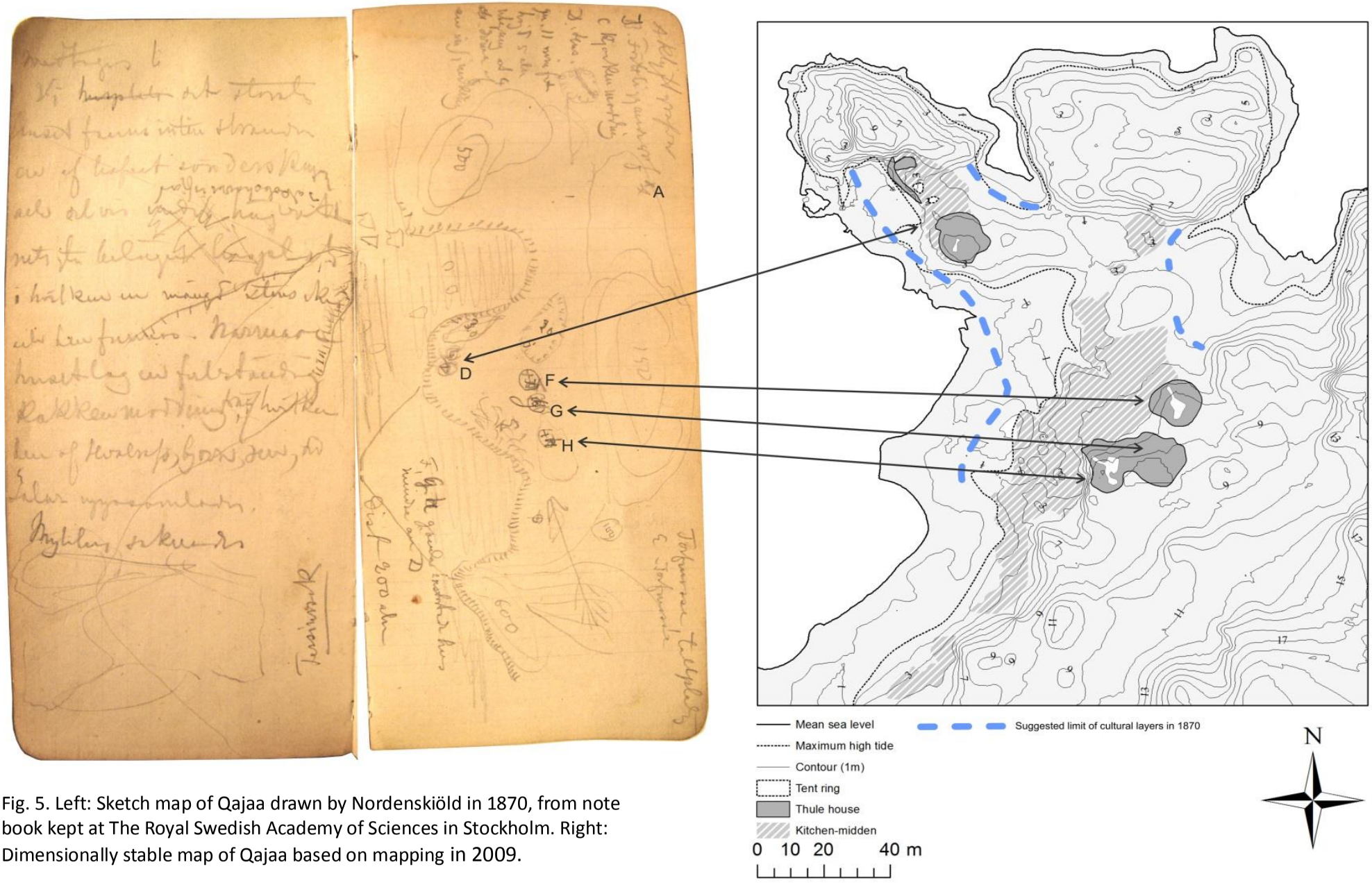


Fig. 5. Left: Sketch map of Qajaa drawn by Nordenskiöld in 1870, from note book kept at The Royal Swedish Academy of Sciences in Stockholm. Right: Dimensionally stable map of Qajaa based on mapping in 2009.

point. Unfortunately Nordenskiöld did not get into detailed descriptions or discussions of the stratigraphy at Qajaa, whereby he missed an opportunity to forestall the lengthy discussion between Mathiassen and Birket-Smith (1893-1977) on the chronology of early human settlement in Greenland (Meldgaard 1996, Gulløw in press). However, Nordenskiöld's hand drawn map of Qajaa is the oldest know scientific sketch map of an archaeological site in Greenland (fig. 5), and the comparison of Nordenskiöld's map with modern accurate site maps combined with Nordenskiöld's notes on the excavations in 1870 enables some qualified suggestions on the erosional history of the site to be discussed separately at the end of this report. Nordenskiöld had his local transport from Disko Bay to Qajaa organized by the trade manager Carl Fleischer (1846-1919) in Ilimanaq, and the following year, in 1871, Fleischer received a request on the presence of middens in Greenland from Japetus Steenstrup (1813-1897) at the Zoological Museum in Copenhagen. Fleischer then made a new excursion

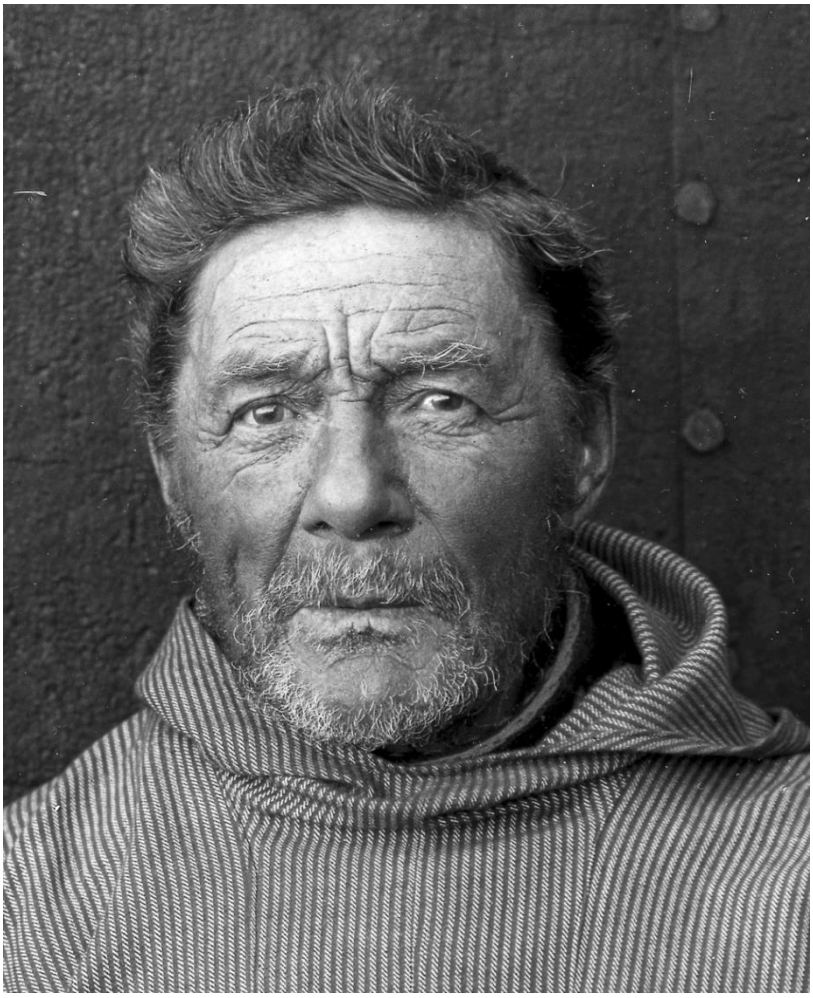


Fig. 6. Carl Fleischer, assisted Nordenskiöld with logistics and man power, and was the first to document the stratigraphy at Qajaa. Photo: Arktisk Institut

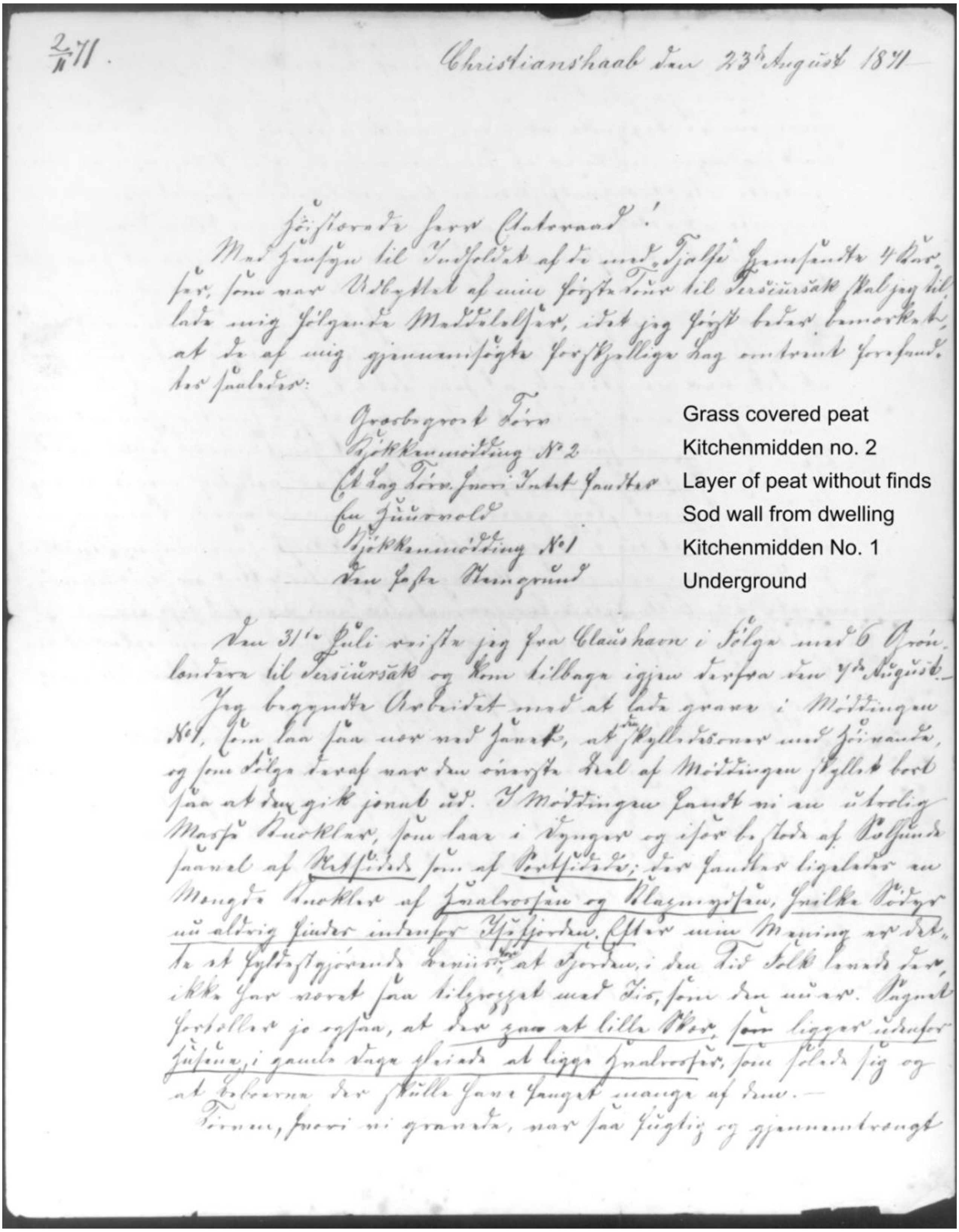


Fig. 7. Letter from Carl Fleischer to Japetus Steenstrup with description of the stratigraphy at Qajaa. Translation inserted by the author. Reproduced with permission by Det Kongelige Bibliotek Nr. 5 3460,-4°

to Qajaa in order to collect samples to be sent to Steenstrup for analysis, and surprisingly Fleischer presented the earliest sketch description of stratified cultural deposits in Greenland (fig. 7). Fleischer characterized the deepest layers on Qajaa as 'kitchen midden no. 1' with layers with bones and stone tools. These deposits were covered by peat layers without finds, and then there were 'kitchen midden no. 2' lacking stone tools. Carl Fleischer actually discovered the Stone Age or pre-Inuit settlement of Greenland. Unfortunately Fleischer's report was forgotten and only rediscovered in 1980'ies (Meldgaard 1996), and his early discovery thus never became known among scholarly people, and for the second time we missed an opportunity to forestall Mathiassen and Birket-Smith's later disagreements.

In the 19-hundreds all these early explorations of Qajaa, was out of the limelight. The archaeological focus shifted to the nearby site of Sermermiut, and Qajaa remained inaccessible behind the iceblocked waters of Kangia until Meldgaard's rediscovery in 1981.

Fig. 8. Meldgaards wife 'Lissen' holding a Saqqaq harpoon head found at the shore in front of the erosion front. Photo: Jørgen Meldgaard Qajaa 1981.

Meldgaards 1981 visit to Qajaa

In 1981 Meldgaards investigation at the Qajaa site was a short visit lasting from august 6th to 10th. Apart from Meldgaard and his wife 'Lissen' there were Mikkel Paulsen and his son Gerth hired in Qasigiannguit. Meldgaard sketch mapped the site and managed to clean several sections of the eroded midden facing the shore. In this process he soon realized the potential of the more than two and a half meter deep and often stratified deposits. Meldgaard was surprised to find large quantities of well-preserved organic artefacts as well as fauna remains in particular in the deepest part of the frozen midden.

Fig 9. Jørgen Meldgaard making notes and descriptions during excavation I 1982. Photo Jeppe Møhl

Excavations in 1982

Meldgaard's 1982 field season lasted from June 29th to August 6th working on Qajaa from July 1st to July 30th. Except from Meldgaard the participants were Helge Larsen, Meldgaards mentor in arctic archaeology and then pensioner, Jeppe Møhl conservator and zoologist from the Zoological Museum in Copenhagen, Hans Lange of the Greenland National Museum, Torben Simonsen and master carpenter Egon Geisler (1931 – 1991) both enthusiast amateur

Fig. 10. Qajaa seen from the North with the location of excavation units marked. Photo: J.Meldgaard

archaeologists and characters in the founding of the local museum in Qasigiannguit. Mogens Andersen (1939-2006) the curator of the museum in Ilulissat and his assistant Regine Jørgensen participated as well. Hans Lange, Jeppe Møhl and Helge Larsen were the core of the team whereas the local staff worked temporarily at Qajaa since they often had other duties to attend in their respective communities. Egon Geisler took care of much logistics bringing supplies and staff and visitors to the camp. In 1982 Meldgaard and his team excavated and collected artefacts from seven different units named D, K, H, E, A, B, C and F when ordered from north to south (fig. 10 and 11).

Neither stratigraphic documentation nor areal excavation was carried out in area K. Sections were documented in units D, E, A, B, C and F where the natural erosion fronts were excavated to vertical sections and sketch drawn, and in area A an approximately 2.5 m section of the cliff was prepared, drawn and photo documented as a 'main profile' (se fig. 32 and 33). The area excavated differs greatly between the different units. The largest excavated units are 'H', 'E' 'C' and 'F'. In these units the peat layers covering the palaeo-Eskimo cultural layers are generally thin leaving the cultural deposits largely free of perma frost which was the primary motivation for Meldgaard to excavate the largest units at these particular places. At the remainder units 'D', 'A' and 'B' sections and minor columns were excavated. In the following pages the main characteristics, sections, features and ground plans and finds from each area will be summarized in the geographical order of the units from North to South.

Finally a revised version of Meldgaard's comparative study of the sections from different parts of Qajaa will form the basis for a discussion of the development and preservation history of the Qajaa site.

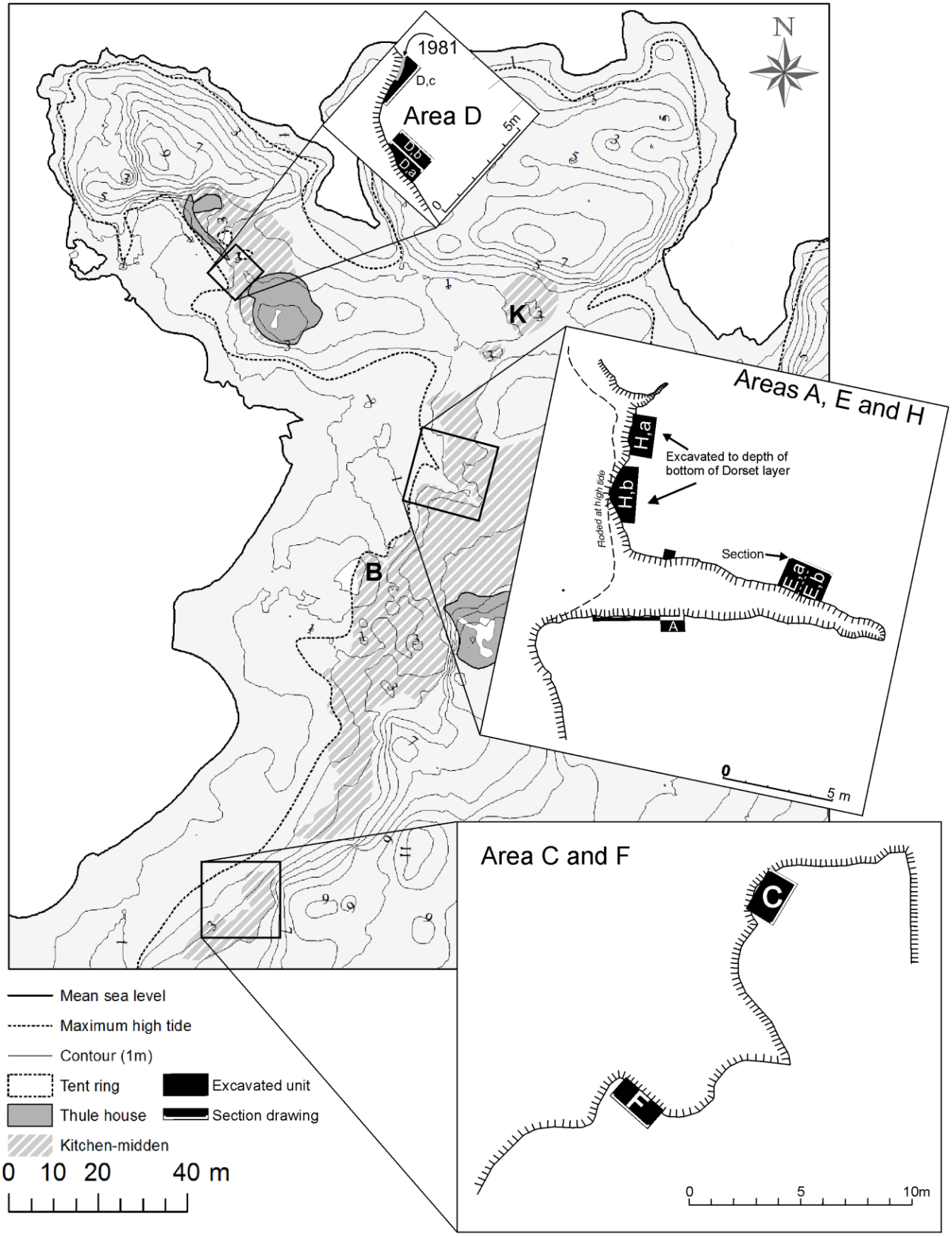


Fig. 11 Qajaa with the location of different excavation units.

Area D

The five to six m wide strip of midden situated between ruin 4 and the granite knoll adjacent to ruin 4 is eroded from southwest and northeast. Towards southwest the eroded cliff is vertical. The Northernmost part of this cliff is made up by the rear wall of a Thule communal house which was not identified by Meldgaard, but acknowledged by Grønnow in 2009 and also mentioned by Nordenskiöld (1872:414) who conducted his excavation here. In 1981 Meldgaard sketch mapped the natural erosion front and in 1982 he excavated two units in area D and documented three different sections associated with the excavated areas. The first mentioned section is the one included as 'D' in Meldgaards comparative chart correlating the different sections on Qajaa (see fig. 58) and the latter are numbered 'Da', 'Db' and 'Dc'. When the different sections are compared (fig. 13 – 15), it is seen that they are quite different although close to one and another. In 1981 Meldgaard was in doubt about the cultural origin of the observed layers and he thus put question marks (Saqqaq? and Dorset?) after the denominations on the cultural layers in the bottom of the section drawn in 1981 (fig. 58). Meldgaard apparently never realized the intrusion of the common house a few meters to the north of 'house 4', but he was puzzled by the co-occurrence of Saqqaq and Dorset artefacts in the deepest culture layers. The recognition of the communal house explains the co-occurrence of Saqqaq, Dorset and Thule objects in the stratified deposits: While some portions of the deepest layers might well be of undisturbed Palaeo-Eskimo origin, the building of the common house in the 1600 or 1700 hundreds is likely to have mixed and disturbed some of the otherwise stratified layers, and trampling and digging might also have introduced younger artefacts such as a Thule baleen meat fork (fig. 16) into the older layers. Consequently the material from area D numbering a total of 282 lithic objects, 19 bone artefacts and 30 wooden artefacts should be treated with great caution as far as their dating concerns.

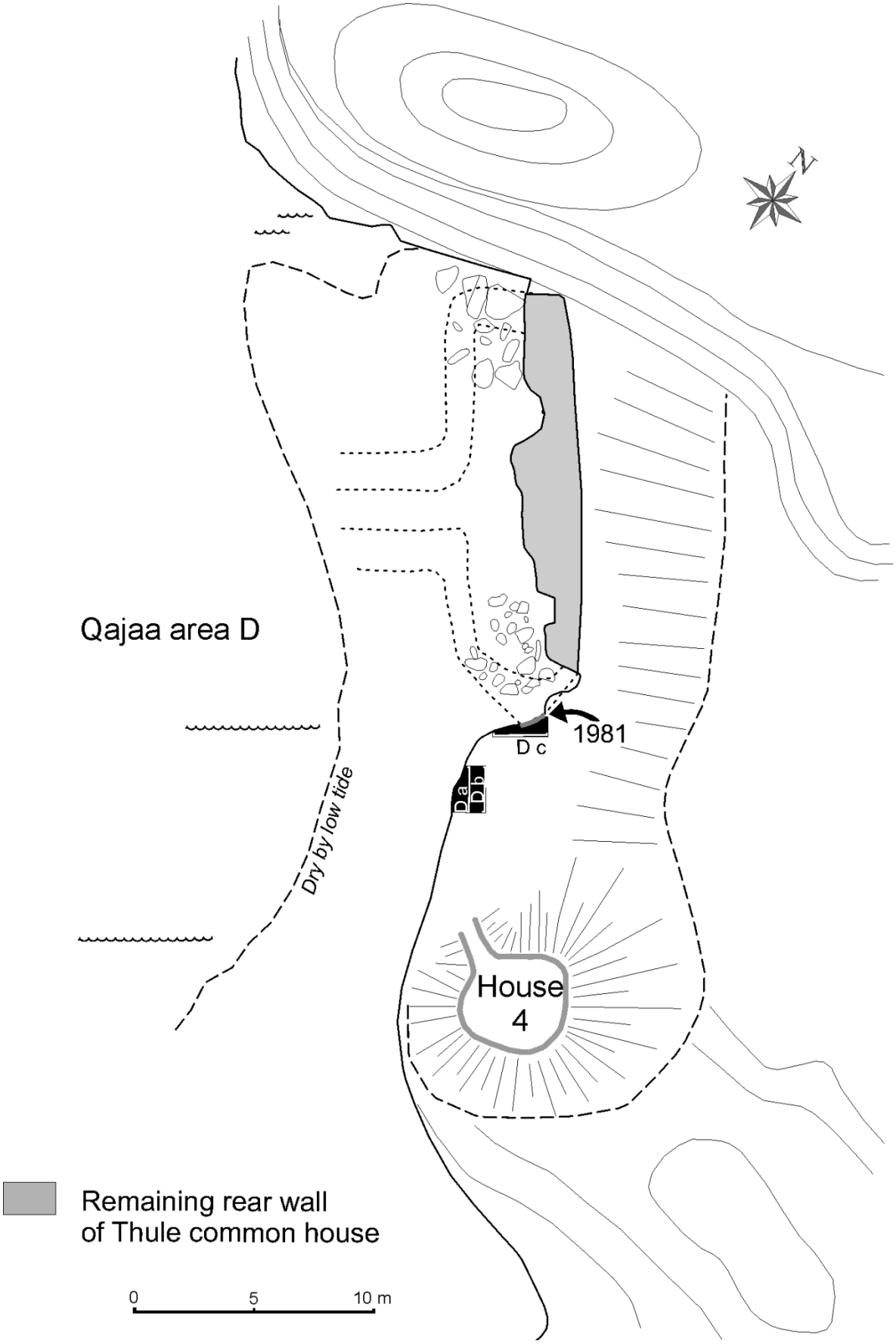


Fig. 12. Sketch map of Thule ruins and excavation units in area D. The inferred outline of a common house described by Nordenskiöld, but where only the rear wall is present today, is marked with a punctuated line.

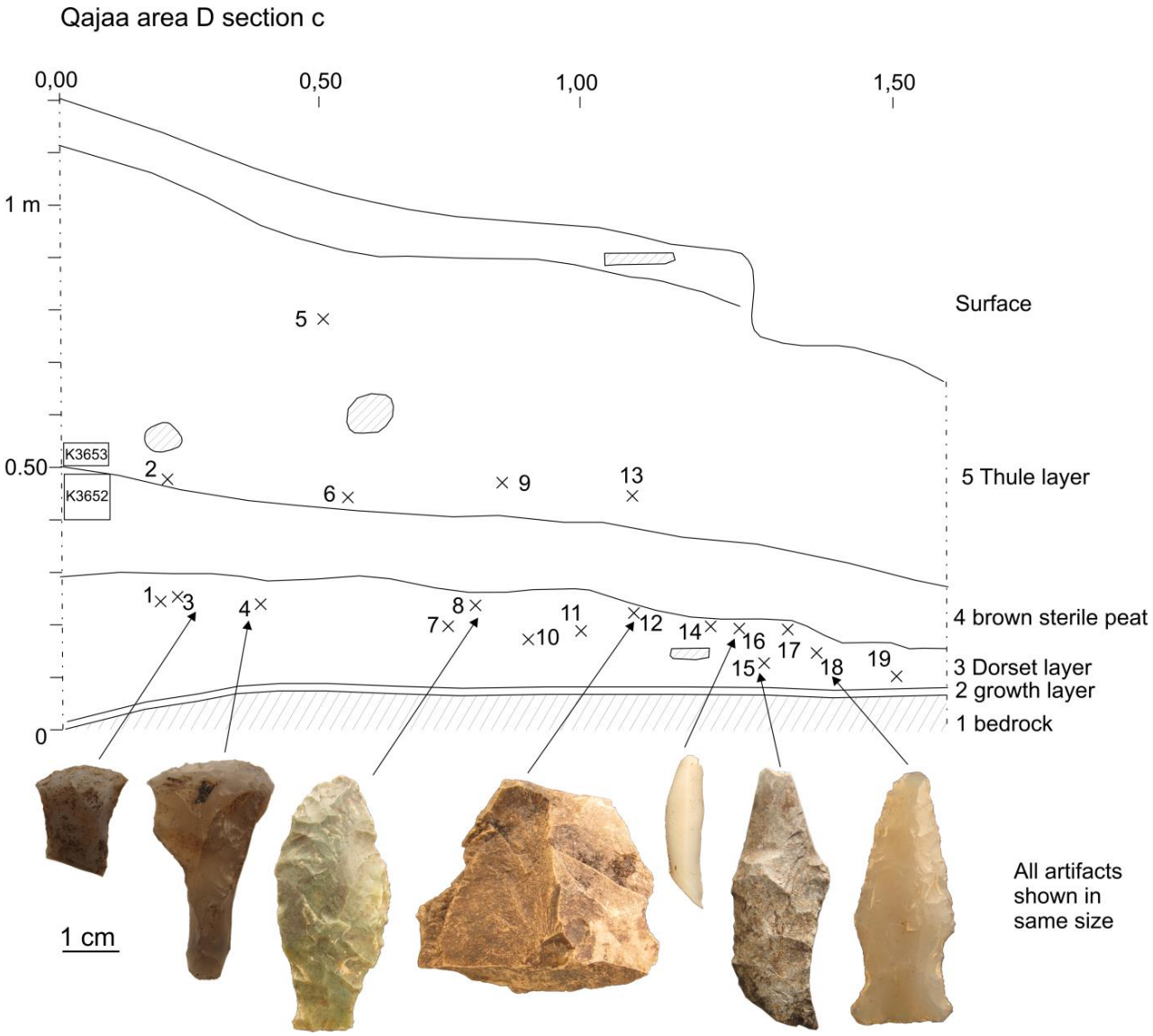


Fig. 13. Section Dc: The objects plotted on the section drawing are: 1 flake, 2 quartz crystal, 3 scraper, 4 scraper, 5 seal bone, 6 seal bone, 7 seal bone, 8 knife blade, 9 snow knife, 10 seal bone, 11 seal bone, 12 flake, 13 tub stave, 14 quartz crystal, 15 burin like tool, 16 microblade, 17 scraber, 18 knife blade, 19 wooden stick, samples for radiocarbondating marked with square outline.

Section Dc (fig. 13) located just about one meter into the erosion front from the section recorded in 1981 appear less complicated. From the bottom and up this section has a Dorset cultural layer resting on a thin ancient growth horizon on bedrock. Then follows a sterile peat layer, and on top of this a 60 cm deep deposit from the Thule culture and the recent vegetation (surface). Among the artefacts collected from this section are 'Thule types' such as a 'tubstave'

associated with the uppermost culture layer and only Dorset lithic artefacts with the deepest cultural layer at the bottom (fig. 13). The cultural layers at this particular spot thus appear unmixed, and no Saqqaq layers are present. Two samples of peat for radiocarbon dating were extracted from section Dc. However the description following the dated samples deviates from the drawing of the section. In the written list of radiocarbon dates from Qajaa it is stated that K3653 was taken from 'a layer of compressed grasses directly over layering Dorset culture' [translated by the author]. However from the section drawing it is seen that the sample was taken from the lowest part of the Thule culture deposits and from a layer over layering a sterile peat layer separating the Thule layers from the Dorset strata in the lowest part of the section. Similarly it is stated that the slightly lower sample (K3652) was extracted 'from an approximately 10 cm thick culture layer with Dorset culture resting on a sterile peat layer (0.25-0.40 m) which again rest on midden layers from Saqqaq culture (0.15 -0.25 m) over layering a bottom layer (0-0.15 m) of peat without traces of humans' [translated by the author].

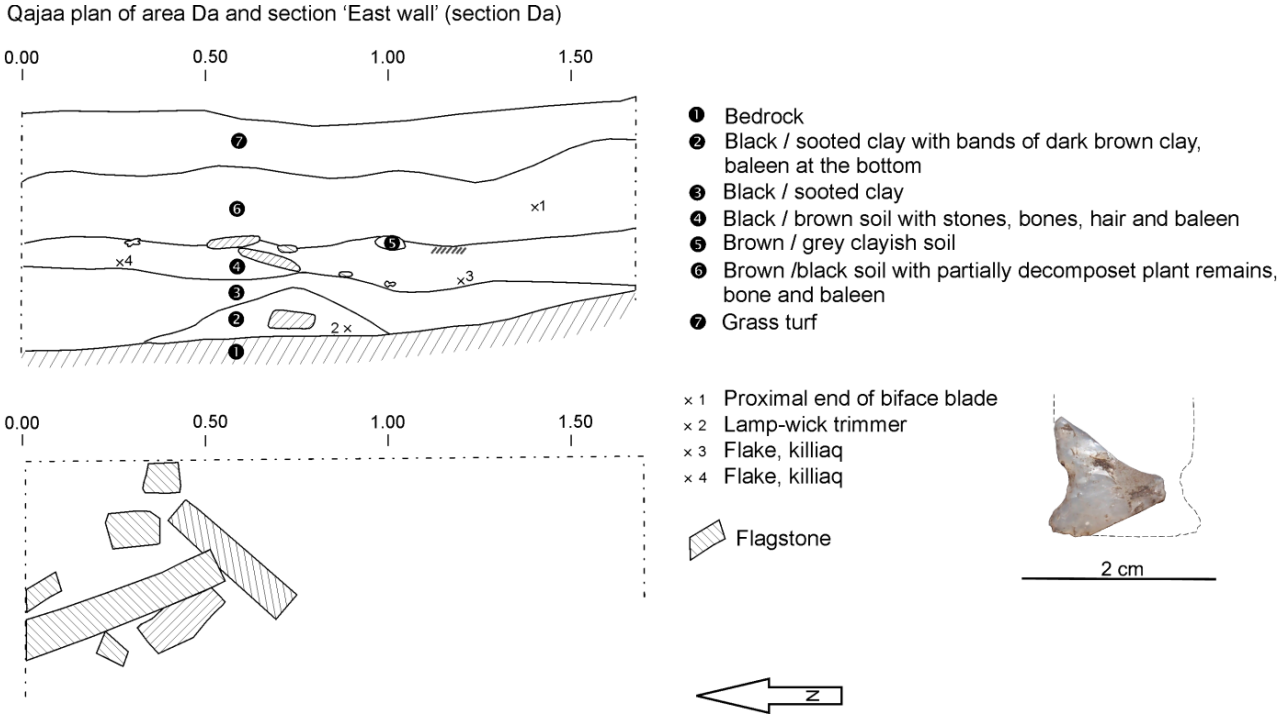


Fig. 14. Section and plan drawing of area Da. The mapped level with flagstones is assumed to be level 4. The plotted find nr 1 is a proximal end of a biface with side notches. It is shown in the right side of graphic.

This description also disagrees with the section drawing. Because from the section drawing it is seen, that there is no Saqqaq present, and the sample was taken from a sterile peat layer separating the Dorset layer from the over layering Thule layers. It thus looks as if the radiocarbon samples were taken by a badly informed person or they were taken prior to the documentation and field study of the section. In any case, assuming that the drawing is true we can correct the context of the two dated samples K3652 and K3653: K3652 does not date a Dorset Culture layer but a sterile peat layer separating the Dorset layer from Thule deposits. K3653 does not date a sterile peat layer but the deepest layers with Thule culture. This correction actually makes good sense since K3652 was dated to 1650 ± 70 BP, which is too young compared to other known dates of Greenlandic Dorset, but fits well for a dating of a sterile layer separating the older layers of Greenlandic Dorset from the Thule culture layers. K3653 was dated to 750 ± 70 BP which fit well for a relatively early dating of Thule culture in West Greenland.

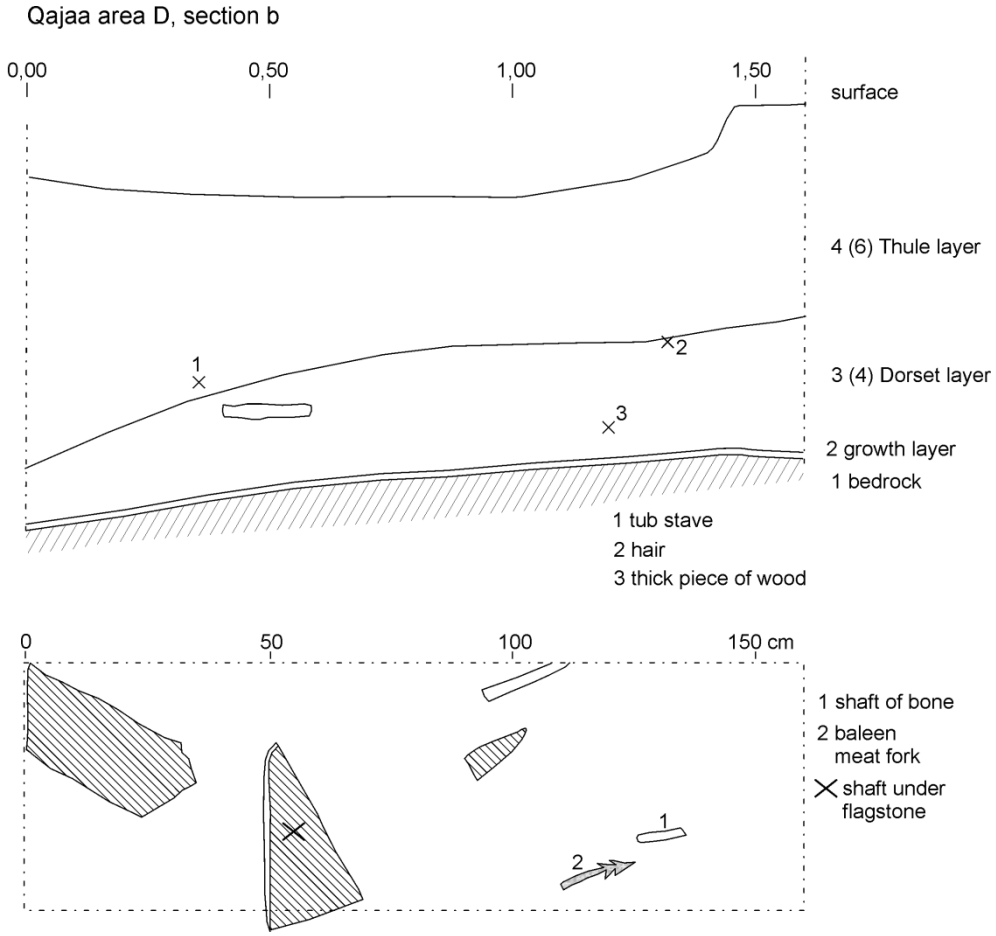


Fig. 15. Section and plan drawing of area Db. The mapped level is 55 cm below the surface approximating the top of the so called Dorset layer. Note: no. 2 at plan drawing marks the baleen meat fork shown on fig 16.

Fig. 16. Baleen meat fork from area Db. Found at the bottom of Thule layer or in top of so called Dorset layer but presumably of Thule origin. Photo John Lee 15.

A few meters to the south of Dc are excavation area Da and Db, both about 1.75 m^2 with approximately 0.75 cm thick deposits resting directly on bedrock. In area Da, a hearth with flagstones was documented a few centimetres above the bedrock. The section (Da) documented in the eastern (rear) wall of the excavation unit show a stratification beginning with bedrock (1) followed by a sequence of culture layers (2-6) and ending with layer no 7 - a layer of recent grass turf. Unfortunately it has only been possible to explain the location of the artefacts in relation to the deepest layer, since one bag with finds from area Da is labled: 'Qajaa Da nederste horisont under ildsted sten 0-5 cm over klippe' [Qajaa Da lowest horizon below hearth stones 0-5 cm above bedrock], (translated by the author). Importantly though this bag contain both Saqqaq tools and Dorset tools. Although the latter appear to dominate, there are at least two Saqqaq arrow points and one Saqqaq dart or light lance point together with a typical side notched Dorset biface and Dorset microblades of white chalcedony. The bottom layer must thus be considered a culture layer of mixed origin. The artefacts are believed to have been collected from a layer corresponding to layers 2 and probably 3 on the drawing of the section (fig. 14). Over these horizons, are other culture layers apparently with unmixed Dorset artefacts, and layer 6 just below the grass turf has decomposed plant, bone and baleen, which probably are of Thule origin.

Area Db is the one meter eastward extension of area Da. No observations of features are mentioned from this area and the stratigraphy has similarities to section Dc: At the bottom is a thin growth horizon resting on bedrock. The growth horizon is over layered by a 20 to 30 cm thick Dorset layer. On top of the

Dorset layer there is a 30 to 50 cm thick Thule layer. The artefacts associated with the strata indicate that indeed the Dorset layer at this place is unmixed, at least there are no Saqqaq types among the chronological significant types found in the Dorset layer and chalcedony is the dominant raw material among tools as well as debitage.

Finds from Area D

The documented sections in area D thus indicate that Dorset layers are present. However, it is also clear, that there are Saqqaq deposits and that thick Thule deposits and the construction of Thule houses in some places have disrupted the older layers. In spite of the apparently undisturbed layers from Greenlandic Dorset seen in section Dc, the heavy mixing of Saqqaq and Dorset elements in the nearby sections Da and Db makes it difficult to draw any generalising conclusions from the 'area D data', since the context of the artefacts remain obscure.

Saqqaq artefacts area D	
microblade core	1
arrows	6
harpoon blades	1
knives	3
bifaces	19
burins	7
Burin spalls	3
scrapers	1
axes	2
retouched flake	4
micelaneous	1
whetstones	1
total	49

Dorset artefacts area D	
microblades	37
mcroblade cores	2
biface	16
blt	2
sideblade	1
scraper	8
sidescraper	4
axe	1
soapstone lamp	2
retouched flake	1
whetstone	0
quartz crystal	4
core / preform	1
toyal	79

flakes undetermined cultural affiliation	154

Table 1 a and b. Saqqaq and Dorset lithic artefacts from area D.

128 of a total of 282 lithic objects are tools (herein including 37 microblades). Most of the chronologically significant types are of Dorset origin, but some

Saqqaq types such as arrow points (n 9) burins (n 7) and burin spalls (n 3) are also present in the same layers as the Dorset artefacts. Even in the deepest layers such as 'Da lower horizon below hearth' and '0-5 cm above bedrock' (se fig. 14) there are both Saqqaq types such as a knife and two arrow points as well as three Dorset bifaces, leaving no doubt that that the Palaeo-Eskimo component in the lower layers must be mixed. In accordance with the descriptions of stratigraphy given in the previous sections, the raw material frequencies support the suggestion that in area Dc there are relatively unmixed Dorset deposits, whereas the deepest layers in area Da and Db have significant components of both Saqqaq and Dorset. Among the lithic artefacts excavated from area Dc there are 2 (6.9 %) flakes of killiaq, 21 of chalcedony and 6 of quartz (the artefacts registered and listed on the section drawing is not included) The very low frequency of killiaq along with the absence of Saqqaq tools makes it unlikely that Saqqaq components are mixed in here. In contrast to the apparently 'clean' Dorset deposits in Dc, the lowest horizon in area Da has 11 artefacts of killiaq (32 %), 19 of chalcedony, 1 of quartz crystal and one of quartzite. Similarly the layer designated 'Dorset layer' on the drawing of section Db (fig. 15), has 20 tools and flakes of killiaq which is more than 35% of the lithic assemblage numbering a total 56 from this horizon.

Altogether 37 % (n 105) of the lithic artefacts from area D (including debitage and stray finds from foreshore) are of chalcedony usually dominating Dorset assemblages, 54 % (n 153) are of killiaq, 6.7% (n 19) of quartz crystal and 1% (n 3) of other raw materials. The dominance of Dorset types in combination with the raw material frequencies indicates that the Dorset component is dominant. However when comparing the total number of lithic artefacts from area D to the area excavated it becomes clear, that the Palaeo-Eskimo component is modest in comparison to the find quantities and thickness of Palaeo-Eskimo layers in areas A, E , C and F. All together the finds indicates, that Area D has relatively rich deposits from Greenlandic Dorset, but it is also clear that these layers often are disturbed so that Dorset and Saqqaq objects occur in mixed context. In some areas there may be pockets or patches of undisturbed cultural layers

such as the seemingly undisturbed Dorset layers in area Dc, but all over area D there are thick deposits and dwelling remains from the Thule culture on top of the Palaeo-Eskimo layers, which add an element of intruding Thule artefacts to the Palaeo-Eskimo component.

Fig. 17. Miniature harpoon head of wood, presumably of Dorset origin

Artefacts of organic materials.

30 wooden and 19 bone and baleen artefacts were recovered from area D. Typological characteristics such as 'locks' carved in the two examples of scarfs as well as the mixed stratigraphy described above indicate, that many if not most of these objects are of Thule origin. Most of the wooden artefacts (n 17) are unidentifiable split pieces and shavings. Three are shaft pieces with diameters between 1.5 and 1.8 cm and a scarf, two are pieces of a wooden ladle or tray, one is an arrow shaft, one a peg, one is a piece of a stake, one is a crudely made handle, one is a peg with a polished point, one is a worked twig and one is a 4.9 x 0.45 cm nicely cut bipointed peg resembling a tooth picker or part of composite fish hook, and finally there is a piece of toy in the form of a 3.8 cm long wooden bilaterally barbed miniature harpoon head (fig. 17) recovered from the Dorset layer (layer 3) in area Dc and thus presumably of Dorset origin. 19 objects from area D are made of bone, antler, ivory or baleen. Baleen artefacts are most numerous (n. 11). Four of these are unidentified pieces of worked baleen, three are baleen strings with knots, two are baleen lists with drilled holes indicating they could be sledge shoes, one is a miniature (toy) bow and one is a baleen meat fork (fig. 15). Of other materials are one broken snow knife of whalebone (fig. 18), one preform for a foreshafts or pressure flaker of bone, and one reworked foreshaft of ivory with remnants of an ornamental line. An antler harpoon head with lateral barbs (Thule II), one piece of skin, a tuft of hair and a pointed piece of bone which could be part of a foreshaft. Finally there

are a blank of antler in the form of a cut-off tine and a preform for a pressure flaker or foreshaft of bone.

At least one of the listed artefacts is of Palaeo-Eskimo origin: The reworked foreshaft with ornamental line, and presumably most of the remainder are of Thule origin. This at least goes for the harpoon head, the snow knife and presumably most of the baleen objects as well.

Fig 18: Broken snow knife from area D. the holes are for the attachment of a handle

Fig 19. Area K seen from southwest. Scale is 50 cm long. Photo: Bjarne Grønnow 2009

Area K

Area area K is an approximately 10 by 10 m large 'island' of cultural layers overgrown by heavy grass turf in the north-eastern fringe of the Qajaa site (fig. 10). Neither sections nor areal excavations have been conducted here, but finds have been collected from the erosion front. Towards southwest the erosion front stands approximately one m high, and in the cliff it is seen that there are 50 to 75 cm thick culture layers presumably mostly of Saqqaq origin, but possibly with remnants from other epochs preserved as well. The cultural layers does not appear to be perma frozen in this part of the site, but the numerous bones bleached by the sun that are visible in the eroded cliff (fig. 19), show that even here bones appear to be reasonably well preserved. The visible eroded Saqqaq deposits in area K appear to have a different composition than in other parts of the site. In K the refuse layers thus form discrete 'heaps' or 'filled holes', and the deposits are heavily soaked in hardened blubber leaving an impression of quite different activities dominating in this part of the site. Among artefacts collected from area K are an almost complete circular soap soapstone lamp (fig. 21), which is unique as just one of two known complete soap stone lamps known from Saqqaq culture sites in Disko Bay.

tool type	No.	total
harpoon blade	1	4
scraper	1	
soap stone lamp	1	
BLT (Dorset)	1	
flakes		2
total		6

Table 2. Lithic artefacts from area K

Finds from area K

Just six lithic artefacts and one soap stone lamp and a bone wedge are registered from area K. Among the objects are both Saqqaq and Dorset types. A harpoon blade, a scraper of 'classic' Saqqqaq type, and an almost complete soap stone lamp (fig. 21) are stylistically chronologically significant Saqqaq types, and a Burin Like Tool indicate that Dorset must be present as well. Apparently no systematic excavation was carried out in Area K. However it was noted, that the harpoon blade (Saqqaq) was

Fig. 20. Chisel maybe ice chisel from area K. Made from reworked whalebone shaft with ornamental line. Note the proximal preparation for a shaft.

found in the lower strata, and that the BLT was retrieved from the grass turf, which indicate, that Dorset deposits in this area are very close to the present surface, or it may be redeposited.

Fig. 21. Almost complete soapstone lamp from area K. The circular lamp has a diameter of 11.3 cm, and it is one of just two complete Saqqaq soap stone lamps known from Disco Bay. The other was found at the site of Tupersuit to the north of Kangia (Larsen and Meldgaard 1958) Photo: John Lee.

Area H

Relative large areas of almost four square meters were excavated in area H when sub-operations Ha and Hb are combined, but little finds were done and there are neither plan drawings nor sections or descriptions of the excavated areas, except for some notes done by Meldgaard on his general situation plan of excavation areas A, E and H. (fig. 11). Here it is stated, that area H was excavated to sphagnum layers including the Dorset deposits only.
No Saqqaq layers were thus excavated in area H, and we do not know the total thickness of the culture layers in this particular place. This limited activity in area H is reflected in the find material where only 2 finds of bone, 17 of wood and 122 lithic artefacts are recorded. 86 % (n 105) of the lithic artefacts are made of chalcedony, and the white opaque variety dominates as is common for Dorset

inventories in this part of Greenland. Among the tool types, microblades are relatively abundant which also is typical for Dorset inventories.

artefact type	No.	total
microblades	15	21
bifaces	3	
scrapers	2	
micelaneous	1	
flakes		102
total area H		123

Table 3. Lithic artefacts from area H.

Artefacts of organic materials.

A pressure flaker of bone and a piece of seemingly unhaired skin are the only artefacts of bone and skin from area H. 17 objects are of wood, and among these there are 6 unidentified pieces of split and / or worked wood, five are stakes, three are missile shafts one of them have a scarf, one is a 12.6 x 1.1 x 0.9 cm handle with a split end for the insertion of a blade, probably for a micro blade, H300 is a 14.1 x 2.1 x 0.5 cm long nicely cut thin bend wooden list believed to be a rib for a vessel, and finally there is a nicely polished 16.5 cm long pin with an oval cross section could be a lacing pin?

Fig. 22. Excavation area H as it appeared in 2009. Photo Bjarne Grønnow 2009.

Area E – *needlemakers workshop*

Area E is a 2.25 m2 area situated approximately five meters to the east north-east of area A on the northern side of the erosion gully that separates area E from area A. The recent vegetation and uppermost turf layers were stripped of by shovel and spade (fig. 23), and the excavation then proceeded in 10 cm artificial horizons. At a depth from 60 cm to 100 cm below the surface J. Møhl unearthed a consecutive series of pavements and hearths with associated concentrations of finds. As flagstone were picked up new ones emerged, and the different configurations of flagstones, lithic scatters and upright wooden pegs were documented with six different plan drawings approximating one new plan drawing for each 10 cm horizon between 60 and 110 cm below surface (fig. 25-27). In the following description the artificially defined excavation 'horizons' are numbered I to V according to the numbers given on the field sketches. In contrast the layers observed in the section (fig. 24) are numbered with Latin numbers. In the text I will refer to the artificial 10 cm excavation units as 'horizons' and the last mentioned geological layers as 'layers'.

Fig .23. Deturfing area E prior to excavation. Photo: Jørgen Meldgaard

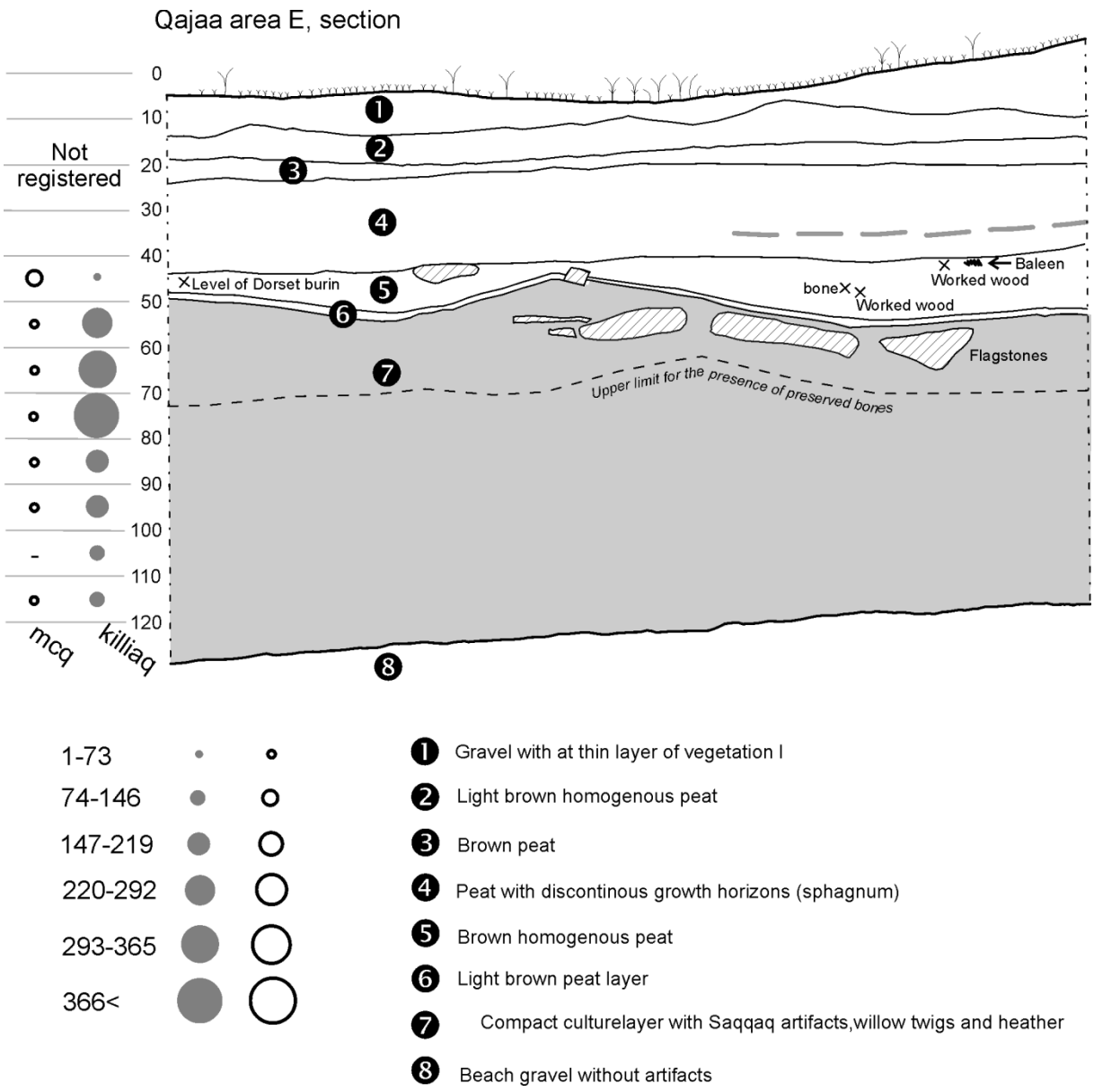


Fig 24. Section of Area E with inserted signatures for the number of killiaq and chalcedony (mcq) artefacts in each horizon.

Stratigraphy

The section was recorded in the entire 2 m 'rear wall', that is the (geographic) northern wall of the excavation. Eight layers were recorded from the present surface to sterile gravel approximately 130 cm below (fig. 24). Several of these layers can be correlated to layers in section A (se fig. 58) making the comparison of section A and E important for the understanding of the development of the stratigraphy at Qajaa. The peat layers at the top were shovelled away making the Dorset layer (layer 5) between 40 and 50 cm below the surface the first strata where artefacts were collected. The Dorset culture

layer is separated from the thick Saqqaq deposits below by a 3 to 4 cm thick layer of sterile peat (layer 6). Below the sterile peat layer are the 70 to 80 cm Saqqaq deposits (layer 7). The top 20 cm of the Saqqaq layer has no preserved bones, whereas the deepest part of the layer has good conditions for the preservation of bone. The lower 50 cm of Saqqaq deposits are thus densely packed with bones showing that Horizons I to IV and IV have been built on former midden deposits and to some extent also have been covered by younger refuse deposited on top of the registered pavements.

Similarities as well as differences spring to the eye when the stratigraphy from area E and area A (described below) are compared: At the bottom both places have massive Saqqaq-layers, and at both places these are topped by sterile peat layers. However the magnitude of the peat deposit varies greatly between the two places. In area A the peat covering the Saqqaq deposits form a more than 40 cm thick layer of virtually completely preserved peat with thin lenses of darker more decomposed fill in some places. In area E the corresponding peat layer is just 2-5 cm thick indicating that at this south facing slope there have not been conditions as favourable for the growth of peat as there were in the area of section A (se 58). Presumably the local topography play a crucial role here because Area E receive more sunlight minimizing the extent of permafrost and making better drainage of surface water and thus unfavourable conditions for the formation of peat at this particular spot. The absence of massive permafrost was one of the reasons for the excavation units to be placed exactly here, since only the absence of permafrost allowed Meldgaard to finish excavating the selected area. The relatively marked difference in thickness of some layers over such a short distance as the approximately 5 meters that separate area A and area B, show, that the stratigraphy represent very local depositional histories, and that the depositional histories may be heavily affected by local topography, geology, as well as by activities of the prehistoric and historic settlers.

The Saqqaq horizons:

The limited size of the excavated area makes it difficult to identify the function and limit of pavements. Are they platform or floor pavements or in some cases collapsed mid-passage arrangements where the upright flagstones have fallen over? In horizons I to IV, the elongated flagstones tend to be oriented northwest to southeast in the central part of the excavated area, and two parallel rows of flagstones might even be identified as possible wall stones in a mid-passage. However, the impression left by the photographs (fig. 25) are more in favour of seeing the flagstones as platform or floor pavements, possibly in a more temporary dwelling. There are just three fire-cracked rocks in the hearth uncovered in horizon II, and apparently no soot on the stones. Five vertically standing pegs were seen in the central part of the unit encircling the hearth seen in horizon IV and going through horizon II, III and IV, and there is also a piece of whalebone of unknown function. In horizon V and VI the flagstones appear more irregularly placed, however, one large flagstone in the northern part of the excavation unit (fig. 27) has a two cm thick layer of charred blubber, which means that this stone must have been part of a hearth. In Horizon I there is a marked concentration of debitage in the south western corner of the excavation unit.

Fig 25. Excavation area E with cleared pavement in horizon I. Photo: J. Meldgaard

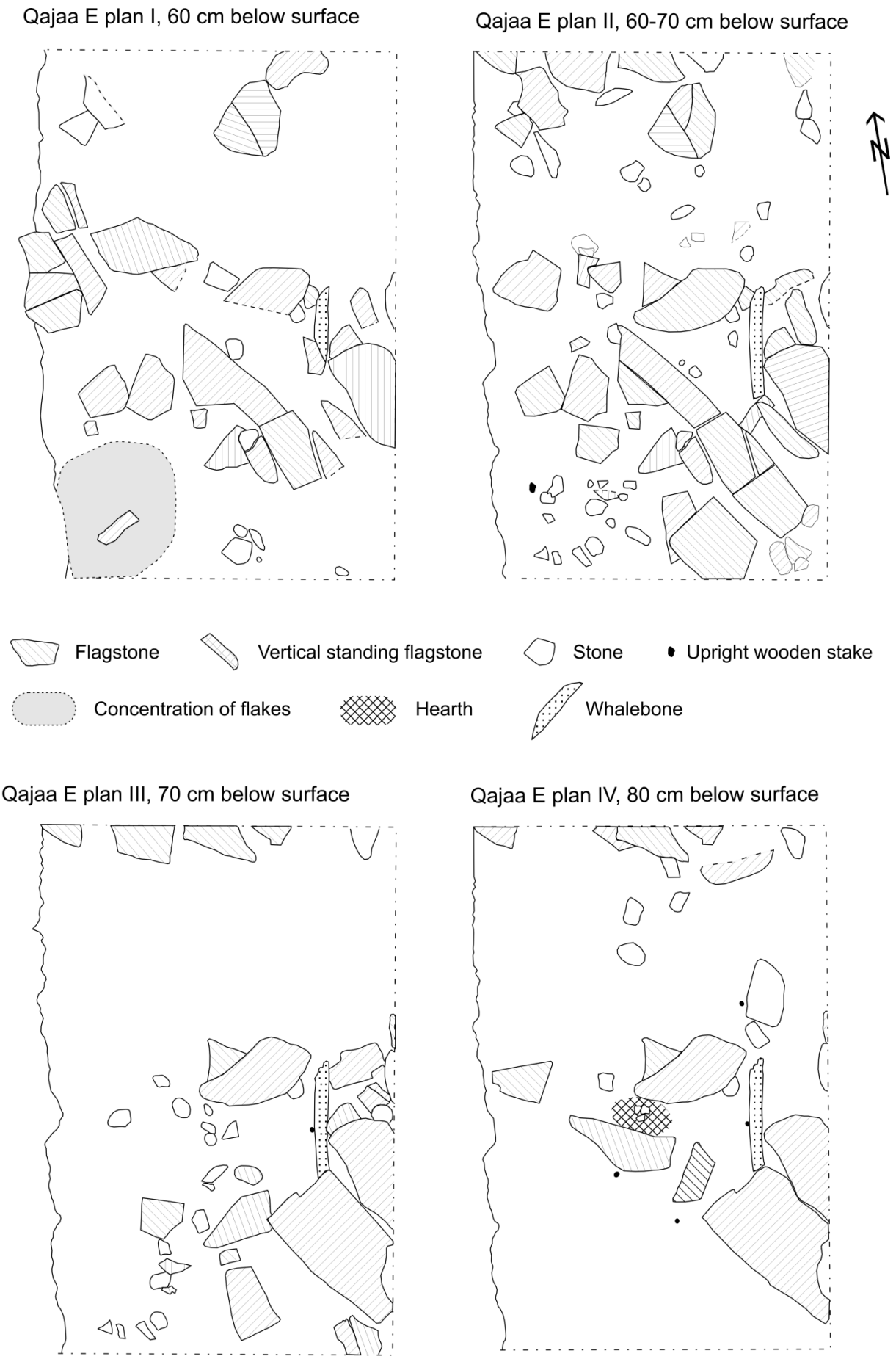


Fig 26. Horizons 1 to IV registered in area E.

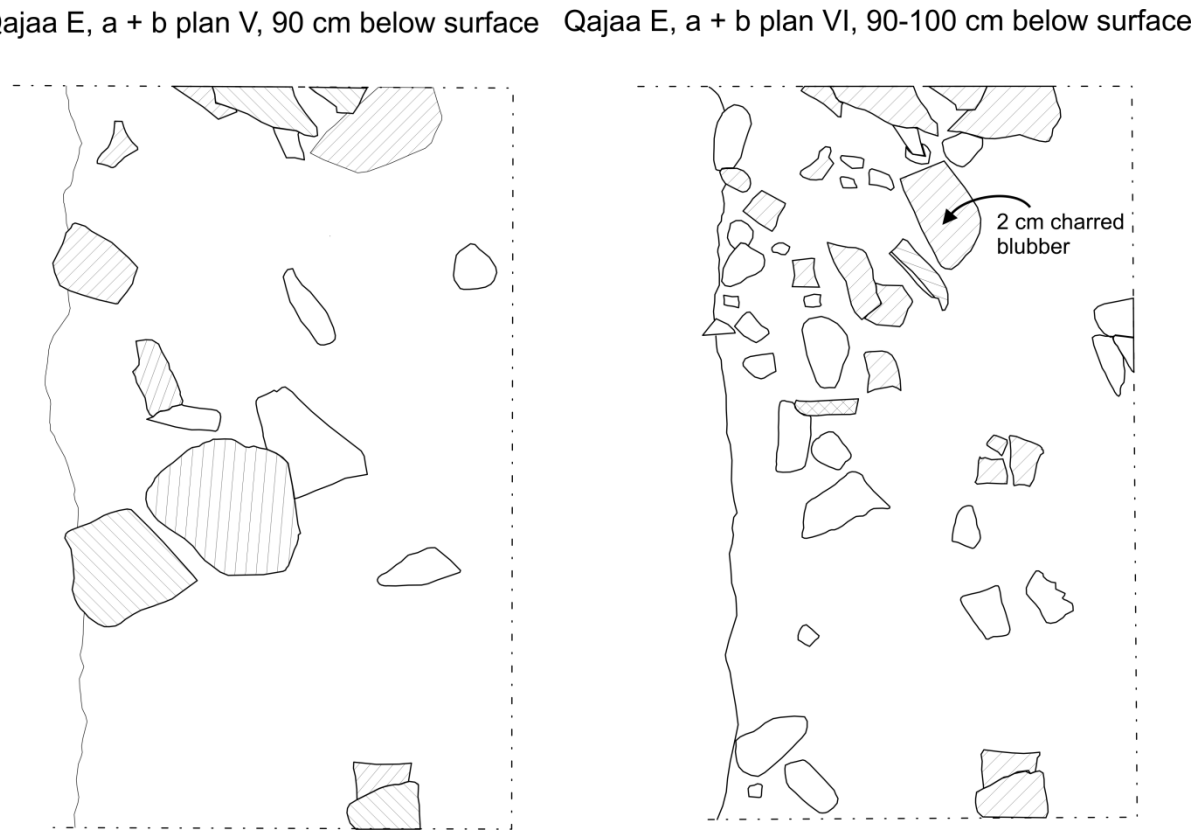


Fig 27. Horizons V and VI in area E.

Finds from area E

A graphic depiction of the total number of lithic artefacts in each 10 cm horizon has been attached to the sketch drawing of the section (fig. 24). This depiction show considerable variation in the quantity of lithic artefacts trough the Saqqaq horizons with the highest find densities in the horizons between 50 and 80 cm below surface, where the flagstone pavements and 'floor or activity-area' like deposits are most prominent. The depiction also shows significant change in raw material preferences when moving from Saqqaq to Dorset. The Dorset layer located 40 to 50 cm below the surface is thus dominated by chalcedony in contrast to the total dominance of killiaq throughout the Saqqaq horizons. The finds of organic material does not have provenience on their horizon within the Saqqaq layer. 88 wooden artefacts and 115 bone objects are from area E. Curiously all of the needles and needle preforms from Qajaa have been found in area E, where they make up 43 % (n. 49) of the 115 artefacts of bone. It thus seems likely, that a needle workshop was situated here. Furthermore there are

several other spectacular objects of wood and bone which wil be described in greater detail below.

Lithic artefacts from area E

Altogether there are 1848 lithic artefacts from area E. 210 are tools (microblades included) and the remainder is flakes (table 4). 19 tools and 98 flakes mainly made of chalcedony are from the Dorset horizon 40-50 cm below the surface. The remainder artefacts are from Saqqaq layers. The younger Saqqaq horizons 50-60 cm and 60-70 cm and 70 -80 cm below the surface have the highest artefact densities (se fig. 24 and table 4). This is true for the total numbers of

lithic finds from area E	Dorset	Saqqaq							
stratigraphic unit	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	Total
microblades	13	1	1		1	1			17
core / preform	1		1					1	3
arrow points		1	1	4	1	2	1		10
knives				1		1		1	3
harpoon blades			1	5	3		1	1	11
bifaces		5	8	10	7	7	4	2	43
burins		8	8	13	3	5	4	3	44
burin spalls		7	7	2	2				18
burin preform							1		1
burin like tool	3								3
scrapers		2		4		2			8
sidescrapers			3	4		1	1	1	10
retouched flakes		2	1	1	2	2	1	2	11
sideblades	1								1
axes		1		1					2
strike a light			1						1
pummice		1		4	3	1		2	11
whetstone	1		1	2	1				5
micelaneous		2	5	2					9
tools total	19	30	38	53	23	22	13	13	211
flakes	98	213	332	403	164	172	117	138	1637
total flakes and tools	117	243	370	456	187	194	130	151	1848

Table 4: Lithic artefacts area E.

tools and debitage but most significant for the tools alone. The uppermost Saqqaq horizons thus have three to four times the tool densities of the lower Saqqaq horizons. This variation in lithic artefact densities supports the general impression of the situation of the flagstone pavements and character of sediments (see fig. 26 and 27). The deepest part of the Saqqaq deposits thus

appears to be dominated by midden and refuse, whereas the uppermost Saqqaq layers are dominated by activity areas and living floors. When the number of lithic artefacts of killiaq is plotted against the number of artefacts of chalcedony / microcrystalline quartz as shown on the left side of the drawing of the section (fig. 24), it is clearly seen, that there are no gradual but an abrupt change from the killiaq dominated lithic industries of the Saqqaq culture to the lithic industry of Greenlandic Dorset where the fine grained white and often colourful varieties chalcedony are preferred.

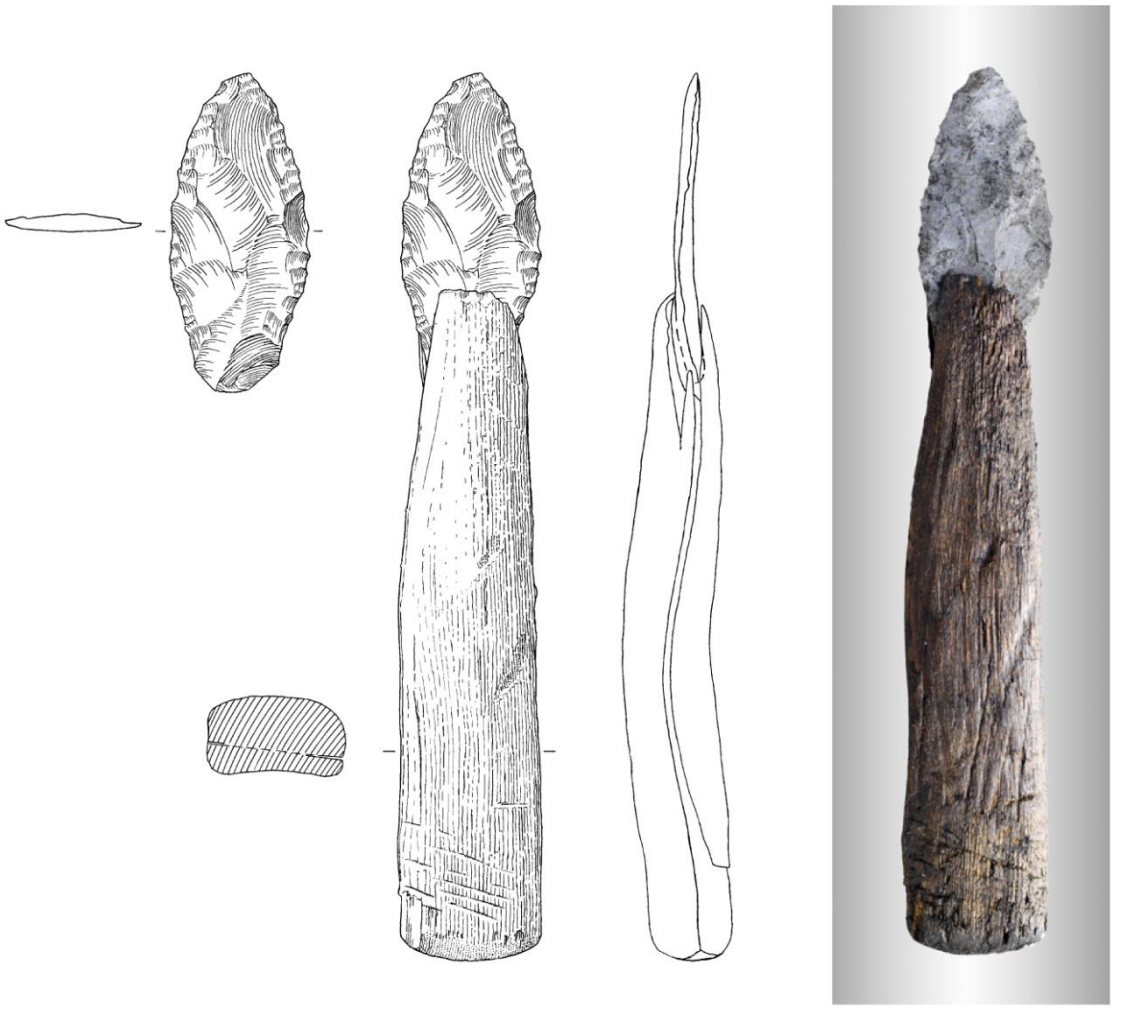


Fig. 28. Knife E237 with handle of wood.
Drawing: Pia Breinholt, Photo: John Lee.

Artefacts of wood, bone, antler, ivory and baleen.

Many artefacts of wood and bone have been preserved in area E: In spite of the lack of permafrost, area E is the excavation area with most bone artefacts (n.

115) as well as a fair number of wooden objects (n. 88). Among the more spectacular finds from area E is one well preserved hafted knife (fig. 28, E237) with a nicely crafted 12 cm x 2.5 cm wooden handle which is longitudinally split for the insertion of the killiaq blade. In addition to this there is one more knife shaft but without the associated blade as well as two other wooden handles for unspecified tools, three arrow shafts, one with a scarf, and 6 pieces of shafts of larger missiles such as darts or lances, and a bow limb. Most numerous are stakes (n 16) and shavings (n 15) and unidentified pieces of split wood, cut branches and similar uncharacteristic worked wood (n 44).

Several artefacts of bone and antler from area E deserve a more throrugh description: In comparison to all other excavation units the needles (n 31) and needle preforms and refuse from needle preform production (n 21) spring to the eye in area E. Even though most of the 31 needles are broken pieces, there are more than four times as many needles as was recovered from the excavations at Qeqertasussuk, where a much larger area was excavated. In addition to the needles there are also several pieces of needle preforms carved from gull bones (fig. 29). And not a single needle or needle preform was recovered from any of the other excavation units. Thus area E deserves to be titled 'the home of the needlemaker' as was indicated in the header of the descriptions of area E. The preforms and finished needles fit closely to the manufacturing principles outlined by Gotfredsen and Møbjerg (2004) for the needle production at Nipisat, with the only difference, that gull humeri appear to be the most common raw material at Qajaa where goose bones were more commonly used at Nipisat.

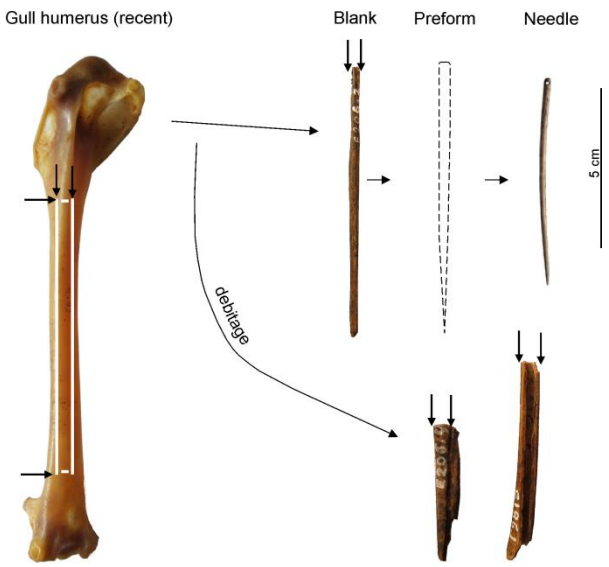


Fig. 29: Saqqaq needle production illustrated with needle preform, finished needle and waste products from area E. Inserted to the left is a recent gull humerus to illustrate the raw material used for the extraction of most of the needle preforms. From Jensen and Grønnow: in press.

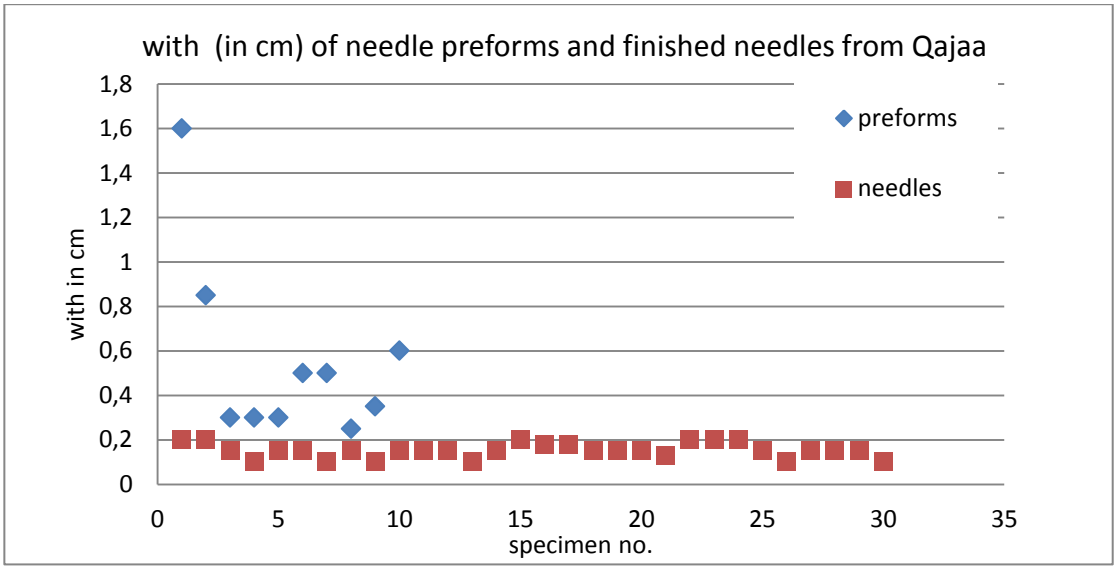


Fig. 30. Comparison of needle with and with of burin carved lists of bird or other thin walled bone. The very broad bone lists with with of 1. 6 or 0.8 cm must be intended for further sectioning

The thickness of the needle preforms compares nicely to the needles (fig. 30). Most preforms were carved out to a width just a half or one millimetre broader than the finished needle to minimize polishing. However a few bone lists are very wide, presumably they were intended for further sectioning. The many waste products and needle preform lists from Qajaa enables a detailed reconstruction of the needle manufacturing process (Jensen and Grønnow in press), which is very similar to the process documented by Gotfredsen and Møbjerg (2006) at Nipisat. After the needle was carved out with burin or microblade, the needle preform was polished with a whetstone with a narrow furrow such as the one shown on fig. 31, Ea 89-90 no. 10.

In addition to the needles are 17 pressure flakers, six harpoon heads, three of Qt type A (fig. 31, E233), one Qt type B or C represented by a pair of spurs broken off in a classical split from the harpoon blade bed towards the proximal end (fig. 31, E234) and two very well preserved Qt type C harpoon heads (fig. 31, E218 and E219). A very carefully cut miniature mask? Without any facial details (fig. 31, E214), the proximal end of a whalebone side prong for bird dart, and there is a proximal end of a missile shaft of a hitherto unknown type (fig. 31, E236).This missile shaft is carefully carved in whalebone. It has a diameter of

Fig 31. Selected artefacts from area E. Photo: John Lee.

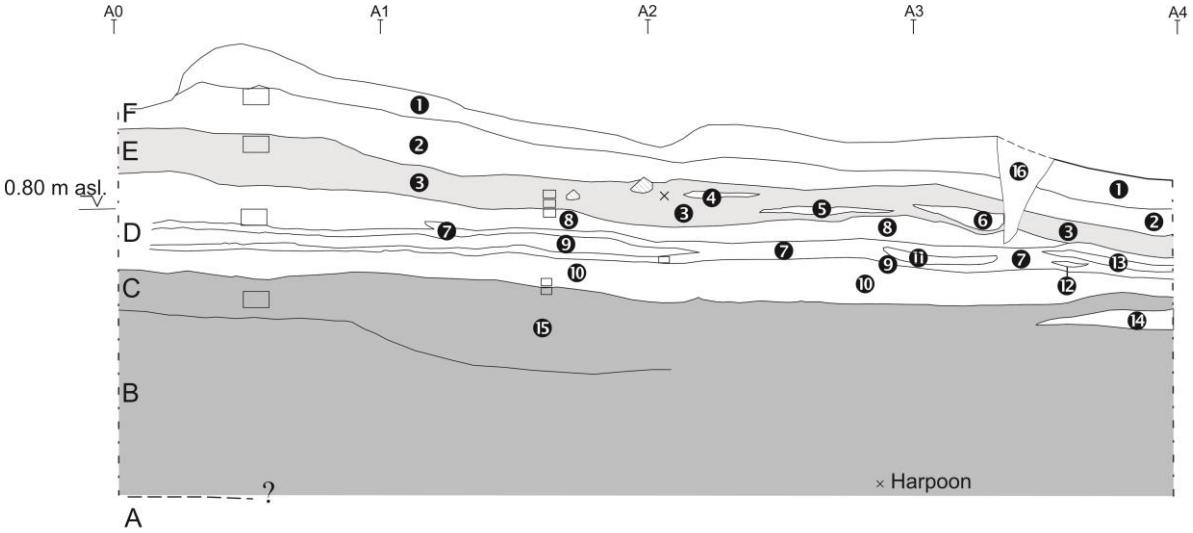
13mm and in the distal end there is a carved slot, where a little notch or hook of caribou antler is inserted. The exact propellant and mechanics of this type of shaft remain enigmatic, but the author suggest that this is the proximal end of

an atlatl propelled throwing dart. The dart may have been propelled by an atlatl similar to C78 (fig. 43), where a hole could form a sort of grip for the hook. Alternatively the hole might have anchored a specially formed socket or notch for this particular missile shaft. Among the 36 remaining objects of worked bone and antler are several burinated pieces of antler (fig. 31, E187). Some of these might well be waste products, but they tend to have lengths suitable for harpoon head manufacturing, and they should thus be regarded as formalized preforms rather than coincidental waste products.

Area A – The *prehistory of Greenland in one section*

Fig 32: Jeppe Møhl excavating section A

Section A is the 'main' section excavated at Qajaa. Section A is situated in the southern side of the same little gully where area E is situated on the northern side. The erosion front rises almost vertically from the shore to a height of several meters above sea level. Since the cliff is north facing it receives little direct sun and the midden layers stay frozen throughout the summer. Only a minor column was excavated in addition to the almost 4 m long section, and there are thus relatively few lithic artefacts from this area.



❶ Turf and grass
❷ Dark brown slightly decomposed peat with light brown more sandy horizontal lences
❸ Dark brown to black slightly decomposed turf with Dorset culture
❹ Brown sphagnum
❺ Light brown to yellow sphagnum
❻ Similar to ❺
❼ Similar to ❸ but without traces of Dorset
❽ Similar to ❺
❾ Darkt brown to yellow sphagnum
❿ Similar to ❾
⓫ Similar to ❾
⓬ Similar to ❾
⓭ Similar to ❾
⓮ Similar to ❾, but darker in colour, maybe due to seeping from covering layers
⓯ Dark brown decomposed humus peats, bone, wood, stone, feather and baleen.
⓰ Recent disturbance
Sample for radiocarbon dating
Dorset layers
Saqqaq layers

Fig 33. Section A with description of layers.

The Section was prepared along a four meter long erosion front (Fig. 32 and 33). At this particular place the stratigraphy is exceptionally well developed and preserved, presumably partly due to the permafrost, which has prevented the midden-layers from decomposing and collapse. Upon removal of the stones

and gravel on the shore below the cliff, Meldgaard realized, that peat and culture deposits continued below the foreshore, whereby a more than 190 cm deep stratigraphy was revealed. In the perma frozen midden layers bones and organic artefacts could readily be seen protruding from the naturally eroded cliff and a total of 22 samples of peat and twigs were taken out for radiocarbon dating of the deposits. The stratigraphy was characterized by 6 well defined layers numbered with letter A to F:

A) 0-17 cm

Resting on sterile gravel and bedrock. Permafrost hampered the identification of the 'bottom' throughout the section. The layer consists in black fibrous peat and humus with many twigs. No artefacts except for a few wooden pieces that might be modified.

B) 17-85 cm

Cultural layer (Saqqaq). Massive layer of black peat with bones, wood, twigs, grass fibers and lithic artefacts, debitage and modified bone antler and wood.

C: 85-100 cm

Black humus peat. In the lower 5-10 cm there are a few bones, wood and killiaq flakes.

D) 100-136 cm

Lighter brown sphagnum, two darker lines at 110 and 117 cm.

E) 136-157 cm

Dark decomposed peat. A few lighter lines.

F) 157-190

Similar to E but without the lighter lines. At the top is the grass turf.

A few bones present (16-17 hundreds).

G) Grass turf

The history of deposition.

Unfortunately, the deepest part of the midden has not yet been radiocarbon dated. The oldest date from area A is thus K3648 dated to 3430±85. Meldgaard characterized this dated peat sample as originating from 'sterile' layers below the Saqqaq deposits. However upon inspection of the section in 2009 Grønnow

concluded that the sample actually was taken from layers with Saqqaq artefacts. In accordance with this observation the cultural significance of the deepest radiocarbon sample from section A has been alternated from 'sterile' to 'Saqqaq' at the comparative chart of Jørgen Meldgaards sketches (fig. 58). A similar alternation has been made in relation to the radiocarbon samples dating the youngest Saqqaq layers. Here Meldgaard characterized sample K3649 as being taken from a 'sterile' layer, but another sample K3894 extracted from a slightly higher position in the same layer but two meter towards west was characterized as 'dating the youngest Saqqaq'. Therefore it must be concluded, that the youngest Saqqaq deposits probably are 'patchy' or irregularly dispersed on the site, at least when compared to the deeper massive Saqqaq deposits, which indicate that all parts of the locality was heavily occupied in the centuries from 3500 BP to 3000 BP. The Youngest Saqqaq date K3894 dated to 2700±75 is interesting because this dating calibrated to 884 ± 64 cal. BC indicates, that Qajaa was occupied during the youngest Saqqaq phases hitherto mainly documented at the Nipisat site in Sisimiut (Gotfredsen and Møbjerg 2004, Jensen 2006:183 ff). At Qajaa the young Saqqaq dating is supported by the findings of soap stone lamps and bevelled points – both types that are associated with the youngest Saqqaq layers at Nipisat and uncommon on Saqqaq sites in Disko Bugt.

After the deposition of the Saqqaq layers a 40 cm thick sphagnum peat developed. There are no finds in the sphagnum peat which appears to act as an insulating cushion over the deeper lying permanently frozen Saqqaq deposits. The formation of the peat results from a change in the local environment (Mortensen 2011). This to some extent may be related to the general climatic changes towards a cooler and moister climate in the northern hemisphere during the Holocene and Neoglacial, but the present author also believes it results from processes triggered by the human settlement and midden accumulation itself. The formation of permafrost in the rapidly deposited Saqqaq refuse layers could thus have formed a waterproof base resulting in the accumulation of run-off water on the surface. On the north facing slope such conditions could promote peat growth to such an extent, that

one can characterize the microenvironment of the midden and the covering peat layers as a positive feed-back mechanism, where initially the freezing of the midden supports the wet environment required by sphagnum, and where the sphagnum growth subsequently helps to insulate the midden from thawing and draining. Another consequence of the permafrost formation which may promote the growth of sphagnum is the freezing of the feritle midden layers which binds or inhibits plants access to nutrients resulting in the depleted environment favoured by sphagnum. However in the sphagnum layer there are two dark horizons with roots from dryer periods and eventually the sphagnum peat growth ceased. Heather vegetation superseded the dominance of sphagnum, and around 2200 B.P. a cultural layer from the Greenlandic Dorset developed on top of the sphagnum. Large quantities of crowberry (*Empetrum nigrum*) are seen in the Dorset layer and Mortensen (2011:5) suggest that it might have been added during episodes of clearing and rejuvenation of platforms in nearby dwellings. Deposition of peat continued until the present and the layer E below the present grass turf contains a few bones estimated to have been left by Inuit.

Saqqaq		
core / preform	4	38
arrow points	1	
knives	1	
bifaces	12	
burins	7	
burin spalls	4	
scrapers	3	
sidescrapers	2	
lamp / soapstone	1	
retouched flakes	1	
micelaneous	2	
flakes		238
total		276

Table 5 (left). List of Saqqaq artefacts from area A.

Dorset		
microblade	1	2
BLT	1	
flakes		3
total		5

Table 6 (above). List of Dorset artefacts from area A

Finds from area A

There are relatively few finds from area A due to the limited area excavated. However when the number of finds are compared to the areas excavated (table 10), it is clearly seen that area A is very rich in finds, and that the permafrost

have resulted in excellent conditions for the preservation of bone as well as wood, and that area A is the unit where relative most wooden objects have been recovered.

Fig. 34. Selected artefacts from area A. Line drawings: Pia Breinholt, Photo: John Lee.

Lithic finds from area A

A total of 40 lithic tools and 241 flakes have been excavated or collected from area A. 28 tools and 236 flakes are from excavated contexts whereas the remainder is objects that have dropped from the erosion front to the foreshore. Lithic tool category frequencies are shown in table 5 and 6 where the single

finds are included as well. The limited quantities excavated from specific strata does not allow for meaningful statistics on the variation of raw material frequencies in the different horizons but the very few Dorset tools demonstrate the limited intensity and duration of Dorset, that also is reflected by the relatively thin Dorset layers seen in the drawing of the section (fig. 33).

Artefacts made of wood.

A total of 182 artefacts of wood have been recovered from area A. When this number is compared to the area excavated of less than one square meter, it becomes evident, that very large amounts of wood are preserved in area A. Area A is thus the excavation unit where most wooden artefacts were recovered in relation the volume of excavated earth (table 10). So the permafrost which prevented Meldgaard from excavating more square meters certainly has its positive effect on the preservation of organic materials.

Among the wooden objects are 16 arrow shafts, one is the proximal end of an arrow with notch (fig. 34, A18), five ribs for vessels (A19 is shown in line drawing at fig. 34 and photo fig. 35), three foreshafts for light lances (Grønnow type 2 foreshaft), these are though not identified on their characteristic proximal end but identified on the flat cross section and ornamental line. One (A25,13) is shown on fig. 34. In addition to these there is one more foreshaft with blade bed for a heavy tool and 12 pieces of shafts heavier than arrows i.e. with diameter of 11 mm or more. Two pieces of drum frames, two burins handles, the one is made from a recirculated foreshaft with ornamental line, and two handles for knives, but the most commen categories are (as usual) the shavings (n. 52) one of these numbers does though account for a bag with ‘many’, stakes (n. 22), two with a scarf, and unidentified pieces of worked wood and sticks (n. 64).

Fig. 35: Boat rib A19. Photo: Bjarne Grønnow

Artefacts of bone antler and ivory

Among the more spectacular finds is a walrus tusk lance blade (fig. 34, A6) similar to specimens from the Nipisat site (Gotfredsen and Møbjerg 2004), a very delicate arrow point foreshaft of bone with blade bed and ornamental line (fig. 34, A36), and a caribou antler 'bar' or block (fig. 34, A33), which is one out of four raw material bars of caribou antler, one raw material bar of whalebone and two raw material bars of ivory. In addition to these objects are 2 harpoon heads, 2 pressure flakers, one bodkin, one foreshaft with a scarf, and an ivory wedge (fig. 34, A41). Four bird bones, three pieces of bone with burin groves, two feathers, one baleen spatula, and four pieces of baleen, one of these is line with a knot, and one piece of unspecified bone.

Fig. 36: area B as it appeared in 2009. Note the partly overgrown remains of testpit from 1982 in right side of picture. Photo: Bjarne Grønnow.

Area B

Area B is situated 15 m to the southwest of area A. Two minor sections from the lowest part of the erosion front were documented in sketch drawing and samples were collected for radiocarbon dating. However as can be seen from Meldgaards comparative chart of Qajaa sections (fig. 58), the layers covering the deepest Palaeo-Eskimo deposits were not documented. At this particular place, the west facing cliff collapses in steep grass covered slopes towards the sea, and only the lowest meter stand as a vertical erosion front.

The lowest part of the erosion front was thus excavated to at depth interpolated by Meldgaard to be 235 cm. below the surface. Two main components could be identified: At the bottom, a 30 cm thick (cultural) layer of black to dark brown decomposed, but still fibrous peat resting on a substratum of gravel and stones. There are numerous bones (seal, whalebone and bird bones). The approximately 30 cm thick 'bottom layer', rests on gravel and it was partly hidden below gravel and stones at the foreshore. Above the 'bottom layer' are a 205 cm thick layer of fibrous sphagnum peat with numerous alternating horizontal layers of light brow and dark brown sphagnum peat all the way to the present vegetation. Three test pits of 50 x 50 cm were excavated in front of the eroded cliff, but only a few artefacts recovered. In this part of the Qajaa site the soil deposits are collapsing and sliding on to the shore in steep grass covered slopes (fig. 36). These erosional processes might have been active or beginning already during Dorset time and thus discouraged the settling in this particular part of the site, but there are no observations to support such guesses.

Finds from area B

The limited excavation carried out in area B has resulted in very few finds, only two flakes are thus registered from the test pits in area B.

Fig. 37. Helge Larsen, Hans Lange and visiting Nikolaj Eriksen excavating in area C.

Area C - *the hunters pouch*

Area C is an approximately 2.75 m^2 large excavation unit in the southern part of the Qajaa site near excavation unit F. At this place the cultural layers and recent turf form a 115 cm deep deposit. In the uppermost layers there were some flagstones believed to have been left by Inuit in the 17th to 18th century, and at a depth of 20 to 40 cm there were fist sized fire cracked rocks as well as soot and charcoal assumed to be a hearth. Below the concentration of fire cracked rocks and ashes were some flagstones at a depth of ca. 60 cm (fig. 38). Larsen assumed the flagstones were part of a hearth.

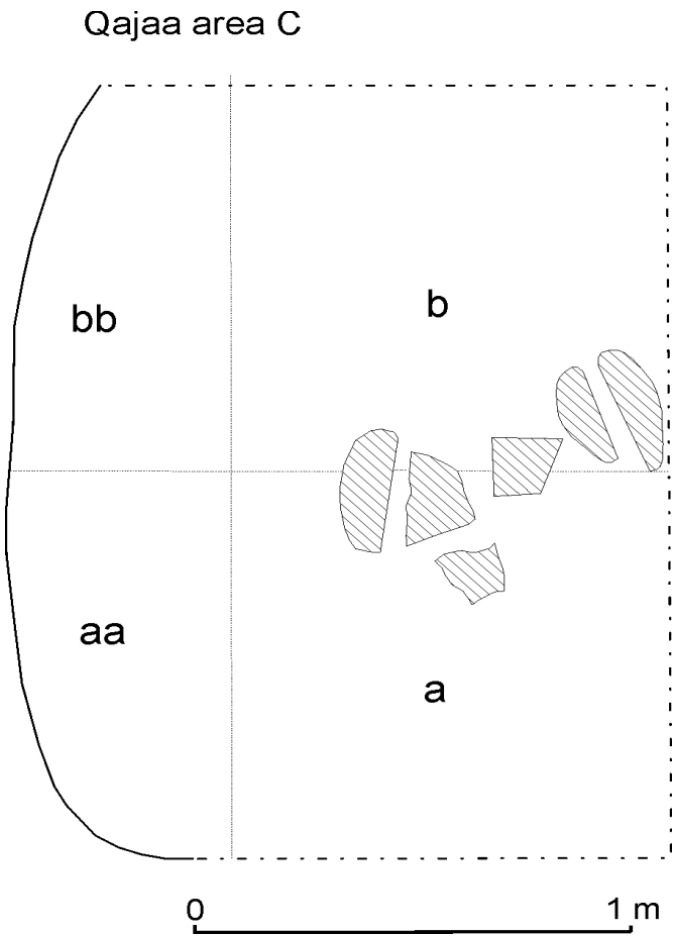


Fig. 38. Plan drawing of flagstones in 'floor layer' approximately 60 cm below the surface.

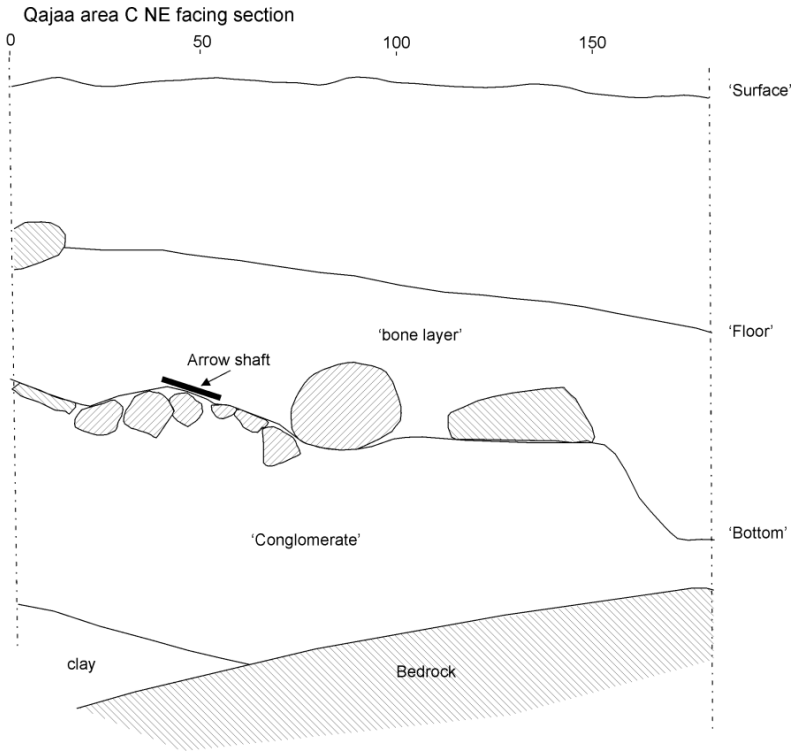


Fig. 39. NE section area C.

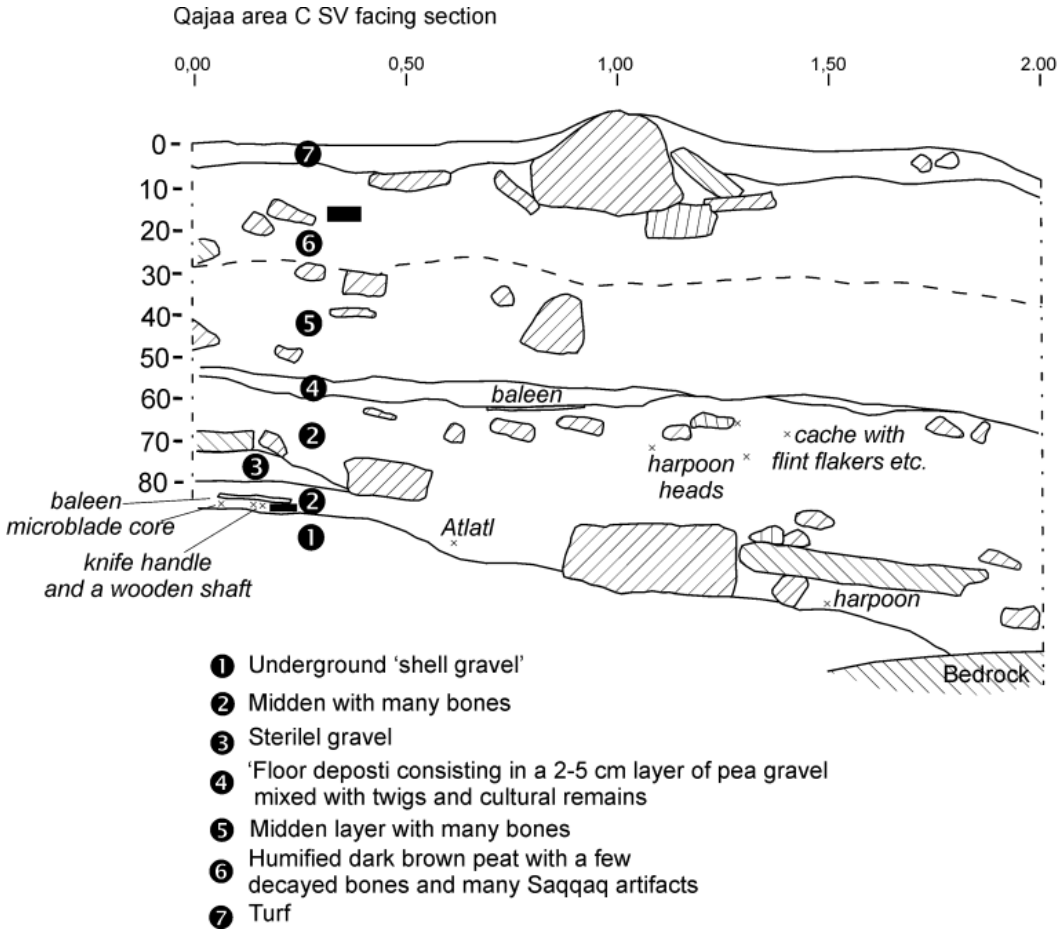


Fig. 40. Section SV area C

Sections area C

In the erosion front Meldgaard initially noticed a substratum of compact gravel, over layered by a 90 cm thick midden layer, rich in bones and with lithic artefacts of Saqqaq type, and at the top, 15 – 20 cm peat with some stones, presumed to have been left by occupants in the 16-17 hundreds. However the clearing of the section revealed a more detailed stratification (fig. 39 and 40): The lower 25 to 30 cm (layer 2) of the Saqqaq deposit is thus characterized as 'midden with many bones'. Then follow layer 4, a thin up to 5 cm thick deposit of pea gravel mixed with twigs and cultural remains which was characterized as a 'floor horizon'. Layer 5 is over layering the 'floor', and it is similar to layer 2: 'Midden with many bones'. The uppermost 20 cm of the Saqqaq deposits are layer 6 -, which has no clear separation from layer 5: Humified dark brown peat with a few decayed bones and many Saqqaq artefacts. Layer 6 is a stratification resulting from the less favourable conditions of preservation of organic materials rather than changes in the depositional history. The well-developed floor horizon approximately in the middle of the Saqqaaq midden deposit corresponds closely to the 'platform' or 'dwelling layer' documented at a depth of 55 to 70 cm in the nearby area F approximately 10 m further south.

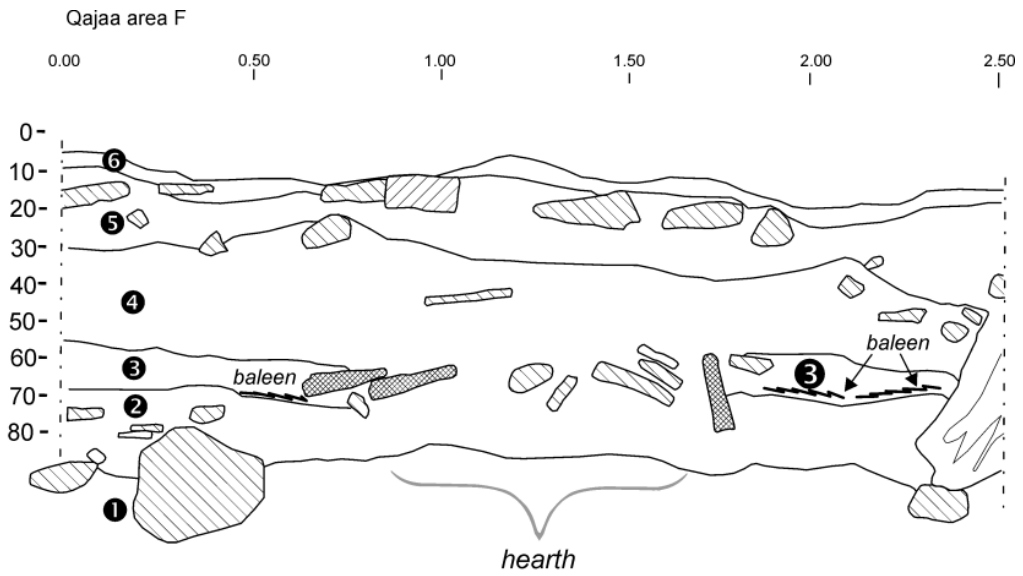


Fig. 41. Section area F.

The sections from Unit C and F (fig. 40 and 41) thus have many similarities, and the proximity of the two units makes possible that the deposits in area C and F also have similar depositional histories or even a shared settlement history.

Finds from area C

Area C is rich in artefacts and several of the more spectacular items are plotted at the section drawing. The lithic artefacts amount to 127 tools and 530 flakes (table 7). Lithic artefacts were documented in four different stratigraphic units: 1) 1-40 cm below surface, 2) 40-60 cm below surface, floor layer 60-65 cm and 65-120 cm below surface. In addition to the artefacts from these systematically excavated horizons there is a minor number of stray finds collected from the foreshore below the erosion front at area C. No Dorset objects have been identified in the lithic inventory.

Artefacts of wood

Among the well preserved wooden artefacts there is a light lance (Grønnow type 2 foreshaft) (fig. 42, C95). 15.5 cm of the foreshaft is preserved, the distal end is broken off, but the proximal end is complete with the characteristic wedge shaped base with a rivet hole. C93 is a nicely worked dart distal end with blade bed, and C99 is an 11.5 cm long broken piece of a drum frame. The frame piece is difficult to identify since it is also split longitudinally. However the carefully worked upper edge is well preserved and the groove for holding the drum skin in place is also identifiable. C89.4 is another but more gracile drum frame. This 11.5 cm long broken piece is 12 mm wide and just 0.8 mm thick. However similar to the other drum frames there is a flattened upper edge and a grove carved along the central axis of the ring for the fastening of the drum skin. The smaller size of this specimen indicates that probably the Saqqaq drums were made in several sizes ranging in diameter from ca 40 cm to 80 cm. The remainder wooden artefacts are three pieces of boat frames, nine arrows, three foreshafts, four pieces of spoons / ladles, two bird darts (three winged shafts), 12 shafts, three of them with a scarf, three knife handles, 24 stakes, three shavings, one peg and 12 sticks or unidentified pieces of worked wood.

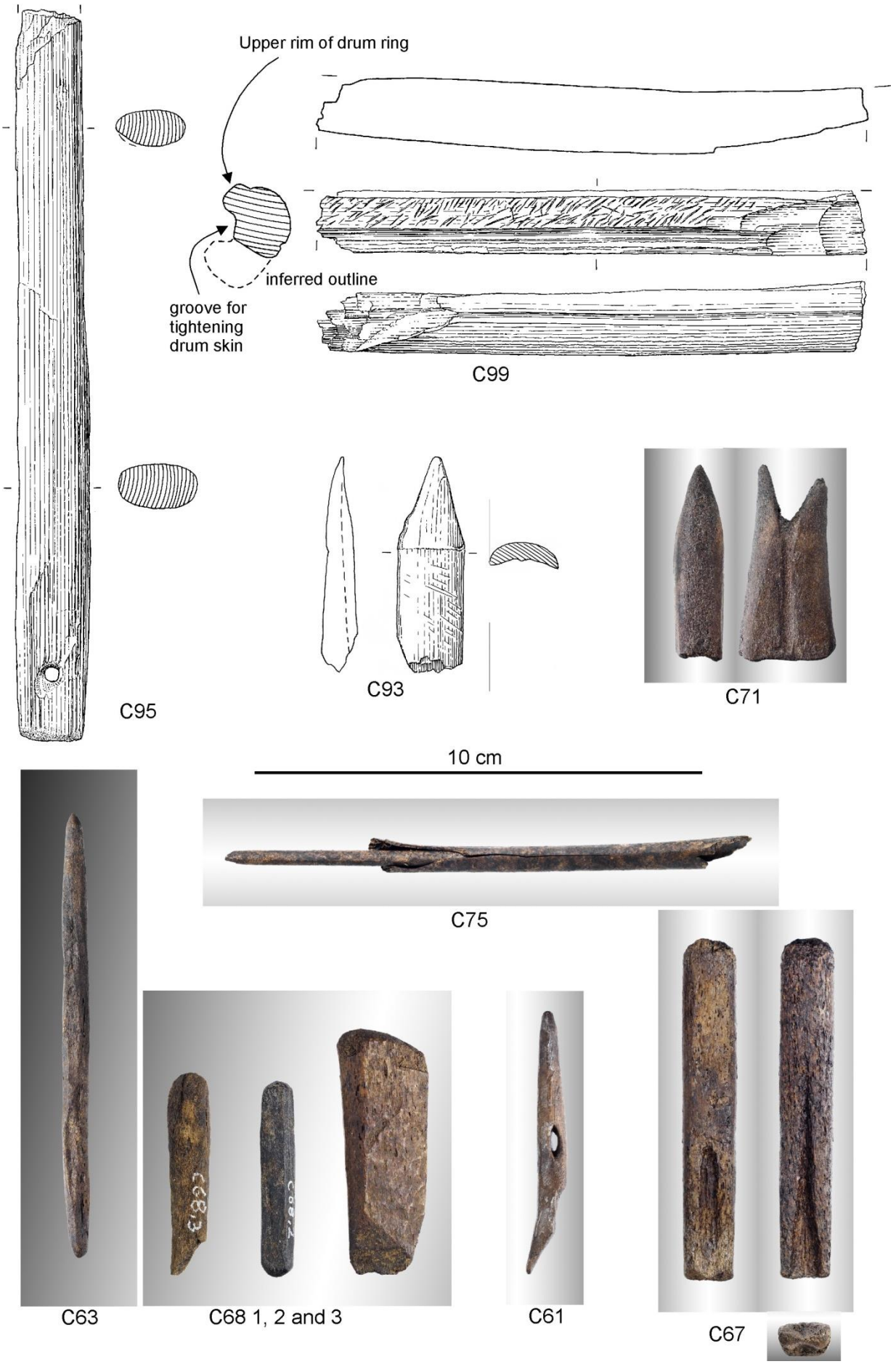


Fig 42. Plate with selected artefacts area C. Line drawings: Pia Breinholt, Photo: John Lee.

Fig 43. Plate with selected artefacts area C. Line drawing: Pia Breinholt, Photo: John Lee.

Table 7. Lithic artefacts from area C.

Saqqaq	1-40	40-60	60-65	65-120	strayfinds	total
microblade core				1		1
core / preforms	4					4
knives	6	1		6	1	14
arrow points	4		1		1	6
harpoon blades	5					5
bifaces	21	3	2	1		27
burins	11	2	1	3		17
burin spalls	2					2
burin preform				1		1
scrapers	2	4	1	3		10
sidescrapers	2		1	2		5
retouched flakes	7	2	2	5		16
axe				1		1
micelaneous	2		1			3
whetstones	9					9
miniature soapstone lamp	1					1
pummice	2	2		1		5
total	78	14	9	24	2	127
flakes	220	114	45	147	4	530

Artefacts of bone

A total of 55 artefacts of bone are preserved from area C. Among these there is the unusual collection of artefacts cached in a hunters pouch (see below) but

Fig. 44. Whale bone bar or raw material for the production of a shaft or for example side prong for bird dart. Photo: Jens Fog Jensen

also three atlatls (fig. 43) or spear throwers of whale bone. Cb 105 and C70 are made after the same basic principles: A grove is carved out in the length of a whalebone plank, and an antler or bone pin, which has the purpose to secure a firm grip in the proximal end of the missile, is inserted in in the distal end of the atlatl. The proximal end is missing at both specimens, so the shape of the handle remains unknown. Cb 105 is the best preserved of the two, and this atlatl is 3 cm wide and 13 mm thick and with a smooth curved dorsal side. The

concave ventral side has a 13 mm wide furrow in almost the entire length of the specimen, but distally the furrow stops in an abrupt step 27mm from the end. In this 'step' a little pin of caribou antler have been inserted by carving an elongated wedge shaped groove, so that the pin is held in place but still protrude a few millimetres from the whalebone surface. C70 is a slightly reworked distal fragment of a whalebone atlatl of similar general type as the abovementioned, even though it has a broader groove for the insertion of the pin gripping into the end of the projectile. The third atlatl or 'possible atlatl' is of a different design but with some similarities as well. The 28 cm long whalebone atlatl is broken proximally where several eyelets meticulously have been carved out along the lateral sides. Similar to C70 and Cb 105 it has a slightly smooth curved dorsal side and a concave ventral side. However in contrast to the U-shaped furrow seen on the two other atlatls this specimen has a more V shaped hollowing in the entire length of the specimen. Distally there is no step or pin to form a grip on the missile, but an oblong hole, which indicate, that if this really is an atlatl, then it is likely to have propelled projectiles with different proximal end designs than those used with the earlier described types of atlatls.

Fig. 45. Hunters pouch during excavation. Pressure flakers, antler tube and birds bill is readily visible.

In addition to these well preserved bone atlatls there are seven harpoon heads., C61 (fig. 42) is a well preserved harpoon head of Qt type A. One preform for harpoon head Qt type B (fig. 47), 16 pressure flakers (fig. 42, C68, 1, 2, 3), four pieces of worked whale bone, two of them are nicely prepared bars (fig. 44), three bodkins, three insert bird bones (fig. 42, C75). The function of these remain enigmatic even though they are common on Saqqaq sites with preserved organic material, and they are known as far away as from Ipiuitaq in Alaska (Larsen and Rainey 1948: Plate 27). Furthermore there are four pieces of baleen line, three of them with knots, two antler tubes of which the one (C71) is a preform that have not been hollowed out, and the other is the antler tube holding harpoon blades, that was found in the hunters pouch. Three foreshafts, one whalebone proximal end for a dart (fig. 42, C67) of similar type as E236 (fig. 31), two side prongs for bird darts, the one a preform, the other broken and discarded, one 'blade support' shaft, one preform for pressure flaker, one 'boot creaser', one piece of worked antler, one piece of worked walrus tooth and a piece of unidentified worked bone.

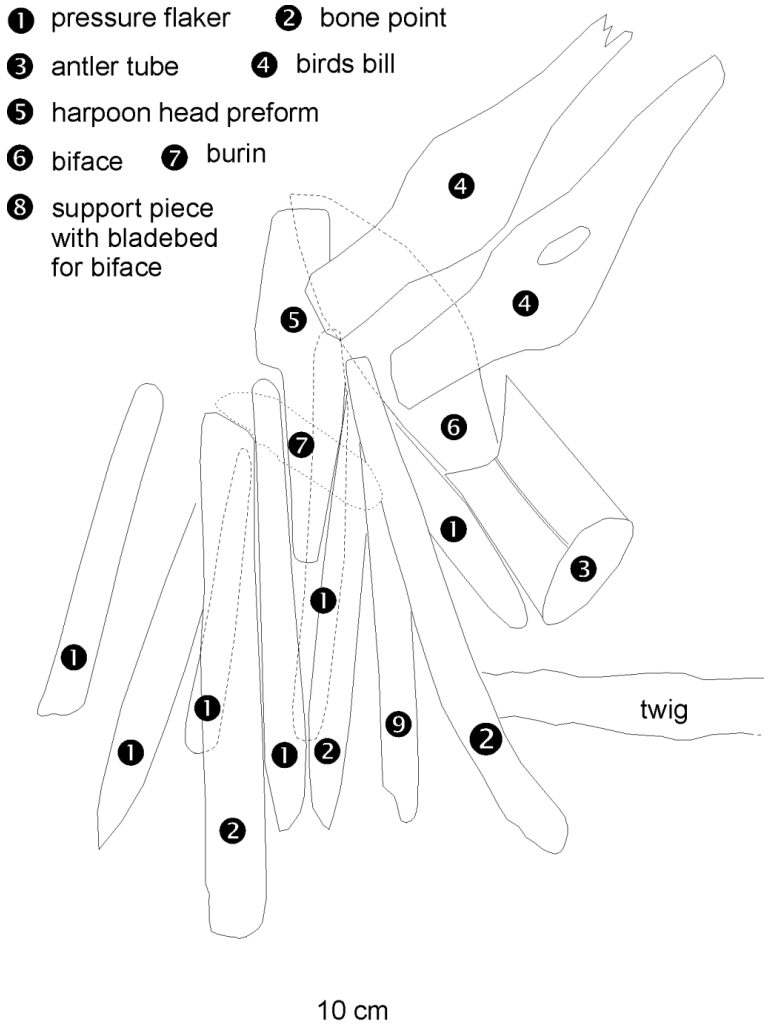


Fig. 46.
Hunters pouch in line sketch. The object categories are marked with numbers. The harpoon head preform (no. 5) is shown in detail in fig. 47, and the antler tube with harpoon blades in X-ray and detail in fig. 48.

The hunters pouch.

A cache of pressure flakers and several other tools was found in a little heap within a 15 x 15 cm large area in the floor horizon (layer 4). The cache is believed to be the contents of a hunters pouch. All of the artefacts were lying as if they had been left tightly wrapped in skin, and below the heap were the partly decomposed remains of the skin pouch. The pouch contained: six pressure flakers, an antler tube containing three harpoon blades, a preform for a harpoon head, a shaft support piece with blade bed, a bone preform for a side prong, a burin, a bifacial blade and a bird's bill (fig. 45 and 46). This unique find gives a good idea of how preforms and spare parts and talismans (the birds bill) were kept close at hand by the Saqqaq hunter, and the enigmatic function of the antler tubes is revealed. Inside the antler tube there is a now conserved substance believed to be leather. In this matrix there are three harpoon blades (see fig. 48), nicely packed as they would sit if they were wrapped in a thin piece of leather and then inserted into the protecting antler tube.

Fig. 47.
Harpoon head preform from the hunters pouch.

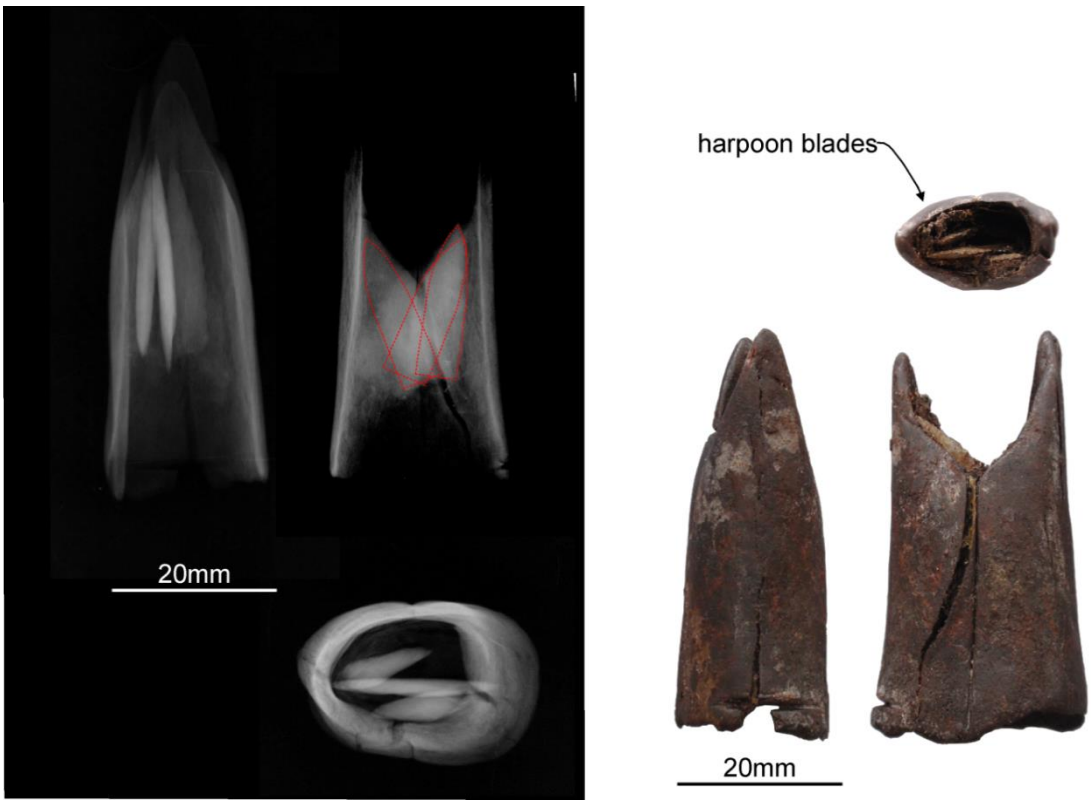


Fig. 48. Left X-ray of antler tube with three harpoon blades of killiaq inside. X-ray by Signe Nygaard . Right the antler tube C113 with harpoon blades visible. Photo: Jens Fog Jensen

Radiocarbon dates from area C:

Tree samples from area C have been dated. K3904: 3550±85, K4104: 3540±80 and K3905: 2910±75, giving calibrated dates of 1896±114 BC, 1883±106 BC and 1124±112 BC. The two first dates are in the the 'earlier' centuries of the Saqqaq culture, whereas the last one is in the younger but not youngest part of the Saqqaq continuum. The early dates of the midden deposits indicate, that the accumulation of Saqqaq middens in area E, A, C and F must have occurred simultaneously and consequently that large portions of the Qajaa site must have been occupied by several dwellings that most likely also was inhabited at the same time by several families.

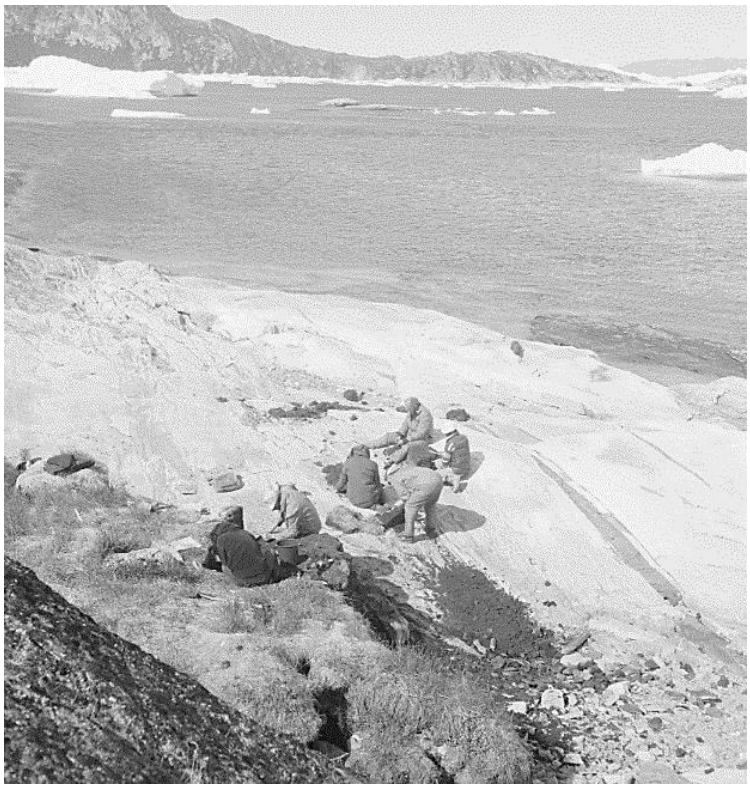


Fig. 49. Excavation in progress in area C.

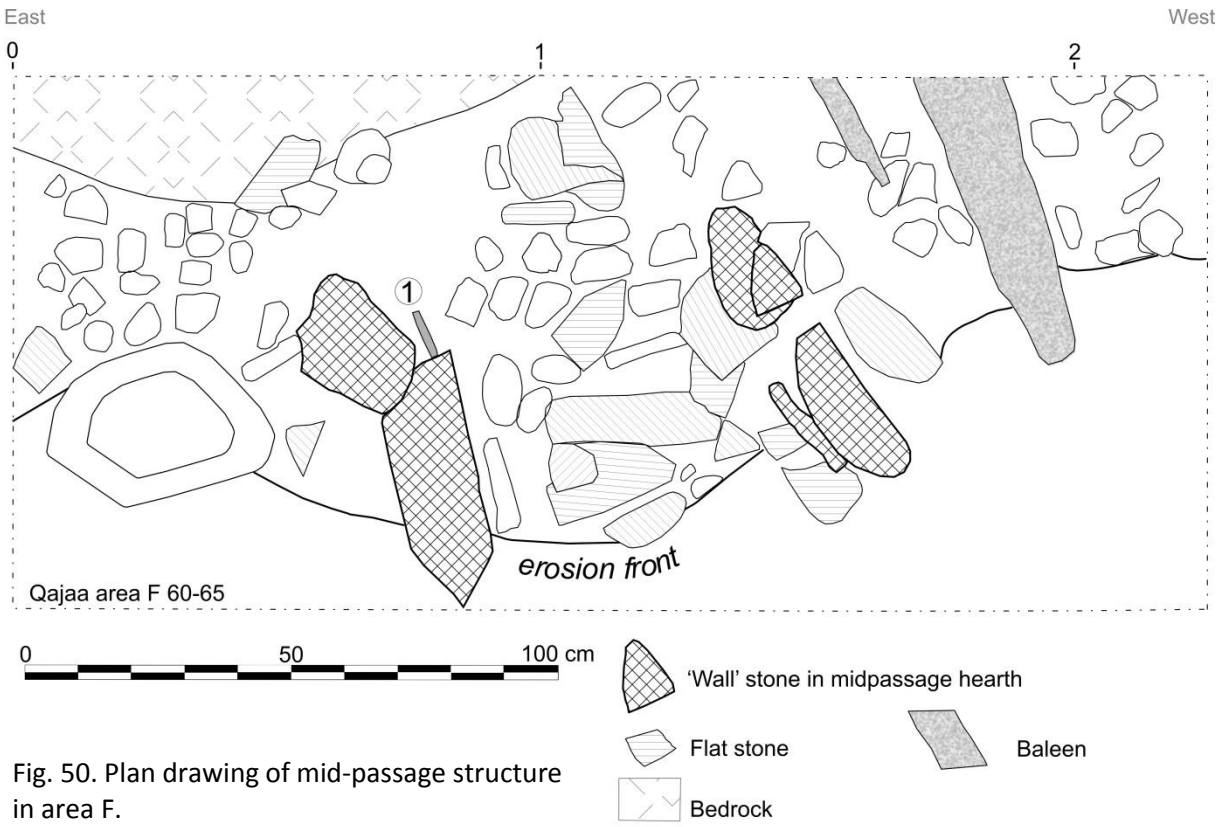


Fig. 50. Plan drawing of mid-passage structure in area F.

Area F – *a mid-passage dwelling*

Area F is a less than 2.5 m² large area situated in the southernmost part of the Qajaa site. The northern part of the excavated unit is delimited by the eroded brink so that well preserved culture layers only were preserved in approximately ¾ of the 2.25 x 1 m large excavation unit. Centrally there is a well preserved mid-passage hearth and adjacent platforms of heather were excavated at a depth of 60 to 65 cm below the present grass turf surface (see fig. 41 and 50). An approximately 1 m long section of the mid-passage was preserved, and it is not clear whether it is the rear or front part of the structure, that was documented. However the presence of bedrock in the back (see fig. 50) or southernmost part of the 2 ¼ m² excavated area indicate, that the excavated feature is the rear portion of a mid-passage where the front half have been eroded by the sea. At this particular place the eroded brink is oriented east-west, and the 1m long preserved part of the mid-passage is placed perpendicular to the eroded brink. The sides of the mid-passage is set by up to ca 50 cm long oblong flagstones, one at the western side still standing upright, whereas the remainder have fallen inwards. Along the sides of the mid-passage there are distinct platforms of twigs

and grass partly placed on sheets of baleen (see fig. 50). A hafted knife (fig. 53, F291) was found in the eastern side of the mid-passage. Only part of the once larger mid-passage was preserved, yet there are several architectural features resembling the hearth and platform features documented at Qeqertasussuk. The close resemblance between the hearth and associated platforms and the feature A8 at Qeqertasussuk indicate that indeed this is a standardized dwelling type.

Fig. 51. Helge Larsen and Jørgen Meldgaard excavating area F. Photo: Jeppe Møhl.

Section F

Similar to the nearby section C the turf and midden deposits constitute an approximately 90 cm thick layer resting on gravel with some shells. However, also similar to area C there is a separate horizon around 55-65 cm below the present surface, which at this place is the debth of the floor and platforms

associated with the mid-passage dwelling (fig. 41 and 50). Several hafted knives and meticulously manufactured wooden artefacts were found in or near the mid-passage hearth or in the 'floor' horizon. The turf layers covering the mid-passage structure are coined 'bone midden' indicating that the abandoned mid-passage structure have been covered by refuse.

Table 8.
Lithic artefacts from area F

Saqqaq F	0-40	40-60	In and below hearth	total
microblade		1		2
microblade core	1	2	1	4
core / preform	1			1
knives	5	1	2	8
arrow points	2			2
lance and throwing darts	7			7
Harpoon blade		1		1
bifaces	12	4	2	18
burins	8	3		11
scrapers	3	1		4
sidescrapers	7	3		10
axes	1			1
saw	1			1
retouched flakes	7	1		8
drill			1	1
micelaneous	2	1		3
miniature soapstone lamp	2			1
whetstone			1	1
total	59	18	7	84
flakes	537	124	46	707
tools and flakes total	596	142	53	791

Lithics: Altogether there are 82 tools and 707 flakes from area F. The finds were documented and collected in a 40 cm thick unit labeled F 0-40 and a deeper unit named F 40-60, and finally a minor fraction of artefacts associated with the hearth or excavated from below the hearth was labeled as 'in and below hearth'. Among the more spectacular finds are two miniature soap stone lamps. One is oval 8.7 x 2.9 cm and fragmented the other circular with a hole in the bottom (fig. 52). In spite of the lack of permafrost there are many well preserved objects of bone and wood. Altogether there are 25 artefacts of bone and 36 of wood. Among the finds are several well preserved hafted knives, some of which was found in direct association with the midpassage structure,

Fig. 52 . Miniature soap stone lamps from area C. Photo Jens Fog Jensen.

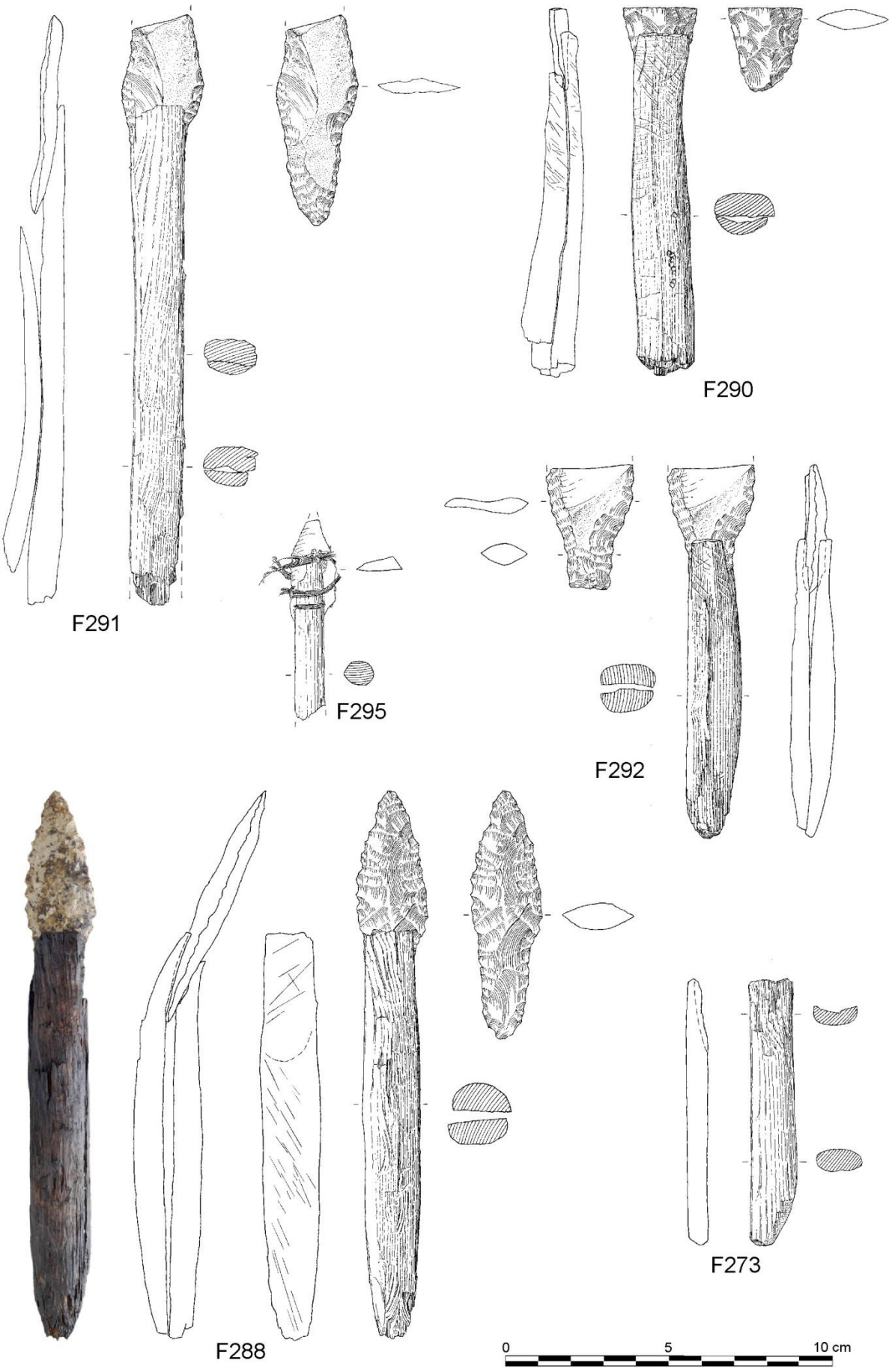


Fig. 53. Plate with knives with shaft from area C. Line drawing: Pia Breinholt, Photo: John Lee.

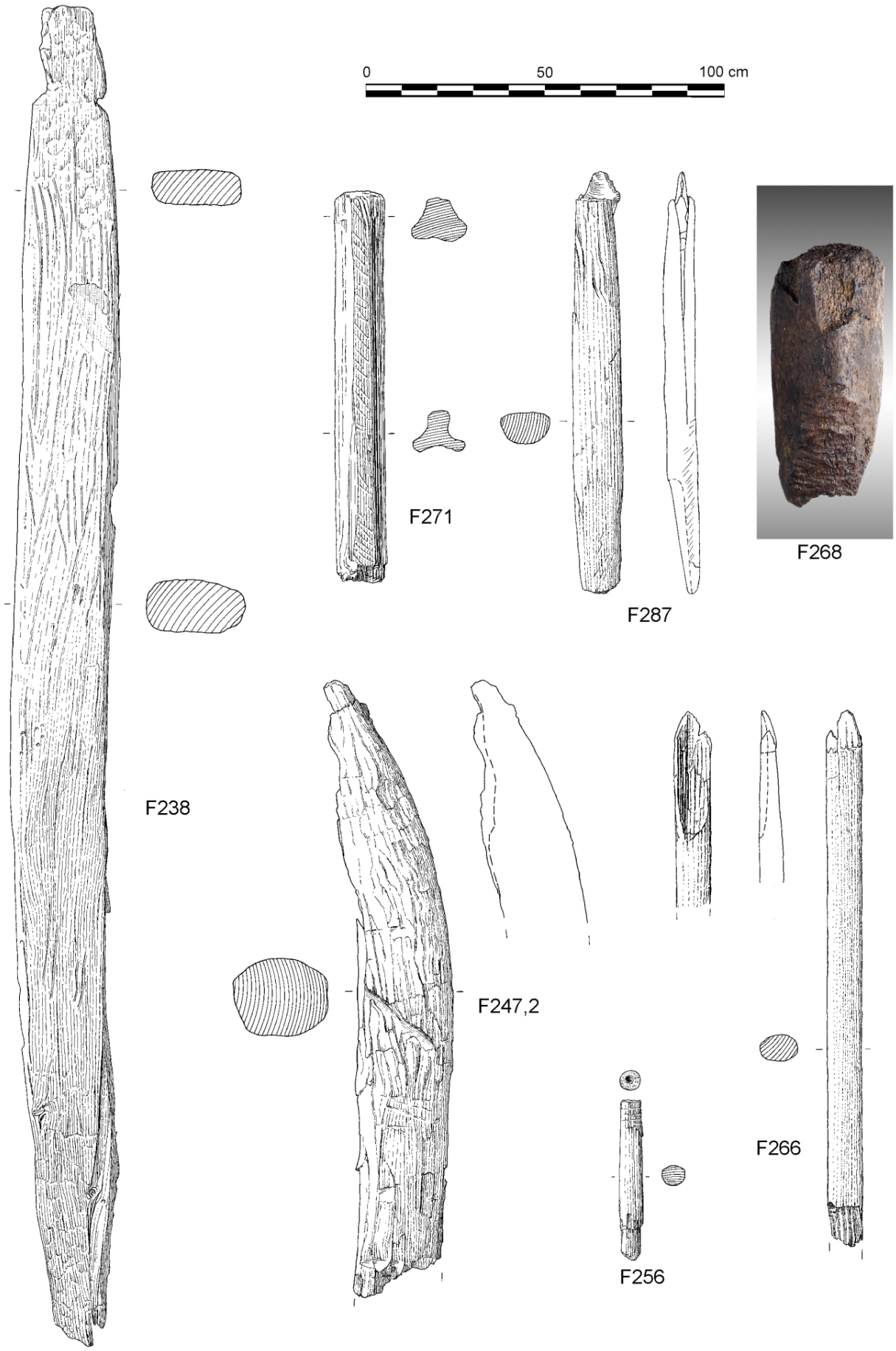


Fig. 54. Selected artefacts area C. Line drawing: Pia Breinholt, Photo: John Lee.

Artefacts of wood: There are several unusual and spectacular finds among the 64 wooden artefacts from area F. F288, F290, F291 and F292 (see fig. 53) are well preserved hafted knives, the first mentioned has a complete blade whereas the three last-mentioned have broken blades of killiaq. All the hafts are made after the common principle for the production of Saqqaq knives where the handles are longitudinally split in two halves that are tied up tightly to hold the knife blade in place. None of the knives have the lashing preserved, but F290 have visible marks from the lashing. In addition to these there are three more knife shafts and a handle for a sidescraper or burin without the associated blades, and F273 (fig.53) is a little shaft maybe for a burin. F295 (fig. 53) is a miniature knife with a shaft made from a reused arrow shaft and lashing of baleen. F238 is a bow limb (fig. 54) which was recognized as part of a bow already during excavation due to the presence of two laterally placed notches in edges ca. 2.5 cm from the distal end of the bow limb. The cross section of the 37.5 cm long bow limb is rectangular 2.8 cm wide and 1.4 cm thick. There are many marks from the working of the surface, yet the specimen appears somewhat expedient or unfinished. Another unusual find is a wooden handle for a pressure flaker (fig. 54, F247,2). This 17 cm long handle is made from a sturdy 2.4 cm thick stick with a point towards the distal end, where a groove or bed have been carved out for the insertion of the bone or antler pressure flaker. F256 is a 44 mm x 7 mm shaft with circular section. Distally the little shaft has marks from lashing and a minute hole as if it was made for the insertion of a needle (fig. 54). F266 is the best preserved of three arrow shafts. It is a 15 cm long and 10.7 mm wide piece of the distal end of an arrow with blade bed. F271 (fig. 54) is a well preserved distal end of a bird dart or 'three-winged foreshaft'. There are clear marks of the lashing holding the side prongs in place. Proximally the shaft is broken, and distally the shaft is cut off giving the shaft a blunt end. F287 (fig. 54) is a hafted burin. The wooden haft (l.: 110 mm; w.: 14 mm) was made from a reused foreshaft or shaft piece from a dart. In the proximal end there are remnants of a scarf originating from this former use. In the distal end the haft is split, but it remains in one piece, and the almost completely exhausted killiaq

burin was inserted into the split end of the haft quite similar to the technique used for the hafted burins at Qeqertasussuk (Grønnow 1994:205). In the proximal haft end some transversal scratches are seen.

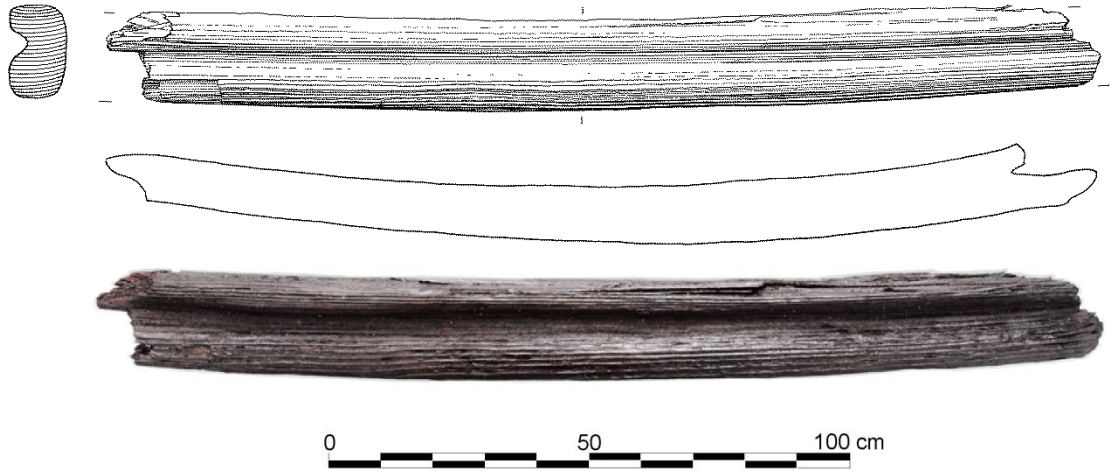


Fig. 55: Drum rim from area F. (F247,4). Top: in line drawing by Pia Breinholt, bottom: Photo by John Lee.

F247.4 (fig. 55) is an illustrative example of a fragment of a drum rim. It is a 19.4 cm long and 1.9 cm thick bend list of wood with the 3.5 mm deep characteristic furrow cut out in the entire length of the fragment. In addition to these well preserved tools there are two pieces of boat frames, a piece of a wooden scoop or ladle, one foreshaft with blade bed and 11 pieces of missile shafts from darts or harpoons, six of these have a scarf. Finally there is an unidentified part of a handle and a piece of pumice wrapped in birch bark, unfortunately the bark roll is too badly preserved to judge whether this was formal container or whether it is an expedient practical sort of storage. 19 artefacts are stakes, one is a shaving and seven are unidentified twigs and worked wood and one is a sediment sample.

Artefacts of bone:

25 artefacts of bone, antler and baleen are from area F. This is less than half as many bone and antler objects as recovered from the nearby and similarly sized area C. The number of lithic artefacts is slightly higher than in area C and the number of wooden artefacts is just slightly lower than the number of wooden

artefacts from area C, so the difference is unlikely to result from differences in preservation. The limited size of the excavation units leave much room for coincidental variation, but the lower number of bone artefacts from area C may also account for a genuine functional difference. The midpassage ruin in area F may thus have resulted in more clearing episodes in this area than in area C, even though both places seem to have floor or activity layers imbedded in thicker midden deposits. The bone artefacts are: Three harpoon heads one of them unidentified, the other of Qt type D and B respectively, seven pressure flakers, two bodkins, four pieces of baleen, three of them have knots, tree foreshafts one of them with a scarf, two inserted bird bones, one whale bone wedge produced from a reused whalebone shaft with an ornamental line (fig. 54), one piece of whalebone split by burin and two unidentified pieces of bone.

Fauna and economy

Fig. 56. Jeppe Møhl identifying bones . during excavation at the Qajaa site. Photo: J. Meldgaard.

The Fauna material have not been included in the present study, and the following summary is thus based on Møhls (1986) publication of approximately 15.000 bones from a single 1 x 1 m unit (presumably from area E excavated by Møhl himself). Møhl estimated the analysed unit to represent a sixth of the material, and the data are brought here only for the convenience of the reader to complete the 'picture'. The fauna was identified in the field by Jeppe Møhl (fig. 56), but only selected seal bones (mandibles, bullae, ulnae and humeri), and bones from other mammals, bird and fish was brought back to Zoological

Museum in Copenhagen, where they are stored on behalf of the Greenland National Museum. The remainder and largely unidentifiable seal bones numbering a total of 44.786 were left on site (Møhl 1980, 1986) (See fig. 57).

Table 9: Species identified from Saqqaq horizon Qajaa. After Møhl 1986

Mammals		
Dog	*Canis familiaris*	18
Arctic hare	*Lepus arcticus*	1
Artic fox	*Alopex lagopus*	22
Caribou	*Rangifer tarandus*	10
Harbour seal	*Phoca vitulina*	1
Ringed seal	*Phoca hispida*	119
Harp Seal	*Pagophilus groenlandicus*	339
Seals unidentified (ringed and harp seal)		13.491
Bearded seal	*Erignathus barbatus*	1
Narwhal	*Monodon monoceros*	2
Whale unidentified	*Cetecea sp.*	1
BIrds		
Fulmar	*Fulmarus Glacialis*	15
Eider	*Somateria Sp.*	76
White fronted goose	*Anser albifrons*	1
Ptarmigan	*Lagopus mutus*	32
Glaucous gull	*Larus hyperboreus*	775
Iceland Gull	*Larus glaucoides*	
Black legged kittiwake	*Rissa tridactyla*	4
Dovekie	*Ploutus alle*	2
Thick-billed murre	*Uria Lomvia*	82
Black guillemot	*Cepprus grylle*	35
Raven	*Corvus corax*	16
Birds inidentified	*Aves sp.*	108
Total		15.151

The numbers of bones from the identified species are shown in table 9. As typical for this part of Greenland the small seals ringed and harp seal are the principal food sources. No systematic analysis has been made on the historical or present local availability of the different species, and therefore it is impossible to make detailed suggestions on chronological changes in the presence of different game species. One must also take into consideration that more species is likely to be represented if all bones are included, and it is also likely

that the relative frequency of some of the low frequent species will change if the entire material was analysed.

Fig. 57. Excavation in progress, the pile of discarded seal bones are seen in the foreground.

Møhl identified 18 dog bones, which firmly established the dog as an integrated element in the Saqqaq lifestyle, enventhough most evidence indicate that the dogs were used for hunting or as pack animals rather than for team sledding, as became common during the younger Thule culture (Morey and Aaris-Sørensen 2001)

Sections and areal variation of stratigraphy at Qajaa

The sections A, B, C, D, E and F demonstrate that the cultural layers differ in different areas of Qajaa (Fig. 58). The character as well as the thickness of the stratified deposits changes markedly from one section to another. The northernmost section 'D' is characterized by approximately 50 cm mixed mainly Palaeo-Eskimo layers in the bottom, which have been disturbed and over layered by a now eroded Thule communal house. Area E and A and maybe B in the central part of the site have thick Saqqaq deposits over layered by sterile sphagnum peat albeit the thickness of the peat layer differs greatly between E and A. In Area E there is only a thin layer of sterile peat on top of the Saqqaq layers, whereas the Saqqaq deposits in area A are covered by a thick cushion of sphagnum peat protecting the permafrozen Saqqaq midden from thawing. On top of the sterile sphagnum peat are turf layers with cultural deposits from Greenlandic Dorset, and finally near the recent grass turf there are layers from the period of the Thule culture and historical time.

Area C and F in the southernmost part of the Qajaa site are characterized by 60 to 100 cm deep Saqqaq deposits covered by relatively thin layers of recent grass turf. The lack of Dorset deposits or of sequences of sterile turf covering the Saqqaq layers in this part of the site might reflect the local depositional history, but it might also result from peat layers being removed in more recent times. Eventually both factors may well have influenced the stratigraphy. Fortunately the Saqqaq deposits appear to be little or undisturbed, but the shallow cover leaves little protection and no insulation to prevent the partial thawing of the Saqqaq layers in this part of the site during the summer. The limited presence of permafrost was important for the selection of area E, C and F for excavation because here Meldgaard anticipated, that excavation would not be slowed too much by perma frost, and that the culture layers could be excavated thoroughly. In addition to midden layers area C and F also has compact floor layers and in area F Meldgaard uncovered a mid-passage hearth partly eroded by the sea.

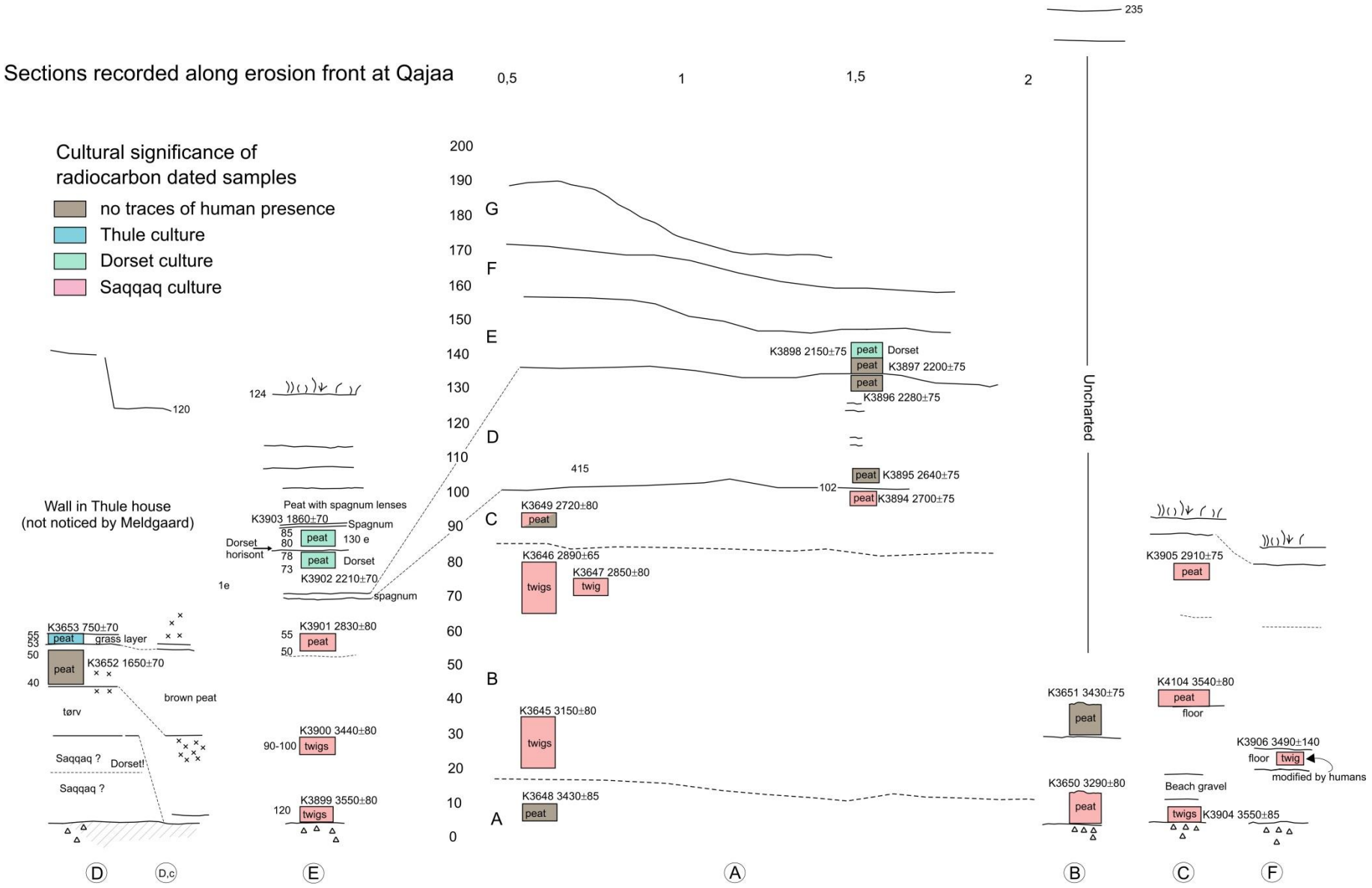


Fig. 58. comparative chart of the sections at Qajaa from north to south. Reordered after sketches by J. Meldgaard

The different sections demonstrate that Qajaa has been occupied during many centuries, and that the well preserved objects from Qajaa originate from many episodes of habitation. There are some lucky finds of objects in their original functional context, such as the finding of a cache of pressure flakers in area C or hafted knives adjacent to the mid-passage hearth in area F. Otherwise the objects are deposited through centuries of habitation episodes in floor areas or refuse deposits with little or no contextual information preserved. The recovered objects have thus been through highly variable taphonomic processes where only the luckiest circumstances have resulted in the perfect preservation of organic artefacts.

Excavation unit from north to south	No of lithic tools	flakes	Lithics total	bone	wood	Area excavated
D	128	154	282	21	30	5,25 m^2
K	4	2	6			
H	21	102	123	2	17	3,925
E	211	1634	1848	129	88	2,25
A	40	241	281	30	182	0.5 m^2 +section
B	0	2	2	0	0	section
C	127	530	657	56	81	2,75m^2
F	84	707	791	27	63	2,25 m^2

Table 10: Numbers of finds of different raw materials and total area excavated in the different parts of the site.

The different sections as well as observations made by Grønnow in 2009 reveal that the thick permanently frozen midden deposits probably are concentrated in a few hundred square meters in the central part of the site, where these depositional circumstances appear to prevail to the south and east of section A. In the remainder parts of the site the cultural deposits are thinner, often better drained and presumably occasionally thawing during summertime. Yet there are still large numbers of organic materials in particular bone antler and ivory preserved in the less frozen peripheral parts of Qajaa, as can be seen from the number of finds of bone and wood from area C and F (table 10), and there are

also spectacular finds such as hafted knives (fig 53) and the bow limb (fig 54), from area C and a drum rim fragment (fig 55) from area F. The extraordinary conditions for the preservation of organic artefacts should thus be monitored as carefully in these areas as the more solid permafrozen thick cultural layers are being in area A.

Erosional history of the Qajaa site

As was mentioned in the section on the history of research, the comparison of Nordenskiölds site map from 1870 to the modern sitemap (fig. 5) along with Meldgaards observations of stratigraphies and all the observations of the geomorphology and permafrost of the last years raise some questions and enables some qualified guesses on the history of erosion.
The vertical erosion front seen along large parts of the Qajaa site naturally raises the question of how fast the deposits are being eroded? Are the Qajaa site under rapid degradation, will it disappear in a few decades or is it stable enough to withstand the effects of wave action and surface water runoff during spring time for the next hundred years? These questions are difficult to answer, but the recent monitoring and analysis of chemical processes in the midden deposits (Elberling et. al 20011, Hollesen et al 2012, Matthiesen et. al. 2014,) indicate that the site is relatively stable as long as the permafrost remain, and that little have happened during the last 35 years (Matthiesen & Hollesen 2014). The studies does though also indicate that the current heating could propel the site into a feedback process of internally generated heating resulting in total loos of permafrost within 80 to 100 years. Obviously that would be a disaster for the Qajaa site (Hollesen et. al. 2015).

To understand the variable conditions for the preservation of organic materials as well as the general site lay-out it is worth considering the site formation process. How can we envision the formation processes at the Qajaa site? Did the different midden areas and stratified deposits evolve from multiple preferred habitation localities and have the site always been ‘fragmented’ into a number

of ‘islands’ of cultural deposits, or did the entire Qajaa site once form a tremendous several thousand square meter large grass covered plain, where the continuous deposition of refuse have grown into a complicated intertwined patchwork of grass covered cultural layers and natural deposits, which eventually all were nourished by and to a large degree resulted from the presence of humans? The sketch map of Qajaa drawn by Nordenskiöld in 1871 seem to support the last mentioned scenario (fig. 5) even though it is fruitless to superimpose Nordenskiöld’s sketch map onto the dimensionally stable sitemap produced in 2009, several topographic fix points are readily recognized, and when looking carefully at Nordenskiöld’s sketch and comparing the sketch with his description of the excavations, there are several topographical details that spring to the eyes. Most importantly Nordenskiöld have marked the shoreline with a characteristic cliff contour, which runs unbroken all along the point where Qajaa sits. This is in contrast to the local topography of today. When overlooking the site (see fig. 2) it is clearly seen that there are no continuous erosion front from area E to area D in the northernmost part of the site, and to anyone whom wish to portray or map the site today, the ‘islets’ of peat and soil with lush vegetation stand out as prominent topographic features against the flat barren scoured rocks surrounding the areas with cultural deposits. It thus seem unlikely that Nordenskiöld would have sketched the point with an unbroken ‘cliff’ contour if the point had the appearance of today already then. When comparing the shape of the coast in Nordenskiöld’s drawing to the coast line and erosion cliff of today it is further seen, that when Nordenskiöld visited the place the shore stretched more or less in a straight northwestern-southeastern direction from an area to the south of area D to area B on the modern map. This is in stark contrast to the situation of today, where this line is taken up by a minor cove, and it appears that in this particular area there is a large area with boulders and stones that might be outwash from a former much larger extent of loose soils and turf deposits. It is difficult to estimate the former location of the coastline, but Nordenskiöld’s description does give a hint of the disappearance of up to 10 meters in front of the present erosion line in area D. Nordenskiöld thus mention: “The two largest of the old house sites, among which we were

now resting, lay so near the sea that their bases were washed by the water. A small stream had found its way through one of them, and had thus not only exposed a profile of the kitchenmidden “At the largest site a tolerably thick round stone wall, 8 or 10 feet high and 26 in sectionwas still distinguishable, divided into two unequal portions by a party-wall. The entrance seems to have led into the larger of these areas, judging from the extensive kitchenmidden situated just outside it” (Nordenskiöld 1872:414). At Qajaa only two Thule houses are situated near the water, and that is the dwellings of area D; the trapezoid house Meldgaard named ‘House 4’ and the common house of which only the rear wall is present just to the north of ‘House 4’. Evidently Nordenskiöld describes the common house north of ‘House 4’ and it is clear that in 1870 the interior of the dwelling could be separated even though it must have been somewhat collapsed, and that midden deposits remained in situ in front of this dwelling. In order to give space for the house, entrance passage and midden deposits the erosion line must thus have been situated around 10 meters to the west of its current position (fig. 5).

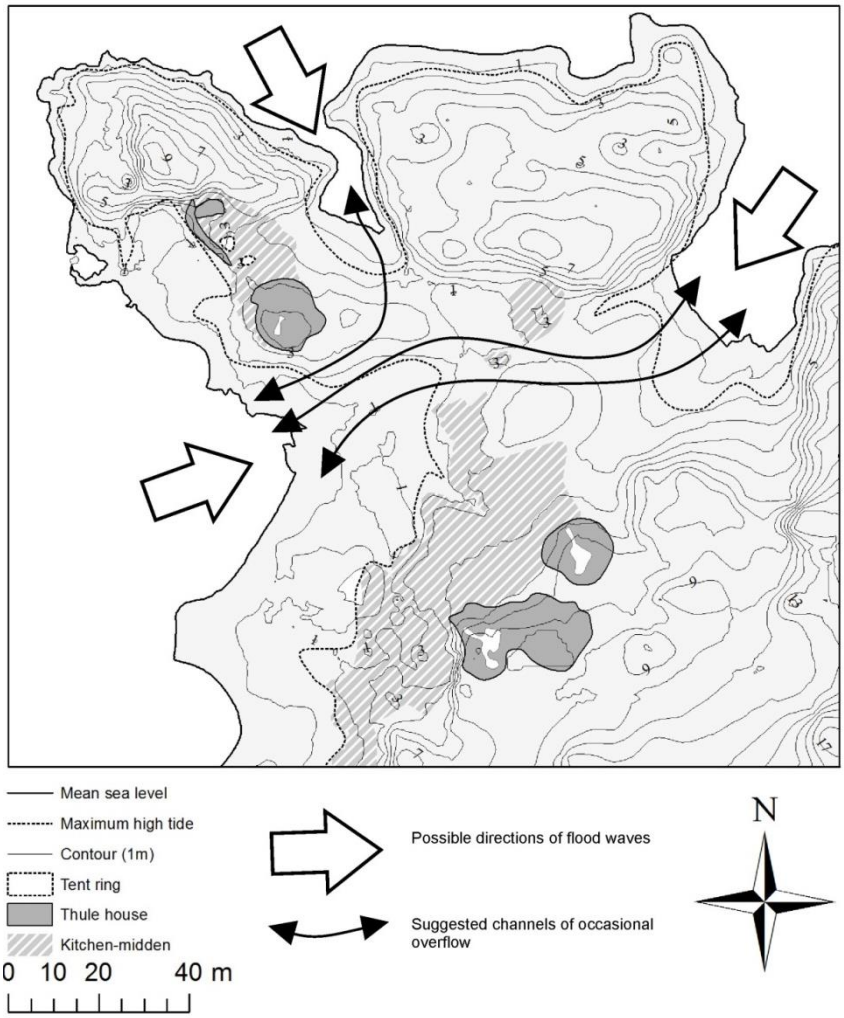


Fig. 59. Directions of possible flood waves and suggested channels of occasional overflow.

So how did this apparently tremendously heavy erosion occur in the 110 year time span separating Nordenskiöld's visit in 1870 and Meldgaards initial visit in 1981, and how come that this erosion have not continued with the same speed throughout the last 35 years?

The answers to these questions are likely to be that the main cause of erosion at Qajaa result from 'catastrophic' events of tsunamis which at times may be generated by disintegrating icebergs in the nearby waters. Such events could have been very rare during the last 40 years, but may well have been more frequent in the second half of the 18-hundreds when the effects of the little ice had caused glacial advances over much of the northern hemisphere, and when the Kangia glacier had its most advanced front recorded in historical time (Larsen and Meldgaard 1958). The comparison of Nordenskiöld's and the modern map thus suggest, that the Qajaa site once was a single large grass covered plain, which as a result of 'catastrophic' tsunamis have been flooded and eroded into it current state of fragmented 'peat islands'. The deposition of stones and gravel along the different small beaches further indicate, that the east facing shore to the east of area K and D occasionally are heavily battered by waves pushing up stones and gravel which at this point is rolling over the grass turf in contrast to the vertical erosion fronts along the west facing shores of Qajaa.

In addition to swells and tsunamis caused by collapsing of nearby icebergs the erosion is also affected by relative sea level changes. Nordenskiöld mentions that already at the time of his visit there was evidence of relative sea level rise, since the two dwellings near the shore were under erosion already then. In addition it must be taken into consideration, that the deepest Saqqaq layers in area A are situated well below the high tide at flood. This observation indicates subsidence of a magnitude of one to two meters since the earliest Saqqaq layers were deposited.

Fortunately the Qajaa site has now been carefully monitored by the Greenland National Museum, National Museum of Denmark and Center for Permafrost (CENPERM) at University of Copenhagen, so even though Qajaa as well as other perma frozen sites are endangered by global warming, today there is institutional awareness that the Qajaa site should be regularly observed, so that appropriate measures can be taken if the site suddenly begins to decay uncontrolled.

Radiocarbon dates

The sections at Qajaa have been dated by a total of 25 radiocarbon dates on material collected by Meldgaard (fig. 58), and four AMS dates on material collected in 2010. Meldgaards dates are conducted on peat or preferably wood or twigs. The samples were collected from all the documented sections, but with most dated samples collected from section A (n. 10), two from section B, four from area D, five from section E, three from section C, and one from section F. The cultural significance of six samples (K3652, K3653, K3648, K3649, K4102 and K4103) have been altered in relation to Meldgaards notes. The peat samples K3652 and K3653 extracted from section D was thus described by Meldgaard as being taken from a Dorset culture layer and a sterile peat layer respectively. However upon inspection of the section drawing (fig. 13) it is clearly seen, that K3652 is from a sterile peat layer separating the mixed Palaeo-Eskimo layers at the bottom of section Dc from overlaying layers with remains from the Thule culture. K3653 was thought to have been extracted from a layer of compressed grasses and peat overlying the Dorset culture layers, but again the detailed section drawing reveals that, this sample is from the lowest part of the layer with Thule culture. K3653 is accordingly altered from being a dating of a sterile layer to a dating of a layer with Thule culture. K3648 from the lowest part of section A was assigned to be a peat layer below the Saqqaq culture layer, However the investigations at Qajaa in 2009 and 2010 (Mortensen 2011) indicate that there are Saqqaq culture to the bottom, so the lowest radiocarbon samples from section A neither predated nor dated the oldest Saqqaq in section

A, but date a sequence in the early part of the Saqqaq culture. K3649 is a peat sample taken from the younger Saqqaq layer (layer C at fig. 33 and 58). Meldgaard initially noticed the sample to have been taken from sterile peat above the Saqqaq layers, but another sample from the same layer C, but two meter to the west was characterized as being from the youngest Sqaaq layer. K 3649 should accordingly be given significance as a dating of the younger but not youngest Saqqaq layers at Qajaa. This interpretation is also in accordance with the stratigraphic description made by Mortensen (2011) where it is mentioned that the youngest Saqqaq layers have none or just a few cultural indicators. When Meldgaard took his sample he might thus rightly have noticed a local void in finds.

The two last dates that have to be reinterpreted is K4103 and K4104. Unfortunately the exact location of these samples are not noted on the section drawing, but the description of sample K4103 fits perfectly to a X on section Db, where it is mentioned that there is a piece of wood (se fig. 15). Meldgaard believed that the dating of these pieces of wood would date the Dorset, but they came out as younger than 1400 AD. Supposedly both can be disregarded as errors due to the intrusion of a Thule house in this part of the site.

When the abovementioned comments are taken into consideration, the general picture given by the series of dates is in concordance with the stratigraphy. The oldest dates are in the deepest layers, and there are no examples of younger dates over layered by older ones even though in this respect it should be mentioned, that it has not been possible to locate the exact sample area for the two dates K4103 and K4104.

The two oldest dates (K3899 and K3904) are equally old (3550 BP ie 1896 ± 114 Cal BC and 1895 ± 109 cal BC respectively) and they are sharply followed by K 3906 at 3490 BP. These dates are several hundred years younger than the oldest Saqqaq dates from other Saqqaq sites in West Greenland which could indicate, that Qajaa was slightly later settled than many other key localities.

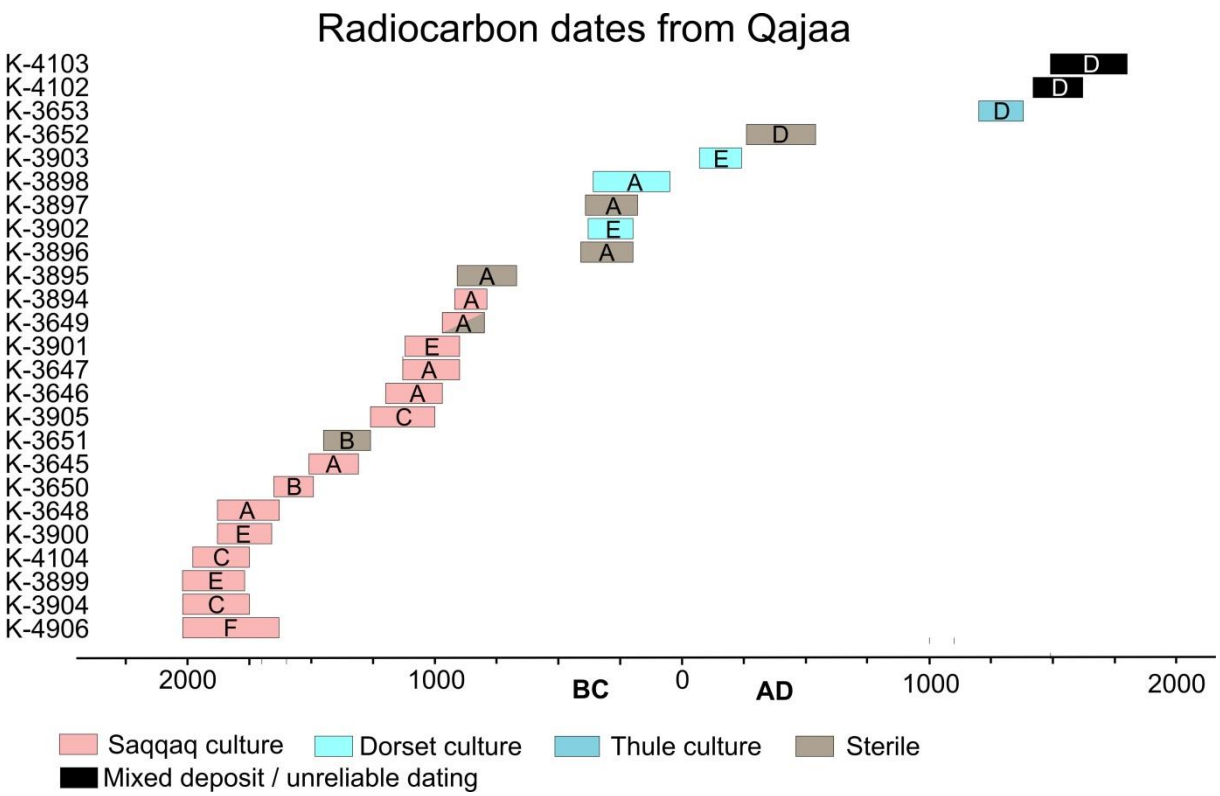


Fig. 60: Graphic with calibrated radiocarbon dates ordered chronologically, with color indicating cultural significance and letters marking the excavation unit where the sample was retrieved.

However there are also taphonomic problems. It thus appears that Meldgaard as mentioned above did not sample the deepest parts of the Qajaa midden hidden below gravel in section A, and since large parts of the midden have been eroded, we also cannot be sure that it is the oldest parts of the midden that is preserved today. In spite of such uncertainties, the presence of similarly old dates of the cultural layers rich in finds in the central and southernmost part of the site indicate, that at this stage of site formation, Qajaa must have been occupied by a relatively large group of people resulting in the massive deposition of refuse over a large area of several hundred square meters. Following the oldest dates is a sequence of partly overlapping Saqqaq dates. The sections show, that occasionally sterile peat layers were deposited in some parts of the site but still, Qajaa must have been regularly settled. The youngest Saqqaq date (K3894) on peat from the uppermost part of the Saqqaq layer in area A is dated to 2700±75 BC (1 st dev.:2769–2898 cal. BP), which is quite young in comparison to the majority of Saqqaq dates from Disko Bay (Jensen 2006), but overlapping the youngest Saqqaq phase at the Nipisat site near

Sisimiut (Gotfredsen and Møbjerg 2004). This young radiocarbon dating is supported typologically by the finding of 5 pieces of soap stone vessels in the younger Saqqaq layers in areas E, C and F. An almost complete circular Saqqaq soap stone lamp was also retrieved from area K, but unfortunately the exact provenience of this specimen have been lost.

Another indicator of human presence during the younger Saqqaq period, is the occurrence of beveled points (n. 7), which have been located in excavation units D (n. 1), E (n. 2), A (n.1), C (n. 2) and F (n.1). Four of the beveled points are from the uppermost Saqqaq deposits, one from intermediate layers 100 to 110 cm below the surface in area E and two are without stratigraphic provenience. The length of the hiatus from the last Saqqaq occupation to the beginning of Greenlandic Dorset is difficult if not impossible to establish, since the dates younger than approximately 2550 BP are in a plateau of the radiocarbon calibration curve.

Meldgaard assigned six dated samples to 'Dorset', but some of the resulting dates are problematic as was mentioned above due to the mixing of deposits from different periods in area D, and one 'Dorset' date (K3653) which Meldgaard thought was sampled from a Dorset layer was in fact sampled from at layer with artefacts from Thule culture. This date has therefore been reinterpreted as a 'Thule dating'. Three dates of Greenlandic Dorset thus remain from Qajaa: The oldest of these is K3902 from area E, which was dated to 2210±70 BP giving a calibrated date between 380 and 190 Cal BC. This dating is followed by an almost equally old date of the Dorset layer in area A, and both dates are in a 'younger' slightly smaller plateau of the first millennium calibration curve following the massive 750-400 BC plateau hampering most Dorset dates. The youngest dating of Greenlandic Dorset is sample K3903 which was retrieved from the Dorset layer in area E but just above the sample K3902. The peat sample was dated to 1860±70 giving a calibrated date of 152±77 Cal AD or between 1720 - 1875 cal BP with 68% range. This is a very young dating of Greenlandic Dorset, however again caution should be given since the dated

peat matrix may not be of exact same age as the imbedded cultural remains. The Greenlandic Dorset dates from Qajaa are thus in the younger centuries of the period when Greenlandic Dorset flourished.

Thule culture is unintentionally dated by the peat sample K3653 which was extracted in order to date the Dorset culture in area D, but the inspection of section drawings and descriptions of the stratigraphy clearly indicate, that the layer is a Thule culture layer, which fits perfect to the date off 750±70 BP , a relative early Thule culture date from Disko Bay indicating, that the earliest Thule people settled at Qajaa right from the beginning of their arrival to West Greenland

The 25 radiocarbon dates conducted on material from the Qajaa site makes it one of the best dated Palaeo-Eskimo localities in Greenland, and in general the radiocarbon dates support the relative stratigraphy recorded in the sections. However, the combination of the stratigraphic evidence and the radiocarbon dates also shows that the site formation and depositional history of cultural layers as well as natural turf deposits are highly variable and different from one part of the site to another. In general the combination of the radiocarbon dates and sections indicate that at least three depositional histories have formed the site: In area D, there are Palaeo-Eskimo deposits heavily disturbed by the intrusion of Thule houses, in areas A and E there are a full depositional history covering both Saqqaq and Greenlandic Dorset as well as younger peat deposits from the Thule culture to historic time. The relative volumes of the individual layers differ greatly between A and E, but the same relative sequence of alternating layers can be recognized in the two areas. Likely the character of the sections in these two areas are replicated in area B, making an area of approximately 200 to 400 square meters in the central part of the Qajaa site exponent to the general conclusions drawn from the sections A and E. In the Southern part of the Qajaa site the stratigraphy and radiocarbon dates indicate, that much of the deposits postdating the Saqqaq culture are missing. To which degree this result from human disturbance such as peat digging or natural

agents is not known, but considering the settlement history of the place, both factors may play a role.

The culture historical conclusions to be drawn from the sections, and in particular from sections A and E are the history of three discontinuous settlement episodes separated by periods without human presence. This observation is analogous with the evidence from Sermermiut and as far as the evidence from the Palaeo-Eskimo periods goes also analogous to the evidence from sections on the sites in Disko Fjord at Disko Island, Northern Disko Bay. Ikorfat and Uummannatsiaq in the former Ummannaq municipality (Jensen 2005). The time frames of the cultural sequences at Qajaa are generally within the spectrum of dates known from comparable sites in Disko Bay, though with an indication of Saqqaq presence during the younger Saqqaq phases that have rarely been found in Disko Bay. The reliable Dorset dates are from the younger part of Dorset period in the centuries between 400 and 200 Cal BC, but they are disturbed by a wiggle on the calibration curve. The presence of the Dorset dates younger than AD from area D should be taken very cautiously due to the mixing of the layers in this particular area.

Ornaments

When comparing the Saqqaq artefacts from Qajaa to those from Qeqertasussuk the similarity is striking. In virtually all aspects of stylistic and metric variation there are similar or near similar artifact types from the two localities and in most cases the frequencies or statistical variables of metric elements of the two artefact samples are close to indistinguishable as well (Grønnow in press). However as has been shown in the previous sections, Qajaa has a few lucky finds of artifacts unknown from the otherwise much larger Qeqertasussuk material. The atlatls and antler tube with harpoon blades from area C are such examples. Ornamented objects are also better represented at Qajaa than they are on Qeqertasussuk. At both localities the number of ornamented objects is dwindling, so the relative overrepresentation

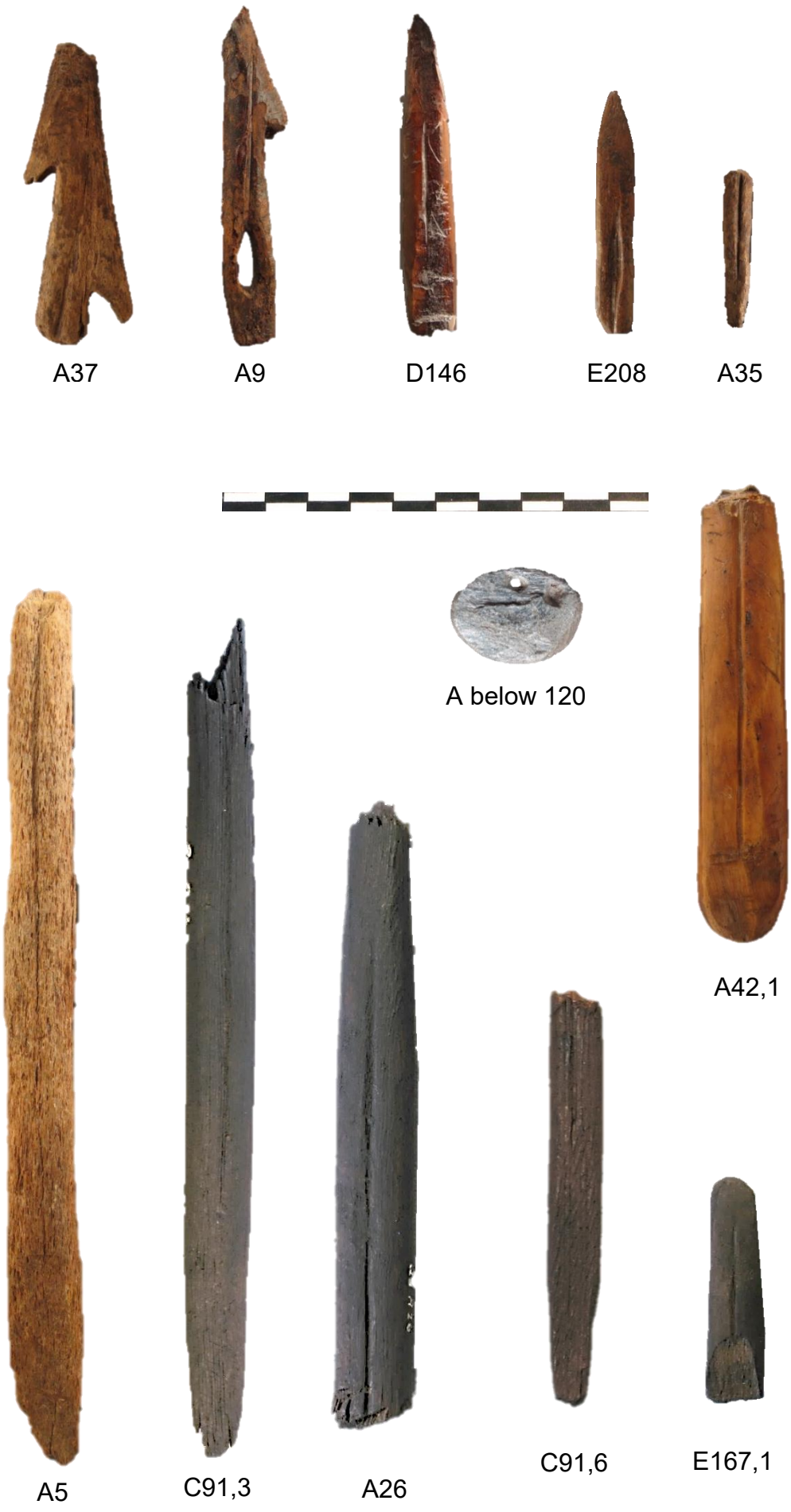


Fig. 61 Objects with line ornament and perforated stone adornment

of ornamented objects at Qajaa should probably be seen as nothing but a taphonomic coincidence. At Qajaa there are a total of 11 or 12 objects of bone and eight of wood, that are ornamented or which as reused shafts have remnants of ornaments originating from the former use (Appendix 3). Among the objects are a pressure flaker, a chisel, foreshafts of wood as well as bone, harpoon heads, a wooden drum rim and antler tubes, however when looking closely at the artifacts it is clearly seen, that several of these objects are reworked from other tool types. Both the chisel (fig. 20), the pressure flaker (fig. 61, A35) and the burin shaft (fig. 61, A26) are thus reworked from a former use as foreshafts. If the objects are categorized according to the function they had or most likely had when the ornamental lines were added then it is seen, that apparently just four functional categories have ornaments: antler tubes (n.3), foreshafts (n. 12), drum rings (n. 1) and harpoon heads (n. 3), and finally there is an ivory blank with a burin groove in the centerline. This specimen should probably not be included as an ornament, but it has been kept in the present discussion and depiction (fig 61, 42,1) in order to allow the reader to judge for herself, and to illustrate the process of sorting burin grooves, manufacturing traces or use wear from ornaments.

The type list of ornamented objects are expanded if the ornamented objects from Qeqertasussuk and Nipisat are included, then needle cases as well as a weapon points such as barbed prongs of ivory and antler is included (Grønnow 2013).

The antler tubes (fig. 31 E232,1, fig. 42 C71, and fig. 48) all have ornamental lines in their central axis and at both sides. The ornamental lines on the antler tubes are similar to those on bone tubes from other AST sites in the Eastern Arctic, and the furbishing of antler tubes and needle cases with such ornamental lines appears to be the norm. A miniature arrow foreshaft (fig. 34 A36) has an ornamental line starting at the blade bed and running in the centerline of the specimen towards the proximal end of the diminutive fore shaft. While metrically unusual the placing of the ornament is typical for ornamental lines on foreshafts. The ornamental line radiate from the center axis of the blade bed. On

the larger wooden foreshafts with ornament such as A25,13 seen on fig 34 it seems as if the ornament is developed already during the carving of the blade bed for the tanged points with tapering stem. In the case of the lance foreshafts there are often ornamental furrows in the centerline of both sides of the slightly flattened foreshaft (Grønnow 2013: fig. 3), C91, 3 and C91, 6 at fig 61 are both produced closely in accordance with this template, whereas A5, A26 and E167, 1 (fig. 61) as well the whale bone chisel (fig. 20) which appear to be reworked from a heavy foreshaft, only have the ornamental lines preserved on one side. Finallty there is a perforated button shaped adornment made of a greenish crystalline rock with a perforation near the edge. The adornment is heavily worn or polished along the periphery and it measures 30 x 23 mm in diameter and it is 5 mmm thick. The perforated hole near the edge appears to have been drilled in a natural cavity in the rock.

In Grønnow's (2013) discussion it is convincingly argued that the ornament lines can be interpreted as analogies to the more elaborate skeleton ornaments of the Late Dorset (Grønnow 2013:63), and that the early ASTt line ornaments probably can be seen as representations of spines or alternatively 'life lines' of the objects. The evidence of the drum rim fragments might not be accepted as 'enough' to argue for the presence of shamans as they have been described historically, however these objects and ornaments is likely to be inscribed in an animistic belief system (Grønnow 2013), and indeed in shamanism there is a long standing and widespread occupation skeletons (Sutherland 2001).

Curiously the limited number of artefacts with ornaments is restricted to the weaponry points symbolizing the offensive engagement with and ultimately consumption of other creatures and the protective casings for needles and harpoon blades, which may symbolize the solicitude, the home, the introvert. Or one may even take it a step further, suggesting that the ornaments in the two artefact classes are a sacred endorsement of respectively male and female stereotypic characteristics.

Summary

The finds from Qajaa, and in particular the conditions of the frozen Saqqaq layers open for a unique insight into parts of the material world that are otherwise inaccessible to archaeologists. Among the unusually well preserved organic objects the atlatls from area C demonstrate insight to Saqqaq propulsion techniques, and the hunters pouch from the same area is a time capsule of everyday objects as they were carried by the Saqqaq hunter. Here the antler tube with inserted harpoon blades reveal the function of the hitherto enigmatic antler tubes as a sort of cartridge case or protective cover similar to the needle cases. From this level of specific objects one may move on to the broader levels of manufacturing techniques and technical complexes and their role in the Saqqaq society. The identification of waste products and preforms from the production of specific tool types such as needles or harpoon heads enables the detailed reconstruction of the 'Chaîne opératoire' of different tool types and it can be shown that 'behind' the standardised tool categories there are standardised schemes for the production of many of the bone and presumably also for the wooden objects in the Saqqaq inventories. Cut marks and use wear are visible on many artefacts but have not been systematically investigated in the present processing of the Qajaa material.

The preservation of organic materials also enables historical observations in a wide range of scientific topics such as flora, entomology and environmental studies, as well as climatology, where the midden is a proxy record for changes over the last 4000 years. So far only a few of such studies have been performed at Qajaa, but the experiences from the site of Qeqertasussuk are promising in this respect (Bøcher & Fredskild 1993). The analysis conducted so far on the Qajaa material and results of excavations in 1981 and 1982 are far from exhaustive. Focussed studies of many specific technological or scientific themes are still possible, and the Qajaa material also has potential to be integrated as comparative material for the provision of supplementary empirical evidence to other studies. Hopefully this report will enable and inspire the use of

the Qajaa material for such comparative studies as well in new studies of ancient technologies and archaeological methodologies.

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Appendix: 1 -list of artefacts of bone, antler and ivory

Lb. nr	lok	Mus nr	genstandstype	materiale	Bemærkninger / beskrivelse			
1	Qa	A	stikkelskåret knogle			7,85	1,2	1,1
2	Qa	A	knogle, forvitret			7,8	1,1	0,7
3	Qa	A5	forskaft, med proksimal laskeflade	hvalknogle		20	1,7	1,5
4	Qa	A6	lanse spids	hvalros tand	John Lee foto	13,4	3,4	1,2
5	Qa	A7	barre eller håndtag	rentak		17	4,7	2,5
6	Qa	A8	afskåret rentak / trykstok	rentak		20+	1,5	1,2
7	Qa	A9	harpunhoved	Qt type c		6,8	0,9	1,1
8	Qa	A 21	tand		Tand, hvalrostand let bearbejdet (flyttet fra liste over A trægenstande)			
9	Qa	A24,1	stikkelskåret knogle stykke	knogle		7,95	0,8	0,5
10	Qa	A24,2	stikkelskåret knogle stykke	knogle		3,45	0,55	0,35
11	Qa	A24,3	stikkelskåret knogle stykke	knogle		2,15	0,55	0,3
12	Qa	A28,1	hvalbarde	barde	viklet om sig selv			
13	Qa	A28,2	'barre'	hvalknogle	Skåret ud af skulderblad?	17	3,1	
14	Qa	A29,1	knoglestykke	ren	distalende af metatarsus			
15	Qa	A29,2	fugleknogle	fugl		5,35		
16	Qa	A29,3	fugleknogle	fugl		6,3		
17	Qa	A29,4	fugleknogle	fugl		6,05		
18	Qa	A29,5	fugleknogle	fugl		3,3		
19	Qa	A 32	barre	rentak	godstykkelse ca 0,5 cm	10,5	3,8	1,3
20	Qa	A 33	barre	rentak	Godstykkelse ca o,7 cm, med stuikkelfure på langs og stikkelfacetter langs afspaltede kanter	14,4	3,3	1
21	Qa	A34	stikkelskåret tand	kaskelot eller hvalros				
22	Qa	A35	trykstok	tak / knogle	med rudimentær langsgående fure	3,35		
23	Qa	A36	pileforskaft	knogle	fint forarbejdet bladebed i distal ende, afbrudt i proximal ende John Lee foto	5,65	0,55	0,5
24	Qa	A37	harpunhoved	tand	Afbrudt parti af harpunhoved med laterale modstillede modhager, ornamental fure på siderne	6,35		
25	Qa	A38	trykstok	tak el knogle		5,15	0,85	0,65
26	Qa	A39	bardetråd	hvalbarde		25 c		
27	Qa	A 40	barde med knude	hvalbarde				
28	Qa	A41	kile af tand		kile med tydelige 'holdefurer'	6,7	2,5	1
29	Qa	A42,1	barre af tand	tand	stikkelfurer eller ornamentalfurer på to sider	9,7	1,8	1,5
30	Qa	A 42,2	bardeliste med gennemboring	hvalbarde	lille tyndt stykke hvalbarde	3	3	
31	Qa	A44	bardeske	hvalbarde	ejendommelig ske af hvalbarde, bærer i sin form Saqqaq estetik	14	1,75	0,2
32	Qa	A47	to fjer	fjer				
33	Qa	C, b 40-60	hvalrostand, bearbejdet	tand	bearbejdet men stærkt eroderet overflade	8,5	5,4	2,5
34	Qa	C,b 105	kastetræ	hvalknogle	flot kastetræ med indfældet tap i distalende	22,1	3	1,3
35	Qa	C 57	afhugget stykke	rentak	Med meget dybe stillkkelfurer i sidefacetter	7,7	4,8	4
36	Qa	C 59	barde med knuder	hvalbarde				
37	Qa	C60	rynkeben	knogle	med stikkelfurer langs kanter	13,7	7,5	0,8
38	Qa	C61	harpunhoved	knogle	Qt type A	5,55	0,75	0,4
39	Qa	C62,1	trykstok	albueben		6,65		
40	Qa	C62,2	trykstok	albueben		4,8		

Appendix: 1 -list of artefacts of bone, antler and ivory

41	Qa	C62,3	trykstok	albueben				
42	Qa	C62,4	trykstok	albueben		4,7		
43	Qa	C63	trykstok	albueben	komplet formodentlig næsten ny trykstok med tydelige tilspidsede spidser i begge ender	9,9		
44	Qa	C64,1	forarbejde	hvalknogle (scapula)	fladt stykke hvalknogle, der er fint tilhugget i kanterne	9,8	5,1	1
45	Qa	C64,2	forarbejde	hvalknogle (scapula)	fladt stykke hvalknogle, der er fint tilhugget i kanterne	12,5	4	0,7
46	Qa	C65	barde med knuder	hvalbarde				
47	Qa	C67	proksimalende	(hval) knogle	Karakteristisk proximal ende med furer til tap og?	7,2	1,15	0,8
48	Qa	C 68,1	trykstok	knogle	lidt speciel 'bred' trykstok	5,1	1,8	1
49	Qa	C68,2	trykstok	knogle	'normal' lille	4	0,7	
50	Qa	C68,3	trykstok	knogle	'normal' lille, den smalle ende er afbrudt	4,4		
51	Qa	C69,1	stikkelskåret liste	hvalknogle	formentlig et forarbejde til et forskaft	9,2	1,3	0,7
52	Qa	C69,2	forskaft	rentak	forskaft medforvitret overflade	8,25	1,1	0,7
53	Qa	C70	kastetræ atlatl	hvalknogle	lille distalende af kastetræ	7,35	2,4	1,2
54	Qa	C71	nålehus	rentak	forarbejde til 'harpunbladshylster', endnu ikke udhulet og med ornamantalfurer på sider	4	2,1	
55	Qa	C72	knogle	knogle	ukarakteristisk	5,85	1,7	1,1
56	Qa	C73	trykstok	knogle (ulna)	Arbejdsfacetter i distal ende kun, stikkelfure langs den ene side	5,4 c		
57	Qa	C74	forskaft	hvalknogle	Fin laskeflade i den ene ende, meget lig C 106	9,3	0,86	
58	Qa	C75	indstukne fugleknogler	fugleknogle		10,8		
59	Qa	C77	forarbejde til trykstok?	knogle	kort bredt listestykke med tydeligt stikkelspor i den ene side	6,4	1,2	0,7
60	Qa	C78	- kastetræ / atlatlmåske håndtag?	knogle	ejendommeligt håndtag eller skaftstykke af hvalknogle			
61	Qa	C79	barre	hvalknogle	lang udhugget barre af hvalknogle, med karakteristisk rombisk tværsnit	21,7	2,9	2,3
62	Qa	C80	pren	knogle (ulna)	trekantet tværsnit	17,2	1,2	0,5
63	Qa	C82	bardeline med knuder	hvalbarde		15		
64	Qa	C83	bardelibne	hvalbarde	opvundet som i et nøgle med knude til at holde det sammen			
65	Qa	C100	harpunhoved Qt type B	tak	basis af dølleharpun	3,5	1	0,55
66	Qa	C101	harpunhoved Qt type B	tak	stærkt eroderet overflade	6	0,55	
67	Qa	C102	harpunhoved Qt type B	tak		6	0,55	
68	Qa	C103	harpunhoved Qt type B	tak		6,3	0,7	
69	Qa	C104	harpunhoved Qt type A	tak	flækket på langs og omdannet til pren	7,4	1	
70	Qa	C105	harpunhoved Qt type B	tak	distalt brudstykke af harpunhoved med blad	2,5	0,9	
71	Qa	C106	forskaft	knogle (hval)	fin laskeflade i basisenden	6,7	0,7	
72	Qa	C108,1	indstukne fugleknogler	fugleknogler		17		
73	Qa	C108,2	indstukne fugleknogler	fugleknogler		9,3		
74	Qa	C109,1	pren af slebet fugleknogle	fugleknogle	sleben i ene ende			
75	Qa	C109,2	pren af slebet fugleknogle	fugleknogle	sleben i den ene ende			
76	Qa	C113	hylster / blad gemme	rentak	flot bladhylster med 4 harpunblade inde i, langsgående ornamentalfure på de to sider	4,65	2,4	1,75
77	Qa	C115	sidegren	knogle (ulna?)	ilskåret og i begge ender tilspidset 'pind' af knogle	10,9		
78	Qa	C116	harpunhoved forarbejde	tak?	specielt tilskåret liste af tak, med hakker der markerer modhagernes kommende placering	7,1	1,5	0,8
79	Qa	C117	trykstok	knogle (ulna)	trykstok med karakteristisk skråt afskåret laskeflade i proximal ende	8,25	0,75	
80	Qa	C118	holdestykke	knogle	fint udskåret stykke knogle med bladgrube lignende udskæring	6,9	0,5	0,35
81	Qa	C119,1	trykstok	knogle (ulna?)	tydelige surringsridser i den ene ende, slidfacetter i modsatte ende. lavet af stikkeludskåret liste	7,7		
82	Qa	C119,2	trykstok	knogle (ulna?)	slid / trykfacetter i den ene ende og svage skæftningsspor i modsatte ende	6,35		

Appendix: 1 -list of artefacts of bone, antler and ivory

83	Qa	C119,3	trykstok	knogle (ulna?)	slid / trykfacetter i den ene ende og ingen skæftningsspor i den tynde skæftnings ende	5,8		
84	Qa	C119,4	trykstok	knogle (ulna?)	tydelige surringsspor lige til den slidte spids	4,6		
85	Qa	C119,5	trykstok	knogle (ulna?)	slid / trykfacetter i den ene ende og ingen skæftningsspor i den tmodsatte ende	5,9		
86	Qa	C119,6	trykstok	knogle (ulna?)	spids facetteret 'tryk' ende modsat den tilspidsede skæftnings ende	7,7		
87	Qa	C120	trykstok eller sidegren forarbejde	knogle (ulna?)	minder meget om C115	8,65		
88	Qa	D, b lag 4 h	liste af hvalbarde med kærv i ender	hvalbarde	fint udskåret liste med kærv i begge ender, legetøjsbue?	18,3	1,3	0,3
89	Qa	D124	bue brudstykke?	hvalbarde	hvalbarde stykke udskåret med tydeligt hak eller kærv i den ene ende	10,5	2,15	0,35
90	Qa	D126	barde med knude	hvalbarde		15 c		
91	Qa	D127	barde stumt	hvalbarde	hvalbarde stump eller 'blok' tydeligt udskåret langs ender og sider	6,2	2	0,2
92	Qa	D 129	hår	hår	mindre hårtot, fint hår, der kunne være fra menneske?			
93	Qa	D130	harpunhoved	tak	distalende af harpunhoved med laterale modhager og gennemgående linehul formodentlig Thule II	7,5		
94	Qa	D131	kødgaffel	hvalbarde	kødgaffel af hvalbarde ligner en lystertand men er en kødgaffel	14,6	1,2	
95	Qa	D132	forarb (til trykstok eller forskaft)	knogle		9,3	1,6	0,75
96	Qa	D133	snekniv	hvalknogle	brudstykke af blad fra snekniv, fem gennemboringer til feste af håndtag	11,5	3,5	
97	Qa	D 134	hår og hvalbarde	hvalbarde	hår og hvalbarde: to hvalbardeknuder, et bundt hår samt en udhugget spån af barde.			
98	Qa	D140	slædesko	hvalbarde	afskårne stykker hvalbarde med knuder	14		
99	Qa	D141,1	barde	hvalbarde	et halvt gennemboret hul i kanten viser, at her formentlig er tale om et stykke slædesko ligesom D142	14	2	0,2
100	Qa	D141,2	barde	hvalbarde		15	1,7	0,2
101	Qa	D142	slædesko	hvalbarde	med fem gennemboringer	14,7	2,5	
102	Qa	D143	barde	hvalbarde	bearbejdet	18	2	
103	Qa	D144	skind	læder	mindre stykke skind, tilsyneladende afhåret			
104	Qa	D145	barre	rentak	afhugget og brudt sprodse	8,5	3,2	1,5
105	Qa	D146	forskaft / omdannet	tand	tilhugget tand, sikkert genanvendt forskaft der er forsøgt omdannet med rest af ornamentfure på langs			
106	Qa	D150, 1	forskaft?	knogle	tilspidset knoglestykke, muligvis et forskaft	6,15	0,85	0,7
107	Qa	D150,2	forskaft?	knogle	stump, der er knækket af D150,1	2,3	0,8	0,35
108	Qa	E152,1	afhugget stykke	knogle	stikkelskåret og afhugget stykke	5,2		
109	Qa	E152,2	afhugget stykke	knogle	tikkelskåret og afhugget stykkefine stikkelfurer flere steder	8,7		
110	Qa	E 153	afhugget stykke	knogle (ren)	afhugget del af tibia			
111	Qa	E159	udspaltet knogle	knogle	stikkeludspaltet	12		
112	Qa	E161	fjer	fjer	perfekt bevaret			
113	Qa	E162	pren?	fugle rørknogle	brudt i begge ender men har muligvis været sleben og brugt som pren	6,65		
114	Qa	E163	pren	knogle (fibula?)	tilspidset knogle, glittet overflade	7,4		
115	Qa	E169	fuglespyd	knogle (hval / hvalros)		7,1	1,1	1
116	Qa	E170,1	afskårne stykker	rentak	stikkelskåret stykke rentak	6	2,5	
117	Qa	E170,2	afskårne stykker	rentak	stikkelskåret stykke rentak	3,7		
118	Qa	E173	afhugget stykke	rentak		8,1	3,7	1,4
119	Qa	E 175,1	stikkelskårret knoglestykker	knogle (fugl?)	forvitret knogle med spor af stikkelfure på en side	4, 36	1,6	0,7
120	Qa	E 175,2	stikkelskårret knoglestykker	knogle (fugl?)	knogle med kraftigt eroderret overflade, muligvis stilkkelskårne kanter	4,6	0,85	0,5
121	Qa	E 175,3	stikkelskårret knoglestykker	knogle (fugl?)	stikkelskåret fugleknogle, forarbejde til nål?	2,9	0,3	0,2
122	Qa	E 175,4	stikkelskårret knoglestykker	knogle (fugl?)	forarbejde, bi eller affaldsprodukt fra nåleproduktion	2,6	0,3	0,15
123	Qa	E 175,5	stikkelskårret knoglestykker	knogle (fugl?)	forarbejde, bi eller affaldsprodukt fra nåleproduktion	6,1	0,3	0,2
124	Qa	E 175,6	stikkelskårret knoglestykker	knogle (fugl?)	forarbejde, bi eller affaldsprodukt fra nåleproduktion	5,7	0,5	0,3

Appendix: 1 -list of artefacts of bone, antler and ivory

125	Qa	E176	afhugget stykke	rentak		4,1	2	0,9
126	Qa	E 178	trykstok	tak el knogle	afbrudt i proximal ende, tilskåret distalt, næsten ikke slidt distalt	3,5	0,5	0,5
127	Qa	E179	forarb til pren	knogle (fugl)		7,4	0,35	
128	Qa	E 180,1	nål	knogle	komplet nål	65	2	1
129	Qa	E180,2	nål	knogle	Komplet nål	5	0,2	0,1
130	Qa	E181,1	nål	knogle	2 nåle, distalender, den ene flad den anden rund i tværsnit	4	0, 15	0,08
131	Qa	E 181,2	nål	knogle	temmelig lille brudstykke af fin spids af nål	2,15	0,1	0,15
132	Qa	E 182	nål	knogle (fugl?)	midtstykke med afbrudt spids og brudt ved øje, 0,15 x 0,1 ved øje runde distal ende	2,45	0,15	
133	Qa	E 182	nål	knogle (fugl?)	midtstykke med afbrudt spids og brudt ved øje 0,2 x 0,1 ved øje rund distal ende,	3,35	0,15	
134	Qa	E 182	nål	knogle (fugl?)	midtstykke med afbrudt spids og brudt ved øje 1,5 x 0,1 ved øje rund distal ende,	1,7	0,1	
135	Qa	E183	'dub'	tak	lille 'dub'af tak, i toppen er 'dubben' næsten gennemskåret sålede4s at toppen er ved at falde af	1,5	0,55	
136	Qa	E184,1	trykstok	knogle (fibula)	trykstok med fine facetter	5,85		
137	Qa	E184,2	trykstok	knogle (fibula)	trykstok med fine facetter i begge ender	3,8		
138	Qa	E184,3	trykstok	knogle (fibula)	brudstykke af trykstok knækket i den ene ende, tydeligt brugsspor i form af afsprængning i anden ende	2,7		
139	Qa	E 184,1	nåleforarbejde	knogle (fugl)	stikkelskåret på langs	5,1		
140	Qa	E 184,2	nåleforarbejde	knogle (fugl)	udspaltet stykke	2,8		
141	Qa	E 184,13	nåleforarbejde	knogle (fugl)	udspaltet stykke	4,35		
142	Qa	E 185	nål	knogle	brudstykke m spids afbrudt og proximal ende afbrudt i øjet.x 0,2 x 0,075 ved øjet hvor tværsnittet er temmelig fladt	2,9	0,15	0,1
143	Qa	E187	barre	rentak	afhugget og brudt i begge ender	7,8		
144	Qa	E188, 1	trykstok	knogle	bred tryk / slidfacet i ene ende	4,9		
145	Qa	E188,2	trykstok	knogle	tryk / slid facetter i den ene ende ingen surringsspor i modsatte ende	5,55		
146	Qa	E188,3	trykstok	knogle	stærkt nedbrudt overflade tryk / slid facetter ikke bevaret	5,9		
147	Qa	E188,4	trykstok	knogle	tryk / slid facetter ikke bevaret	4,7		
148	Qa	E188,5	trykstok	knogle	tydelige tryk / slid facetter i distalenden	4,75		
149	Qa	E 189	pren	knogle	afbrudt distal ende	2,25	0,55	0,25
150	Qa	E190,1,	'liste'	hvalknogle	afhugget og brudt stump af knogle	2,9	1,4	1
151	Qa	E190,2	'liste'	hvalknogle	liste af stikkeludskåret hvalknogle, meget tydelige stikkelfurer langs to sider	11,8	1,1	1
152	Qa	E191,1	afskåret rentak sprods	rentak	stikkelskåret og afhugget stykke rentak	7,1	2,3	
153	Qa	E 191,2	skåret og afbrudt stykke rentak	rentak	lille stikkelskåret og afhugget stykke rentak	5,45	1,7	
154	Qa	E191,3	skåret og afbrudt stykke rentak	rentak	lille stikkelskåret og afhugget stykke rentak	2,55	0,8	
155	Qa	E 195	barde med knude	hvalbarde	knuden danner en lykke	7		
156	Qa	E 197,1	trykstok	knogle	svage spor af skæftning	4,6		
157	Qa	E197,2	trykstok	knogle	med indridsninger ingen skæftningsspor	4,85		
158	Qa	E197.3	trykstok	knogle	noget forvitret overflade, ingen skæftningsspor	4,3		
159	Qa	E197,4	trykstok	knogle	let forvitret overflade, ingen skæftningsspor	6,1		
160	Qa	E197,5?	trykstok	knogle	slid / trykfacetter i ene ende, spidset i modsatte ende.	4,1	0,8	
161	Qa	E199	'planke* råemne	rentak	stikkelfuret og flækket segment af rentak	5,7	4,6	1,9
162	Qa	E 200,1	nål, distalender	fugleknogle	lidt fladt tværsnit, meget fin spids	2,5	0, 1	0,075
163	Qa	E 200,2	nål, distalende	fugleknogle	rundt tværsnit meget fin spids	1,65	0,15	
164	Qa	E 201,1	nål	knogle	brudstykke af nål med fladt tværsnit 0,15 x 0,075 cm flad ende formodentlig proximal øje-del, ingen spor af øjehul	2,6	0,15	0,1
165	Qa	E 201,2	nål	knogle	brudstykke af nål med fladt tværsnit	1,75	0,15	x0,075

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166	Qa	E 201,3	nål	knogle	brudstykke af nål med fladt tværsnit	1,15	0,1	0,05
167	Qa	E 202,1	stikkelskåret fugleknogle	fugle knogle	minder om c til f i ovenstående E 175, men lidt mere irregulære	4, 7		
168	Qa	E 202,2	stikkelskåret fugleknogle	fugle knogle	minder om c til f i ovenstående E 175, men lidt mere irregulære			
169	Qa	E 202,3	stikkelskåret fugleknogle	fugle knogle	minder om c til f i ovenstående E 175, men lidt mere irregulære			
170	Qa	E 202,4	stikkelskåret fugleknogle	fugle knogle	minder om c til f i ovenstående E 175, men lidt mere irregulære			
171	Qa	E 202,5	stikkelskåret fugleknogle	fugle knogle	minder om c til f i ovenstående E 175, men lidt mere irregulære	1,5		
172	Qa	E 203,1	nåle midtstykke	fugleknogle	rundt tværsnit distalende, men yderste spids er afbrudt	3,6	0,15	
173	Qa	E203,2	nåle midtstykke	fugleknogle	lidt kantet tværsnit, tilsyneladende ikke helt færdig	3,65	0,2	0.1
174	Qa	E204	trykstok	knogle	lidt atypisk form, bred distal ende, tydelige surringshak i proximal ende	3,7		
175	Qa	E205,1	afskårne stykker	knogle	tydelig stikkelfure langs den ene side, brudt i begge ender	6,2		
176	Qa	E205,2	afskårne stykker	knogle	tydelig stikkelfure langs den ene side, brudt i begge ender	5,4		
177	Qa	E205,3	afskårne stykker	knogle	Afskåret stump tydelige stikkelspor langs begge kantetr.	2,5		
178	Qa	E206,1	stikkelskåret fugleknogle	fugleknogle		5,1	0,5	0,15
179	Qa	E206,2	stikkelskåret fugleknogle	fugleknogle		7,35	0,25	0,15
180	Qa	E206,3	stikkelskåret fugleknogle	fugleknogle		3,5	0,35	0,08
181	Qa	E206,4	stikkelskåret fugleknogle	fugleknogle	med meget tydelig stikkelfure i knoglen, der ikke er spaltet helt igennem stikkelfuren	3,4	0,6	0,3
182	Qa	E207	trykstok	knogle	tryk / slidfacetter i begge ender, fin og velbevaret men opbrugt	3,15	0,9	0,5
183	Qa	E208	trykstok	knogle	atypisk, lavet på omdannet forskaft? Med langsgående fure	5,4	0,85	0,4
184	Qa	E209,1	nål	knogle	fladt tværsnit, nålen er knækket i øjet	3,8	0,18	0,1
185	Qa	E209,2	nål	knogle	brudstykke af nål	3	0,18	0,12
186	Qa	E212	trykstok	knogle	tydelig tryk / slidfacet i distal enden, brudt i proximal ende	4	0,6	0,5
187	Qa	E213	kile	hvalknogle	skråt afhugget i distal ende, med 'holderiller'	6	2,6	1,35
188	Qa	E214	maske / vedhæng	knogle el. tak		3,05	1,05	0,45
189	Qa	E215,1	fugleknogle	fugleknogle	udspaltet eller flækket fugleknogle	3,6	1,5	0,1
190	Qa	E215,2	fugleknogle	fugleknogle	vanskeluigt at afgøre om der er tale om udspaltet stykke	4,45	0,3	0,12
191	Qa	E215,3	fugleknogle	fugleknogle		3,7	0,35	0,31
192	Qa	E 216,1	nål	knogke	distalende af nål, rundt tværsnit	2,85	0,15	0,1
193	Qa	E 216,2	nål	knogke	distalende af nål, rundt tværsnit	3,15	0,15	0,1
194	Qa	E 216,3	nål	knogke	distalende af nål, fladt tværsnit	3, 15	0,15	0,1
195	Qa	E 216,4	nål	knogke	distalende af nål, fladt tværsnit	1,85	0, 13	0,075
196	Qa	E217,1	nål	knogle (fugl)		1,3	0,2	0,1
197	Qa	E217,2	nål	knogle (fugl)		2,15	0,2	0,1
198	Qa	E217,3	nål	knogle (fugl)		1,9	0,2	0,1
199	Qa	E218	harpunhoved	tak	flot komplet Qt type C to modhager foto af J. Lee	5,95	0,7	
200	Qa	E219	harpunhoved	tak	flot komplet Qt type C to modhager foto af J. Lee	4,8	0,75	
201	Qa	E220	afhugget stykke	knogke	stor afhugget 'spån'	2,8	1,2	0,6
202	Qa	E 221	nål	knogle	Distalende, fladtrykte proximal ende, spidsen intakt	3,2	0,15	0,1
203	Qa	E 222,1	nål	fugleknogle	brudstykker af nåle med fladt tværsnit (rund distal del) x 0,5 x 0,1 (flad proximal ende) cm	3,5	0,1	
204	Qa	E 222,2	nål	fugleknogle	brudstykker af nåle med fladt tværsnit	1,35	0,15	0,1
205	Qa	E 222,3	nål	fugleknogle	brudstykker af nåle med fladt tværsnit	1	0,15	0,1
206	Qa	E 222,4	nål	fugleknogle	brudstykker af nåle med fladt tværsnit	0,5	0,15	0,075
207	Qa	E 223	nål	fugleknogle	proximal ende med fint rundt øje i flad ben nål 3 x 0,1 (distalt) x 0,05 (ved øje) cm	3	0,1	0,05

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208	Qa	E224	forskaft	hvalknogle	fint forarbejdet forskaft, med butt spids og brud i proximalende	7,5	0,8	
209	Qa	E225,1	trykstok	knogle	med tydelige tryk / slidfacetter i distalende ingen surringsridser	6,2		
210	Qa	E225,2	trykstok	knogle	med tydelige tryk / slidfacetter i distalende ingen surringsridser	7,1		
211	Qa	E225,3	trykstok	knogle	med tydelige tryk / slidfacetter i distalende ingen surringsridser	4,2		
212	Qa	E 226	kile?	hvalknogle	bearbejdet hvalknogle	4,4	3,2	
213	Qa	E 227	stikkelskåret liste (forarbejde til nål)	fugleknogle		2, 5	0,5	0,1
214	Qa	E 228	nål	knogle, fugl	midtstyvkke brudt ved øje x cm rundt tværsnit distalt, fladt proximalt, 0,1 x 0,19 ved øje	3,05	0,15	
215	Qa	E229	trykstok	knogle	slid / trykfacetter i distalende, 2 surringsmærker i distalende	5,4	1	0,5
216	Qa	E230	brudstykke	knogle	afhugget stykke	2,85	0,8	
217	Qa	E231	harpunhoved (Qa type A)	tak	ornamental linie på den ene side af spids	9,2	1,4	0,85
218	Qa	E232	nåle el. bladhus	tak	komplet meget fint udført hylster med ornamentallinier på begge sider.	5,6	2,5	2
219	Qa	E233	harpunhoved Qt type A	tak	selvbladet harpunhoved med åben skaftgrube	5,5	0,7	
220	Qa	E234	harpunhoved modhager Qt type B	tak	modhavger afspaltet ved brud i forlængelse af bladgrube på harpunhoved af Qyt type B	3,1	0,5	
221	Qa	E235	harpunhoved Qt type A	tak	harpunhoved, selvbladet med åben skaftgrube	4,15	0,6	0,55
222	Qa	E236	kastespyd proximalende	hvalknogle / tak	flot forarbejdet proximal ende med lille tap til indgreb i kastetræ, cirkulært tværsnit	10,1	1,35	
223	Qa	F241,7	brudstykke af kaskelot tand	kaskelot tand				
224	Qa	F2 under ildsted	knoglestump	knogle	lille uidentificerbar knogleklump	4,7		
225	Qa	F250	stikkelskåret knoglestykke	hvalknogle	13,5 cm langt stykke stikkeludskåret og afspaltet hvalknogle	13,5		
226	Qa	F251,1	teleskopindstukne fugleknogler	fugleknogle				
227	Qa	F251,2	teleskopindstukne fugleknogler	fugleknogle				
228	Qa	F252	forskaft?	hvalknogle	noget eroderet overflade,der kan også være tale om en sidegren til fuglespyde	12	0,7	
229	Qa	F253	forskaft	tak el knogle	spinkel og 'fladtrykt' spids tak el knogle	11	0,9	0,5
230	Qa	F254	trykstok	tak el knogle	trykstok med typisk trykstok afsprængning i distalende	6,4	0,9	0,8
231	Qa	F255	pren el afskåret stykke	knogle	tilspidset knogle	7,3		
232	Qa	F257	barde med knude	hvalbarde		7,7		
233	Qa	F258	bardetråd	hvalbarde	meget tyndt stykke hvalbarde med en enkelt knude	25		
234	Qa	F259,1	trykstok	knogle	fin trykstok med slid / tryk facetter i begge neder, svage surringsspor i proximalende	4,55		
235	Qa	F259,2	trykstok	knogle	fin trykstok med slid / tryk facetter i begge neder	5,65		
236	Qa	F260	trykstok	knogle	tilsyneladende kun lidt brugt, distal afsprængning, meget spids distal ende	11,2	0,9	
237	Qa	F261	pren	knogle	stikkelskåret og udspaltet knogle med spids distal ende	7,7		
238	Qa	F?262	harpunhoved	tak	stærkt opskærpet / omdannet harpunhoved med afbrudt spids	4,2	0,55	0,7
239	Qa	F263	trykstok	tak	Svage surringsspor langs siderne, afsprængninger i begge ender har formentlig ført til stykkets kassation	3,9		
240	Qa	F264	forskaft med laskeflade	hvalknogle	afbrudt stump af hvalknogle med en fin laskeflade i den ene ende.	4,	1,2	0,6
241	Qa	F265	trykstok el. lille kile	hvalknogle	tilsyneladende genbrugt stykke hvalknogle	5,2	1,5	0,9
242	Qa	F268	kile	hvalknogle	tydelige ar efter afsprængninger i proximalende, og holderiller i distalenden	7,45	3,2	2,3
243	Qa	F278	barde med knude	hvalbarde		14		
244	Qa	F284	barde med knuder	hvalbarde	3 stykker hvalbarde med knuder, et par af disse knuder lader til at være lidt mere komplicerede (garn?)			
245	Qa	F285	harpunhoved Qt type D	tak	harpunhoved med afbrudt od linehul 'højt' placeret ud for lateral modhage.	4,45		
246	Qa	F286	harpunhoved Qt type B	tak	'klassisk 'harpunhoved hvor modhager er brudt af i et brud der udgår fra bunden af bladgruben (se også E234)	5,65		
247	Qa	F291	trykstok	knogle	fint forarbejdet trykstok med slid/ tryk facetter i begge ender	4,4	0,8	0,6
248	Qa	H297	trykstok	hval knogle	trykstok med noget forvitret overflade	4,4	0,75	
249	Qa	H304	skindstykke	skind / læder	lille stykke skind / læder tilsyneladende afhåret			

Appendix: 1 -list of artefacts of bone, antler and ivory

250	Qa	K308	kile eller tuk	knogle	tuk eller kile formentlig lavet af genbrugt skaft der har haft en tydelig ornamentalfure har måske været skæftet?	8,5	2,4	1,2
251	Qa	X311	harpunhoved Qt type B	tak	vandrullet og bleget af solen	6,3		
252	Qa	X310	Benspids / forskaft legetøj?	knogle eller tak.	spids af knogle eller tak, tydelige stikkelfurer langs begge 'bredsider'og fint udført proximal laskeflade	10.8	0,5	0,3
253	Qa	Løsfund 8/8, 1	trykstok	knogle	fin bleget trykstok med trykfacetter i begge ender	4,95	0,8	0,45
254	Qa	Løsfund 8/8, 2	trykstok	knogle	flækket på langs, formentlig har denne kun haft tryk / slid facetter i den ene ende	4,4		
255	Qa	U nr	forskaft / genbrugt lanse spids?	knogle	brudstykke af skaft med stikkeludskåret fure	8,2	0,9	0,75

Appendix 2: list of artefacts of wood

Lb nr	Museums-nummer			genstandstype	diam
1	Qa	A	1,1	Udflækket stykke	
2	Qa	A	1,2	Udflækket stykke	
3	Qa	A	1,3	Udflækket stykke	
4	Qa	A	2	Stage	
5	Qa	A	A3	Pind med fint forarbejdet side (brudstykke af skaft?)	1,3
6	Qa	A	4	Pileskaft	0,8
7	Qa	A	10,1	Udflækket stykke	
8	Qa	A	10,2	Pind, let buet I begge knækkede ender	
9	Qa	A	10,3	Værktøjsskaft	
10	Qa	A	10,4	Udflækket stykke	
11	Qa	A	11,1	Udhugget stykke	
12	Qa	A	11,2	Stage (spant?)	
13	Qa	A	11,3	Skaft, afskåret I begge ender	1,3
14	Qa	A	12	Pind, tilspidset	
15	Qa	A	13	Stikkelskaft lånt til kbh	11 x 1, 4 cm
16	Qa	A	14,1	Pileskaft	0,7
17	Qa	A	14,2	Skaft, brudstykke	1,3
18	Qa	A	14,3	Skaft, brudstykke	
19	Qa	A	14,4	Pileskaft, brudstykke	
20	Qa	A	14,5	Pileskaft, brudstykke	
21	Qa	A	15,1	Trommekant med fure, lille brudstykke	
22	Qa	A	15,2	Stage, brudstykke med spids	
23	Qa	A	15,3	Stage, brudstykke	
24	Qa	A	15,4	Skaft, brudstykke	
25	Qa	A	15,5	Pind, svedet overflade	
26	Qa	A	15,6	Pileskaft, brudstykke, knækket I begge ender	
27	Qa	A	15,7	Afskåret eller afhugget ende	
28	Qa	A	15,8	Skaft, brudstykke	
29	Qa	A	15,9	Brudstykke, pind	
30	Qa	A	15,10	Spant, brudstykke, knækket i begge ender	
31	Qa	A	15,11	Spant, brudstykke, knækket i begge ender	
32	Qa	A	15,12	Stage, brudstykke knækket i begge ender	
33	Qa	A	15,13	Udflækket stykke	
34	Qa	A	16,1	Stage	
35	Qa	A	16,2	Stage	
36	Qa	A	16,3	Stage	
37	Qa	A	16,4	Udflækket stykke	

38	Qa	A	16,5	Udflækket stykke	
39	Qa	A	16,6	Udflækket stykke	
40	Qa	A	16,7	Spån	
41	Qa	A	16,8	Spån	
42	Qa	A	16,9	Udflækket stykke	
43	Qa	A	16,10	Udflækket stykke	
44	Qa	A	16,11	Skaft, brudstykke	1,5
45	Qa	A	16,12	Spån, brudstykke	
46	Qa	A	16,13	Skaft, brudstykke	1,8
47	Qa	A	16,14	Stage / skaft	
48	Qa	A	16,15	Pind, brudstykke	
49	Qa	A	16,16	Udflækket stykke	
50	Qa	A	16,17	Udflækket stykke	
51	Qa	A	16,18	Spån	
52	Qa	A	16,19	Skaft, brudstykke, tromme kant	
53	Qa	A	16,20	Spån	
54	Qa	A	16,21	Pind	
55	Qa	A	16,22	Spån	
56	Qa	A	16,23	Udflækket stykke	
57	Qa	A	16,24	Spån	
58	Qa	A	16,25	Spån	
59	Qa	A	16,26	Spån	
60	Qa	A	16,27	Spån	
61	Qa	A	16,28	Spån	
62	Qa	A	16,29	Spån	
63	Qa	A	16,30	Spån	
64	Qa	A	16,31	Spån	
65	Qa	A	16,32	Spån	
66	Qa	A	16,33	Spån	
67	Qa	A	16,34	Spån	
68	Qa	A	16,35	Spån	
69	Qa	A	17	Samling på ca. 50 stk. snitspåner og stykker af kviste	
70	Qa	A	18	Pileskaft, proximal del	6,6 x 0,67 cm
71	Qa	A	19	Spant til fartøj, Ovalt tværsnit	25,8 X 2,1 X 1,4
72	Qa	A	20	Skaft, brudstykke, meget fint poleret (forskaft af 'knæktypen')	
73	Qa	A	21	Tand, hvalrostand let bearbejdet	
74	Qa	A	22,1	Pileskaft, brudstykke	0,68-0,7
75	Qa	A	22,2	Pind, tilsnittet	
76	Qa	A	22,3	Pileskaft, brudstykke	1,0

77	Qa	A	22,4	Stage, med hul	
78	Qa	A	22,5	Stage, brudstykke med laskeflade	
79	Qa	A	23,1	Pind, udskåret brudstykke	
80	Qa	A	23,2	Spån	
81	Qa	A	23,3	Spån	
82	Qa		A23,4	Spån	
83	Qa		A23,5	Spån	
84	Qa		A23,6	Udflækket stykke	
85	Qa		A23,7	Spån	
86	Qa		A23,8	Udflækket stykke	
87	Qa		A23,9	Spån	
88	Qa		A23,10	Udflækket stykke	
89	Qa		A23,11	Spån	
90	Qa		A23,12	Spån	
91	Qa		A23,13	Spån	
92	Qa		A23,14	Spån	
93	Qa		A23,15	Spån	
94	Qa		A23,16	Spån	
95	Qa		A23,17	Spån	
96	Qa		A23,18	Spån	
97	Qa		A23,19	Udflækket stykke	
98	Qa		A23,20	pind	
99	Qa		A23,21	Spån	
100	Qa		A23,22	Spån	
101	Qa		A23,23	Udflækket stykke	
102	Qa		A23,24	Udflækket stykke	
103	Qa		A23,25	Spån	
104	Qa		A23,26	Spån	
105	Qa		A23,27	Spån	
106	Qa		A23,28	Spån	
107	Qa		A23,29	Spån	
108	Qa		A23,30	Spån	
109	Qa		A23,31	Spån	
110	Qa		A23,32	Udflækket stykke	
111	Qa		A23,33	Spån	
112	Qa		A23,34	Spån	
113	Qa		A23,35	Udflækket stykke	
114	Qa		A23,36	Stage, brudstykke	
115	Qa		A23,37	Stage, flækket på langs	

Appendix 2: list of artefacts of wood

116	Qa		A23,38	Skaft, flækket brudstykke, dobbeltfuret forskaft	
117	Qa		A23,39	Skaft	1,1
118	Qa		A23,40	Afhugget stykke med hakker til surring, hører til 23,52	
119	Qa		A23,41	Udhugget stykke	
120	Qa		A23,42	Pileskaft	0,9
121	Qa		A23,43	Spån	
122	Qa		A23,44	Udflækket stykke	
123	Qa		A23,45	Udflækket stykke	
124	Qa		A23,46	Spån	
125	Qa		A23,47	Pileskaft	0,9
126	Qa		A23,48	Spån	
127	Qa		A23,49	Spån	
128	Qa		A23,50	Stage, brudstykke, flækket på langsage	
129	Qa		A23,51	Udflækket stykke	
130	Qa		A23,52	Udflækket stykke, samhørende med 23,40	
131	Qa		A23,53	Spån	
132	Qa		A23,54	Pind	
133	Qa		A23,55	Udflækket stykke	
134	Qa		A23,56	Pileskaft	0,9
135	Qa		A23,57	Stage, afskåret	
136	Qa		A23,58	Pind, brændt i ene ende	
137	Qa		A23,59	Skaft, brudstykke	1,4
138	Qa		A23,60	Pind, flækket brudstykke	
139	Qa		A23,61	Pileskaft ? brudstykke	1,0
140	Qa		A23,62	Pileskaft, brudstykke	0,9
141	Qa		A23,63	Knivskaft (kun den ene halvdel)	
142	Qa		A23,64	Stage, brudstykke	
143	Qa		A23,65	Stage/ skaft, brudstykke	
144	Qa		A23,66	Stage, brudstykke	
145	Qa		A23,67	Pile skaft?	0,9
146	Qa		A23,68	Pind, brudstykke	
147	Qa		A23,69	Spån	
148	Qa		A23,70	Spån	
149	Qa		A23,71	Skaft	2
150	Qa		A24	Ark mangler fejlagtigt blandet med A23	
151	Qa		A25,1	Stage, brudstykke	
152	Qa		A25,2	Stage, lille brudstykke	
153	Qa		A25,3	Stage, brudstykke / spån	
154	Qa		A25,4	Stage brudstykke med laskeflade	

155	Qa		A25,5	Pind af lokalvokset træ	
156	Qa		A25,6	Skaft brudstykke med bladgrube fra kraftigt redskab	
157	Qa		A25,7	Pind af lokalt træ	
158	Qa		A25,8	Skaft, brudstykke	1,1
159	Qa		A25,9	Pind, brudstykke, svedet i ene ende	
160	Qa		A25,10	Spant, brudstykke	
161	Qa		A25,11	Stage, brudstykke	
162	Qa		A25,12	Stage, brudstykke	
163	Qa		A25,13	Distalende kastespyd med ornamentalfure tegnet af Pia Breinholt	1,3 x 0,8
164	Qa		A25,14	Pind, brudstykke	
165	Qa		A25,15	Skaft, brudstykke	1,4
166	Qa		A25,16	Pind, gren af lokalt træ	
167	Qa		A26	Stikkelskaft med fure på langs lavet på omdannet kastespyd	2 x 1,2
168	Qa		A27	Spån, tynd span, svedet I den ene ende	1,45x1,2
169	Qa		A30	Stikkel skaft	
170	Qa		A31	Udflækket stykke	
171	Qa		A43,1	Pileskaft, brudstykke	1
172	Qa		A43,2	Pileskaft, brudstykke	1
173	Qa		A43,3	Udflækket stykke	
174	Qa		A45,1	Stage, distalenden med spids	
175	Qa		A45,2	Udflækket stykke	
176	Qa		A45,3	Udflækket stykke	
177	Qa		A45,4	Stage, brudstykke med spids	
178	Qa		A46,1	Udflækket stykke	
179	Qa		A48,1	Ubestemmeligt stykke	
180	Qa		A48,2	Pind af lokalvokset træ	
181	Qa		A48,3	Ubestemmeligt brudstykke / stump med hugspor fra graveske	
182	Qa		C49,1	Spant ?	
183	Qa		C49,2	Spån	
184	Qa		C50	Udflækket stykke med mange hugspor	
185	Qa		C51,1	Pind / stage	
186	Qa		C51,2	Tilsnittet stykke	
187	Qa		C51,3	Stage, flækket brudstykke af stage	
188	Qa		C51,4	Skaft, flækket brudstykke med laskeflade	1,2
189	Qa		C51,5	Pind, brudstykke	
190	Qa		C51,6	Stageskaft, brudstykke	
191	Qa		C52	spån	
192	Qa		C53	Stage?	
193	Qa		C55,1	Skaft, afskåret stump	

Appendix 2: list of artefacts of wood

194	Qa		C55,2	Skaft af let kastespyd, brudstykke med bladgrube 6,1 x 1,4 x 1 cm	1,4
195	Qa		C56,1	Stage, brudstykke	
196	Qa		C56,2	Stage, brudstykke	
197	Qa		C56,3	Ubestemmeligt objekt	
198	Qa		C58,1	Pileskaft, brudstykke, proximalende 0,7 x 0,6	0,8
199	Qa		C58,2	Pileskaft, brudstykke	
200	Qa		C66,1	huggespån	
201	Qa		C66,2	Pileskaft, brudstykke	0,75
202	Qa		C76	Skaft brudstykke / afskåret laskeflade	1,2
203	Qa		C81,1	Pløk? brudstykke	
204	Qa		C81,2	Skaft, brudstykke	2,1x1,35
205	Qa		C84	Skål, brudstykke	
206	Qa		C85	Skål / bakke	
207	Qa		C86	Skål, brudstykke	
208	Qa		C88,1	Stage, brudstykke	
209	Qa		C88,2	Stage, brudstykke	
210	Qa		C88,3	Stage, let kantet tværsnit	
211	Qa		C88,4	Stage, ovalt tværsnit	
212	Qa		C88,5	Stage, let kantet tværsnit	
213	Qa		C88,6	Stage, brudstykke	
214	Qa		C88,7	Stage, brudstykke med laskeflade	
215	Qa		C88,8	Udflækket stykke	
216	Qa		C88,9	Skaft med tilspidset ende	2,2
217	Qa		C89,1	Stage, brudstykke	
218	Qa		C89,2	Stage, pind	
219	Qa		C89,3	Lamel, spile pind	
220	Qa		C89,4	Tromme kant 1,2 x 0,8	
221	Qa		C89,5	Knivskaft, b 1,7	
222	Qa		C89,6	Stage, brudstykke	
223	Qa		C89,7	Stage, tynd stage	
224	Qa		C89,8	Stage, brudstykke med spids	
225	Qa		C89,9	Stage, brudstykke med spids	
226	Qa		C89,10	Skaft, brudstykke, knækket I begge ender	
227	Qa		C89,11	Stage, brudstykke med laskeflade	
228	Qa		C89,12	Stage, brudstykke m spids	
229	Qa		C89,13	Stage, afskåret ende	
230	Qa		C89,14	Stage ? brudstykke, med laskeflade	
231	Qa		C89,15	Spant ?, brudstykke,snittede ender ovalt tværsnit	13,5 x 1,6 x 0,8
232	Qa		C89,16	Stage, brudstykke,	

233	Qa		C89,17	Stage / spant ?	
234	Qa		C90,1	Pileskaft, brudstykke	0,75x0,55
235	Qa		C90,2	Pileskaft, brudstykke	0,55
236	Qa		C90,3	Let kastespyd eller pileskaft	0,95
237	Qa		C90,4	Pind af lokalvokset træ	
238	Qa		C90,5	Pind, forarbejde til pileskaft	
239	Qa		C90,6	Pileskaft, brudstykke	0,7
240	Qa		C90,7	Pind med brændt ende, brudstykke	0,8
241	Qa		C90,8	Pileskaft forarbejde, brudstykke	0,8x0,6
242	Qa		C90,9	Pileskaft, brudstykke	0,9
243	Qa		C90,10	Pind, brudstykke	
244	Qa		C91,1	Skaft, brudstykke	1,3
245	Qa		C91,2	Skaft med laskeflade	1,2
246	Qa		C91,3	Skaft m. langsgående furer på begge sider	1,7
247	Qa		C91,4	Skaft, brudstykke	1,4
248	Qa		C91,5	Forskaft med laskeflade og bladgrube	1,5
249	Qa		C91,6	Skaft med fure, dobbeltfuret forskaft	1,8 x 0,8
250	Qa		C91,7	Skaft, Brudstykke skønnet diameter:	1,4 til 1,5
251	Qa		C92,1	Ske el. skål brudstykke	
252	Qa		C92,2	Stort udspaltet træstykke, muligvis brudstykke af fad	
253	Qa		C92,3	Stort brudstykke af træ	
254	Qa		C93	Let kastespyd med fin bladgrube tegnet af Pia Breinholt	4,5x 1,37x0,67
255	Qa		C94	Forskaft, med laskeflade	1,45
256	Qa		C95	Forskaft ? til kastespyd af knæktypen med hul til 'nitte' og ornamentalfure tegnet af Pia Breinholt	15,2x1,6, 0,9
257	Qa		C96,1	Trefuret skaft	1,2
258			C96,2	Trefuret skaft	1,4
259	Qa		C97	Skaft, lanse el. let kastespyd, med bladgrube	1,4
260	Qa		C98,1	Knivskaft 2,6 cm i diam	
261			C98,2	Knivskaft, 2,5 cm i diam	
262	Qa	C	99	Tromme kant lidt udædvanlig type tegnet af Pia Brejnholt 114 x 14 mm	
263	Qa		D,c,Dorsetlag	legetøjsharpunhoved / miniature	
264	Qa	D	121	Skål /ske brudstykke	
265	Qa	D	123	Udflækket stykke	
266	Qa	D	125	Pløk /lås	
267	Qa	D	128,1	Tandstikker, 4,9 x 0,45 tilspidset i begge ender	
268	Qa	D	128,2	Pind, tilskåret	
269	Qa	D	128,3	Stump af tilskåret pind med kantet tværsnit, poleret spids	
270	Qa	D	128,4	Skaft, brudstykke med laskeflade	1,75
271	Qa	D	128,5	Spån eller splint	

272	Qa	D	128,6	Spån med hugspor	
273	Qa	D	128,7	Rund pind, afskåret stykke	
274	Qa	D	135	Spån med huggespor	
275	Qa	D	136,1	Spån, stor	
276	Qa	D	136,2	Brudstykke af stage	
277	Qa	D	136,3	Span, kraftig	
278	Qa	D	136,4	Span, snittet af tynd pind	
279	Qa	D	136,5	Spån	
280	Qa	D	136,6	Brudstykke af 'liste'	
281	Qa	D	136,7	Spån	
282	Qa		D136,8	Brudstykke / spån	
283	Qa		D136,9	Udhugget stykke / stor spån	
284	Qa		D136,10	Stump af træ	
285	Qa	D	136,11	Lille dårligt forarbejdet håndtag	
286	Qa	D	137,1	Skaft brudstykke med laskeflade, hak (lås) og huller	1,8
287	Qa	D	137,2	Brudstykke med laskeflade med hak (lås)	1,5
288	Qa	D	138	Skål / ske, brudstykke med let forkullede områder	
289	Qa	D	139	Kvist, lille stump af afskåret kvist	
290	Qa	D	147,1	Spilepind, diam. 1 cm	
291	Qa	D	147,2	Pileskaft	0,8
292	Qa	D	149	Pind, brudstykke	
293	Qa	E	151	Skaft, Rundt tværsnit, brudstykkekastespyd el harpun	42,5 x 1,5
294	Qa	E	154	Værktøjsskaft med bladgrube	1,1
295	Qa	E	155,1	Skaft brudstykke af pileskaft?	0,7
296		E	155,2	Brudstykke, ubestemmeligt	
297	Qa	E	156	Stage, brudstykke med spids	
298	Qa	E	157,1	Stage, brudstykke	
299	Qa	E	157,2	Stage, brudstykke	
300	Qa	E	157,3	Pind	
301	Qa	E	157,4	Stage	
302	Qa	E	157,5	Spån	
303	Qa	E	157,6	Pind	
304	Qa	E	157,7	Pind	
305	Qa	E	157,8	Udflækket stykke	
306	Qa	E	157,9	Pind, deform	
307	Qa	E	157,10	Pind, brudstykke	
308	Qa	E	157,11	Spån	
309	Qa	E	157,12	Pind	
310	Qa	E	158,1	Brudstykke	

311	Qa	E	158,2	Brudstykke	
312	Qa	E	158,3	Brudstykke	
313	Qa	E	158,4	Brudstykke af pind	
314	Qa	E	158,5	Brudstykke af pind	
315	Qa	E	158,6	Brudstykke af skaft oprindelig diam kan ikke bestemmes men > 2 cm	12 x 1,09 x X> 2
316	Qa	E	158,7	Brudstykke	
317	Qa	E	158,8	Brudstykke	
318	Qa	E	158,9	Brudstykke	
319	Qa	E	158,10	Brudstykke	
320	Qa	E	158,11	Brudstykke af skaft oprindelig diam kan ikke bestemmes men > 2 cm	9,6 x0,95 x X> 2
321	Qa	E	158,12	Brudstykke	
322	Qa	E	158,13	Spån / Brudstykke	
323	Qa	E	158,14	Brudstykke	
324	Qa	E	158,15	Brudstykke	
325	Qa	E	160,1	Udflækket stykke	
326	Qa	E	160,2	Ubestemt brudstykke	
327	Qa	E	160,3	Stage ?, brudstykke	
328	Qa	E	160,4	Stage ?, brudstykke	
329	Qa	E	160,5	Stage, brudstykke	
30	Qa	E	164,1	Udflækket stykke	
331	Qa	E	164,2	Udflækket stykke	
332	Qa	E	164,3	Tynd udskåret pind	
333	Qa	E	164,4	Stage, brudstykke	
334	Qa	E	165,1	Pind	
335	Qa	E	165,2	Stage	
336	Qa	E	165,3	Pileskaft, brudstykke	0,9
337	Qa	E	165,4	Stage, brudstykke	
338	Qa	E	165,5	Udflækket stykke	
339	Qa	E	165,6	Stage,med fure	
340	Qa	E	165,7	Udflækket stykke	
341	Qa	E	165,8	Skaft, brudstykke med laske flade, ridsninger på laskeflade	6,2 x 1,1
342	Qa	E	165,9	Stage,brudstykke	
343	Qa	E	165,10	Pind	
344	Qa	E	E166,1	Knivskaft, 1,7 cm i diameter	
345	Qa	E	E166,2	Brudstyæææ af trætod	
346	Qa	E	E166,3	Brudstykke af træ	
347	Qa	E	E166,4	Kvist af lokalvokset træ	
348	Qa	E	E166,5	Brudstykke af skaft eller stage	12,3 x 1,68 x 1,2
349	Qa	E	E167,1	Spatelformet genstand, rynkeben? Med fure på ene side.	

350	Qa	E	167,2	Spilepind?, ja el teltlukkepind	
351	Qa	E	167,3	Pind, flækket brudstykke	
352	Qa	E	167,4	Spån	
353	Qa	E	167,5	Spån	
354	Qa	E	167,6	Ubestemmeligt stykke	
355	Qa	E	171,1	Pløk eller stage spids med snitmærker	
356	Qa	E	171,2	Pind / pløk	
357	Qa	E	171,3	Pind / pløk	
358	Qa	E	171,4	Skaft, brudstykke med laskeflade skaftet har ovalt tværsnit	6,8 x 1 x 0,61
359	Qa	E	171,5	Spån	
360	Qa	E	172,1	Brudstykke / spån	
361	Qa	E	172,2	Spån	
362	Qa	E	172,3	Spån	
363	Qa	E	172,4	Spån	
364	Qa	E	172,5	Spån	
365	Qa	E	172,6	Spån	
366	Qa	E	172,7	Spån	
367	Qa	E	172,8	Spån	
368	Qa	E	174	Stage, lille brudstykke af	
369	Qa	E	177	Pind, tynd og fint forarbejdet	
370	Qa	E	192,1	Spån, svedet brudstykke	
371	Qa	E	192,2	Udflækket stykke	
372	Qa	E	192,3	Stage, brudstykke	
373	Qa	E	193	Stage, brudstykke	
374	Qa	E	194	Stage med spids, brudstykke (bue fragment?)JA kategoriseret som BUE	
375	Qa	E	196,1	Udflækket stykke med snitflader	
376	Qa	E	196,2	Skaft? Lille brudstykke	4,9 x 0,9
377	Qa	E	196,3	Lille ubestemmeligt brudstykke	
378	Qa	E	210	Stage, brudstykke med tydelige hugspor	
379	Qa	E	211	værktøjsskaft	
380	Qa	E	237	Skæftet kniv	2,5
381	Qa	F	238	Bue laskeflade i proximal ende?, 37,5 x 2,8 x 1,5 tykkelse	37,5 x 2,8 x 1,4 cm
382	Qa	F	239	Stage, stor, med kantet tværsnit	
383	Qa	F	240	Ubestemmelæigt kraftigt stykke træ	
384	Qa	F	241,1	Stage / skaft, brudstykke	
385	Qa	F	241,2	Værktøjsskaft, klemstykke	
386	Qa	F	241,3	Stage, brudstykke	
387	Qa	F	241,4	Stage?, brudstykke	
388	Qa	F	241,5	Brudstykke af ubestemmelig genstand	

389	Qa	F	241,6	Knivskaft	2,5
390	Qa	F	241,8	Stage, brudstykke	
391	Qa	F	242	Forskaft med grube	1,6
392	Qa	F	243	Skål, ske	
393	Qa	F	244	Værktøjsskaft til håndværktøj	
394	Qa	F	245,1	Skaft, brudstykke med laskeflade	1,3-1,5
395	Qa	F	245,2	Skaft, brudstykke med laskeflade	1,4
396	Qa	F	245,3	Brudstykke med laskeflade	1,4 x 1
397	Qa	F	246,1	Stage el. pløk brudstykke	
398	Qa	F	246,2	Knivskaft, kun den ene halvdel, diameter 1,5	
399	Qa	F	247,1	Stage, brudstykke	
400	Qa	F	247,2	Værktøjsskaft trykstokhåndtag	
401	Qa	F	247,3	Stage, let kantet tværsnit	
402	Qa	F	247,4	Trommekant ?, brudstykke 19,4 x 1,9, 0,35 cm dyb fure	
403	Qa	F	247,5	Stage brudstykke	
404	Qa	F	248,1	Stage, brudstykke af spids	
405	Qa	F	248,2	Spån, brudstykke	
406	Qa	F	248,3	Stage, brudstykke	
407	Qa	F	248,4	Stage, brudstykke	
408	Qa	F	249	Muligt spant, knækket i gennemboret hul	
409	Qa	F	256	Nåleskaft? Lille rundt 'håndtag' tol en formodentlig spids genstand	4,5 x 0,7
410	Qa	F	266	Pileskaft Seddel mangler i kopi lånt til kbh	1,05-0,7
411	Qa	F	267	Stage / bue fragment? 24,8 x 2,4 x 1,2 cm	
412	Qa	F	269	Skaft, med laskeflade skævt afskåret i modsattte ende	1,4-1,6
413	Qa	F	270	Pind, tilspidset af lokalt træ	
414	Qa	F	271	Trefuret skaft, tegnet af Pia B.11 x 1,3 cm	1,3
415	Qa	F	272	Skaft, brudstykke af pile? skaft	1
416	Qa	F	273	Lille skaft måske til stikkel (lånt til kbh), 8,2 x 1,4 x 0,7	
417	Qa	F	274	Knivskaft	
418	Qa	F	275,1	Skaft stump (afskåret i begge ender), 8,2 x 1,3 cm	1,3
419	Qa	F	275,2	Skaft? Brudstykke knækket i begge ender	1,25
420	Qa	F	276	Brudstykke med laskeflade 12 cm langt, 1,25 cm bredt	
421	Qa	F	277,1	Brudstykke af bue? Eller fartøj, 20 cm langt	2,2 x 1 cm
422	Qa	F	277,2	Stage, brudstykke	
423	Qa	F	277,3	Skaft, brydstykke med laskeflade, 15, 6 cm langt	1,3
424	Qa	F	277,4	Pind, brudstykke	
425	Qa	F	277,5	Stage, brudstykke	
426	Qa	F	277,6	Stage el skaft, brudstykke 15,3 0,9 x 0,75	0,75
427	Qa	F	279,1	Stage, brudstykke	

428	Qa	F	279,1	Stage, brudstykke med spids, uregelmæssigt rundt tværsnit	18,8 x 2,2
429	Qa	F	280,1	Skaft til let kastespyd, brudstykke	1,3
430	Qa	F	280,2	Skaft til let kastespyd, brudstykke. 7 x 1,46 x 1,2cm	1,46
431	Qa	F	281,1	Stage, afknækket spids	
432	Qa	F	281,2	Brudstykke, ubestemmeligt	
433	Qa	F	282,1	To sammenhørende brudstykker af lille pind	
434	Qa	F	282,2	Skaft, lille brudstykke af pileskaft, 6,5 x 0,7	0,7
435	Qa	F	282,3	pind	
436	Qa	F	283	Skaft, brudstykke11,1 x 1,5	1,5
437	Qa	F	287	Skæftet stikkel (lånt til kbh), 11,1 x 1,5 x 0, 8 + 0,9 cm	
438	Qa	F	288	Skæftet kniv, med symmetrisk blad (F, a 60, kniv A)	
439	Qa	F	289	Muligvis sedimentprøve taget under kniv	
440	Qa	F	290	Skæftet kniv med bladfragment 10,5 x 1,8 cm ,tegnet af Pia Brejnholdt	
441	Qa	F	291	Kniv med blad skaft 15,8 x 2,6 x 1,5	
442	Qa	F	292	Skæftet kniv (lånt til kbh) skaft 9,1 x 1,7 x 1,5, totallængde 11,4 logo Ilulissat museum	
443	Qa	F	295	Skæftet stenblad , lille kniv på genbrugt pileskaft, 0,4,9 x 9 x 0,7	
444	Qa	F	296	pimpsten i birkebarkshylster af pimpsten + birkebark , helt fladt slebet ventral side og to slibe facetter i den ene ende af pimpstenen viser at her er tale om en 'raspe sten'	
445	Qa	H	298,1	Skaft, brudstykke 4,6 x 1.4 x 0,55	1,4
446	Qa	H	298,2	Skaft af let kastespyd brudstykke med laskeflade	1,2
447	Qa	H	298,3	Værktøjsskaft, håndtag til mikroflække el. lignende 12,6 x 1.1 x 0,9	
448	Qa	H	298,4	Skaft, brudstykke 14,5 x 1,3 x 1,0cm	1,3
449	Qa	H	298,5	Teltlukkepind? Fint poleret buet pind, 16,5 x 0,9 x 0,55	
450	Qa	H	299,1	Stage, brudstykke	
451	Qa	H	299,2	Pind, brudstykke	
452	Qa	H	299,3	Udflækket stykke	
453	Qa	H	300	Lamel / spant	
454	Qa	H	301	Ubestemmeligt stykke (Thule træ?)	
455	Qa	H	303,1	Stage brudstykke	
456	Qa	H	303,2	Stage komplet	
457	Qa	H	305,1	Udspaltet pind	
458	Qa	H	305,2	Stage, spids	
459	Qa	H	305,3	Pind, lang tynd udspaltet pind	
460	Qa	H	306,1	Stage, brudstykke	
461	Qa	H	306,2	Pind, tilspidset	
462	Qa		X309	Del af kajakstol eller fartøj?	

Appendix: 3 list of objects with ornaments

Objects of bone with ornament							
Qa	A5	forskaft, med proksimal laskeflade	hvalknogle	ornamentlinie på langs?	20	1,7	1,5
Qa	A9	harpunhoved	Qt type c	med ornamentlinie	6,8	0,9	1,1
Qa	A35	trykstok	tak / knogle	med rudimentær langsgående fure	3,35		
Qa	A37	harpunhoved	tand	Afbrudt parti af harpunhoved med laterale modstillede modhager, ornamental fure på siderne	6,35		
Qa	A42,1	barre af tand	tand	stikkelfurer eller ornamentalfurer på to sider	9,7	1,8	1,5
Qa	C71	nålehus	rentak	forarbejde til 'harpunbladshylster', endnu ikke udhulet og med ornamantalfurer på sider	4	2,1	
Qa	C113	hylster / blad gemme	rentak	flot bladhylster med 4 harpunblade inde i, langsgående ornamentalfure på de to sider	4,65	2,4	1,75
Qa	D146	forskaft / omdannet	tand	tilhugget tand, sikkert genanvendt forskaft der er forsøgt omdannet med rest af ornamentfure på langs			
Qa	E208	trykstok	knogle	atypisk, lavet på omdannet forskaft? Med langsgående fure	5,4	0,85	0,4
Qa	E231	harpunhoved (Qa type A)	tak	ornamental linie på den ene side af spids	9,2	1,4	0,85
Qa	E232	nåle el. bladhus	tak	komplet meget fint udført hylster med ornamentallinier på begge sider.	5,6	2,5	2
Qa	K308	kile eller tuk	knogle	tuk eller kile formentlig lavet af genbrugt skaft der har haft en tydelig ornamentalfure har måske været skæftet?	8,5	2,4	1,2

Objects of wood with ornament				
Qa	A	25,13	Distalende kastespyd med ornamentalfure	1,3x0,8
Qa	C	95	Forskaft ? til kastespyd af knæktypen med hul til 'nitte' og ornamentalfure	15,2x1,6, 0,9
Qa	A	26	Stikkelskaft med fure på langs lavet på omdannet kastespyd	2 x 1,2
Qa	C	91,3	Skaft m. langsgående furer på begge sider	1,7
Qa	C	91,6	Skaft med fure, dobbeltfuret forskaft	1,8 x 0,8
Qa	E	165,6	Stage,med fure	
Qa	E	167,1	Spatelformet genstand, rynkeben? Med fure på ene side.	
Qa	F	247,4	Trommekant ?, brudstykke 19,4 x 1,9, 0,35 cm dyb fure	

Appindex 4 Lithic tools from Qajaa SAQQAQ	A lag B, 17-45	A lag B, nedre 20-35	A lag B, nedre 20-25	A lag B 45-85	A løsfund nedskredet 8/8	A profilen ”løse fund” 50-90 under niveau-linien profiltegnsten	A 2-4 m, Lag E (4 indmålte Dorset)	A syd stensager nedskredet	Qajaa C a 1-40 affaldsten	C a 1-40,1	C a 1-40, 2	C a 40-60 samt et retoucheret afslag pakket med affald	C 60-65 gulv	C a+b 65-120	C b 1-40 heri inkluderet en kærne el. nakke af økse pakket med stenaffald	C b 40-60	C Løsfund 8/8	C 112 bifacialt blad fra depot	C 114 del af værktøjstasken	D a Dorset 0,35-0,45	D a Egon og Torbens sager 28/7	D a nederste horisont under ildsted sten 0-5 cm over klippe	D, b lag 4	D c Dorset lag	D c profil 31/7 artifakter indmålt	D Egons felt	D nedre 0-40	D tomt 4 (felt D)	Profil D, a	QAJAA 0708 overflade tomt 4	Qajaa felt D løsfund	E, a 40-50 (Dorset)	E, 50-60 affald	E, 50-60 stensager	E, a 70-80 stensager herunder et stk micelanous fra pose med affald	E, b Dorset stikkel 47 cm's dybde	E,a 80-90 stenredskaber	E, a 90-100 Stensager	E, a 100-110 affald og Stensager	E, a 110-120 herunder et forarbejde fra pose med affald	E, a b 60-70 affald og redskaber	E, b 70-80 stensager	E, b 80 – 90 stenredskaber samt et retoucheret afslag fra pose med affald	
microblades																																		1				1			1		1	4
microblade core														1																	1										1			3
core / preform		2	2						1	2					1																									1	1			10
arrows	1										1		1		3		1					2					2			2	1			1	2		1	1				1		20
harpoon blades											2				3															1					2				1	1	1	3	3	17
knives		1								5		1		6	1		1					1								2					1					1				20
bifaces		2	4		2			4			7	2	1	1	14	1		1				1					5	1		8	3			5	6		4	1	3	1	8	5	3	93
burins	1	1	1	1	1	1		1			6	1		4	5	1			1								2			5				8	4			3	5	1	8	9	3	73
Burin spalls	1		2	1							2																1	1		1				7	2						7		2	27
scrapers		1	2									3	1	3	2	1														1				2	3			1				1		21
sidescrapers			1		1						1		1	2	1																							1			3	4		15
axes														1													1			1				1								1		5
retouched flake		1								3	1	1	2	5	3	1											3				1			2	1		1		1	1	1		1	29
micelaneous	1			1						2			1																	1			1	1	1						4			13
whetstones										2					7													1							2		1				1			14
lamp / soapstone								1							1																				1									3
pumice												1		1	2	1																		1	3		2	1		1		1	1	15
hammerstone																																												0
strike a light																																									1			1
stone wedges																																									1			1
																																												384

DORSET							A 2-4 m, Lag E (4 indmålte Dorset)	A 2-4 m, Lag E (4 indmålte Dorset)												D a Dorset 0,35-0,45	D a Egon og Torbens sager 28/7	D a nederste horisont under ildsted sten 0-5 cm over klippe	D, b lag 4	D c Dorset lag	D c profil 31/7 artifakter indmålt	D Egons felt	D nedre 0-40		Profil D, a	QAJAA 0708 overflade tomt 4	Qajaa felt D løsfund	E, a 40 50 (Dorset)			E, a 70 80 stensager	E, b Dorset stikkel 47 cm`s dybde								
microblade							1													1	3	3	9	7	1	4	2		1	5	1	13												51
Microblade cores																							1		1							1												3
biface																				1	1	3	4	1	2	1			1	2														16
blt								1																	1		1					2				1								6
sideblade																				1												1												2
scraper																					1		1		3					3														8
sidescraper																											3			1														4
axe																							1																					1
lamp																							1				1																	2
retouched flake																							1																					1
whetstone																																1												1
quartz crystal																							1							3														4
core preform																					1																							1
							1	1												3	6	6	19	8	8	5	7		2	14	1	18				1								100

SAQQAQ	E, b 90-100 Stensager samt redskaber listet og pakket med affald	E, b 100-110	E, b 110-120	F, a 0-40 Stenredskaber 1 og 2, sidstnævnte er fedtstenslamper	F 0 - 40 stensager	F a 40-60 stensager	F 40 - 60 stenaffald	F 65-110 slibesten	F-profilen (afretning) 40-65 stensager	F 2 i og under ildsted II	H, a Dorset Laget	H, b	H	K	
microblades									1						1
microblade core				1		2				1					4
core / preform					1										1
arrows	1	1		1	2										5
harpoon blades									1					1	2
knives	1			2	3				1	2					9
bifaces	6	1	1	10	8	2	1		1	2					32
burins	2		2	3	5	3									15
burin spalls															0
scrapers	1			1	2				1					1	6
sidescrapers		1	1	5	2	3									12
axes					1										1
saw					1										1
drill										1					1
retouched flake	2		1	3	4	1									11
micelaneous					2										2
wetstones								1							1
lamp / soapstone				2										1	3
pumice			1												1
hammerstones															0
strike a light						1									1

DORSET															
microblade												11	4		15
biface													3		3
blt														1	1
sideblade															
scraper												1	1		2
micelaneous											1				1
	13	3	6	28	31	12	1	1	5	6	1	12	8	4	

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