

# The Nature of Thule Eskimo Whale Use

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**ABSTRACT.** Archaeologists for the past half century have considered bowhead whaling to be an important and integral part of Thule Eskimo subsistence. This position has come into question recently. Arguments are set forth favoring the predominant archaeological view that bowheads were hunted and extensively used during the period A.D. 1000-1300 in much of the Canadian Arctic. Direct, indirect, and circumstantial evidence is outlined, ranging from the presence of whaling gear and graphic whaling depictions to arguments of resource maximization and ample storage capacity at Thule winter sites. Differences in interpreting the Thule record appear to reflect different methodological approaches of ethnologists and archaeologists.

**RÉSUMÉ.** Pendant ce dernier demi-siècle, les archéologues admettaient que les baleines à tête inclinée faisaient partie important ou intégrale de la subsistance des Esquimaux de Thulé. Cela a été remis en question récemment. Les arguments en faveur du point de vue de l'archéologie classique étaient que les baleines à tête inclinée étaient chassées et utilisées sur une grande échelle, pendant la période de 1000 à 1300 ans après J.C., dans une grande partie du Canada Arctique. L'auteur schématise des preuves directes, indirectes et circonstancielles, en allant de la présence d'ustensiles en os de baleine et de peintures graphiques de baleines jusqu'aux arguments de ressources maximales et d'ample capacité de stockage dans les sites hivernaux de Thulé. Les différences dans l'interprétation de l'inventaire de Thulé, apparaissent refléter des approches méthodologiques différentes de la part ethnologues et des archéologues.

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## INTRODUCTION

Archaeologists for half a century have emphasized bowhead whales in their characterizations of Thule Eskimos. However, Dr. Milton Freeman, an arctic ethnologist, recently has been asked hard questions about archaeological evidence for the central place of baleen whales to Thule peoples (Freeman, 1979). The value of a non-archaeological perspective cannot be overemphasized in provoking a closer look at Thule data and models which best explain them. Methods of relating ethnology to archaeology are as old as anthropology itself (see e.g. Sollas, 1911; Steward, 1942; Thompson, 1958; Ascher, 1961; Chang, 1967; Binford, 1967; Lee and DeVore, 1968; Dozier, 1970), but very few attempts have been made to "connect" historic Canadian Arctic cultures with ancestral ones. Freeman's interrogatory about the importance of bowhead whales to Thule subsistence focuses our attention anew on problems inherent in archaeological-ethnological interpretation.

## FREEMAN'S POSITION

In contrast to the simple conclusion that abundant whale bones in Thule sites indicate that the occupants were whale hunters, Freeman (1979: 279) raises the following objections:

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- 1) The more notable features of a few localized sites cannot be taken to characterize all Thule sites over large areas and through several successive centuries;
- 2) The distinction between a whale bone *utilizing* people and a whale *hunting* people does not appear to be explicitly recognized in the reconstructions advanced to date;
- 3) The realization does not seem apparent in archaeologists' accounts . . . that in order to hunt baleen whales (during a brief whaling season) diversity and abundance of non-whale resources are mandatory; and,
- 4) Ethnographic evidence suggests that certain associated demographic and cultural correlates of baleen whale hunting should be encountered but are not supported by the Thule archeological record.

That whales have been overplayed as an integral part of Thule existence is summed up by Freeman's (1979: 283) comment that "the whale assumes no overriding significance in the economy or religious life of these (Thule) populations, and that no overdue dependence was placed upon success in its pursuit." Freeman does not deny that whale bones served an important function in building houses, but questions whether whale bones (and other derived materials) resulted from intentional whale hunting or not. He believes widespread, but uncritical, acceptance of a North Alaskan Eskimo whaling society model is to blame for Thule societies being cast as those of whale hunters.

Although not formally stated as such, three kinds of whale use are variously alluded to by Freeman: 1) *whale hunting* that provides fresh soft parts and bones, 2) *whale scavenging* of stranded or dead whales that provides fresh to rotting soft parts and bones, and 3) *whale bone collecting* from intact or disarticulated skeletons. I have tried to distinguish between these uses because they suggest different procurement methods and resulting products. Whether Thule people only collected whale bones for house building and other manufacturing, or whether they had tons of whale meat and blubber available is obviously a critical distinction. Also, "significance" and "dependence", as used by Freeman in the preceding statement, have meaning only in regard to a particular whale product in a particular cultural sphere. Thule peoples were dependent on whale bones in the eastern Canadian Arctic if large permanent houses with lasting roofs were to be constructed; whale meat and blubber were greatly significant if they were available for food in large quantities.

Before commenting on Freeman's objections, it should be admitted that almost no exposition of archaeological deduction in the literature covers whale bone use (or most other arctic animals and materials for that matter, but see Binford, 1978). For this reason, Freeman's reservations about whale hunting and use quite rightly to remind us to scrutinize our approaches and the logical steps between our data and our generalizations about Thule lifeways.

Mathiassen, "father" of Thule archaeology, did not make explicit his derivation of Thule people as whale hunters but his inferences are clear:

Whaling has apparently been one of the principal occupations; this is proved both by the construction of the houses, in which whalebones play

such a great part, and by the material used for the implements, whalebone and baleen apparently being the most important; in particular, however, the composition of the refuse heap, the large masses of baleen and whalebones which appear especially in the lower strata, indicate that whaling has been one of the most important means of livelihood of the population. The hunting of other marine animals, especially walrus and seals, has also been of great importance to them, and the same may be said of caribou hunting (Mathiassen, 1927: 85).

Whereas the present day Central Eskimos live a very nomadic existence . . . with caribou hunting as their principal occupation . . . the Thule culture has to a much greater degree been connected with the coast (and) has been based upon the hunting of the big marine mammals, especially whales and walrus . . . (Mathiassen, 1927 II: 2).

Next, the Thule culture is a typical coast culture and seems to have been particularly adapted to the hunting of whales and other big marine animals; it must therefore have originated on a coast, and a coast that abounds with big game, especially whales (Mathiassen, 1927 II: 182).

All these features indicate that we must seek in the west for the cradle of the Thule culture. But when besides we consider the whole fundament of the Thule culture, whaling, it is difficult to imagine this as having originated in the central regions (Mathiassen, 1927 II: 183).

We must therefore imagine that the Thule culture, with all its peculiar whaling culture, has originated somewhere in the western regions, in an Arctic area where whales were plentiful and wood abundant . . . (Mathiassen, 1927 II: 184).

The identification of whaling artifacts such as the whaling harpoon, foreshaft for whaling harpoon, and fixed lance heads used on whales (Mathiassen, 1927) strengthens Mathiassen's conviction that the Thule peoples were whale hunters. He further assumed that he was dealing with whale hunters, rather than scavengers of already dead whales, by deriving Thule culture from the Alaskan area where whale hunting continues into the 20th century, and by considering the massive size and potential importance of whales to Eskimo bands. Mathiassen (1927 II) identified certain whale hunting artifacts such as the whaling toggle head through ethnographic analogy (see Murdoch, 1892). To his satisfaction he had found the means, economic rationale, and evidence for hunting.

Mathiassen's Thule culture and earlier Alaskan cultures or phases were subsequently subsumed under a larger unit called the "Arctic Whale Hunting culture" by Larsen and Rainey (1948) on the basis of common whaling evidence. This pan-arctic cultural unit stressed similarity in the "fundamental elements" of the separate phases (eastern and western Thule, Old Bering Sea, Birnirk, etc.), and was so named because "whale hunting seems to have been the most important economic factor." (See Giddings, 1961, 1966, 1967 for an interpretation of the Old Whaling culture in western Alaska which is analogous to Mathiassen's interpretation of eastern Thule culture.) "Arctic Whale Hunting culture" is a term little used by archaeologists today, yet it reflects the extent and duration of whale hunting in the New World Arctic.

It is this early whale hunting identification that Freeman faults, but more recent archaeological work has shown that 1) the prevalence of whale bone associated with the classic Thule spread into the Canadian Arctic (c. A.D. 1000-1300) did not continue temporally into the historic period, and 2) Thule culture was not as uniform in its adaptation to geographic/climatic regions of the Arctic as Mathiassen assumed (McGhee, 1969/70; McCartney, 1977a). Although temporal and regional variants have been suggested, such archaeological units have not been established in the literature and hence it is no surprise that Thule culture is still perceived as a homogeneous adaptation to the Arctic.

While agreeing, in part, with Freeman's objections above, I do not concur that these justify the conclusion that Thule people were likely not whale hunters. I agree that 1) a few sites do not characterize all of Thule culture in the broadest sense, 2) archaeologists have not made a clear distinction between evidence for whale bone use versus evidence for whale hunting, 3) non-whaling resources are required even if whales are hunted, and 4) correlates of whale hunting like charms and amulets have not been found and definitely identified as such in the archaeological record. But these observations, singly or as a group, are not sufficient to alter the position of Mathiassen, and most archaeologists since, that bowhead whaling or whale use was of paramount importance to Thule peoples throughout much of the Canadian Arctic.

The following sections discuss the key questions raised by Freeman: 1) did Thule Eskimos hunt whales?, and 2) did whales have significance only as bones for house construction and implements, or were whales also significant to subsistence as meat, blubber, and internal organs?

#### A DEFENSE OF THULE ESKIMOS AS WHALE HUNTERS

Before discussing evidence supporting Thule whale hunting, the alternative to hunting should be explored. Freeman, both directly and indirectly, suggests that Thule people salvaged dead or stranded whales as their means of procuring bones and other whale parts. If whale bone occurrence does not prove whale hunting, then can we not assume that presence of walrus, seal, and caribou (or other animal) bones fails to prove the hunting of those animals? If they were also scavenged, we need not consider Thule Eskimos to be hunters at all but merely beachcombing collectors depending on dead or stranded animals. What, in other words, discriminates between whale hunting and other hunting in the archaeological record? Smaller sea mammal bones, in contrast to whale bones, are parts of more portable animals, are recycled less due to size, and are not large enough to be used in house building. We find little more evidence of paraphernalia requisite for other species hunting than we do for whale hunting, nor is there any more evidence of ritual treatment for those animals found archaeologically. Based on the rich ethnographic evidence of Inuit hunting, no anthropologist seriously believes that recent or past Inuit have subsisted on scavenged rather than hunted game. Yet we are reduced to this conclusion if we rely on the equation: bone presence = animal hunting, with no discussion of procurement technology and other factors.

Whale hunting and use of stranded whales are compatible and predictable activities (cf. Krasheninnikov, 1755; Langsdorf, 1817; Turner, 1886; Jochelson, 1933; Hawkes, 1916; Taylor & Taylor, 1977), but there are no ethnographically-known northern groups which utilized only stranded whales while ignoring live ones. The Thule pattern might not conform to these ethnographic analogues, but to the extent that material categories of Thule culture conform to the wider arctic and sub-arctic pattern of adaptation, it is highly probable that Thule whale hunting occurred as well.

Baleen whale strandings are relatively rare in the eastern Canadian Arctic today. Due to imprecise estimates of current and past stocks in that area, there is little chance of establishing the average number of strandings per year that would have been available to Thule bands. We may presume that incidence of strandings, like whale hunting, was highly seasonal (late spring to early fall) and occurred only within the known whale range for that period.

Turning now to specific observations, these can be categorized as direct, indirect, and circumstantial evidence, and archaeological "blindness."

#### DIRECT EVIDENCE

Direct evidence for whale hunting includes 1) artifacts known to be associated only or persistently with whale hunting, and 2) depictions of whale hunting in process. Such evidence does not include mere presence of bones, baleen, or other by-products at sites which fail to distinguish the manner of procurement. No one has found, to my knowledge, such direct hunting evidence as Thule lance blades embedded in whale bones.

#### *Whaling Artifacts*

Very few Thule implements have been identified by Mathiassen or later archaeologists as solely made for whaling. He mentions whale toggle harpoon heads, whale harpoon foreshafts, whale lance heads, and he relies on ethnographic analogy to establish their unique function (Mathiassen, 1927 II). Larger size is the most convincing attribute for these implements being used on bowheads.

The most consistently recognized of these specimens is the toggle harpoon head. These massive, closed socket heads are separable in size and, to a lesser degree, style from the toggle heads used on smaller sea mammals. They are found in low frequency from Siberia to Greenland to Labrador (see e.g. Mathiassen, 1927 II; Holtved, 1944; Bird, 1945), and can be identified in Alaska by their essentially identical modern counterparts (see e.g. Geist and Rainey, 1936; Murdoch, 1892). These heads measure 140-250 mm for six of Mathiassen's (1927) specimens and about the same for Alaskan examples (see e.g. Murdoch, 1892; Mathiassen, 1930; Geist and Rainey, 1936; Collins, 1937; Larsen and Rainey, 1948). The infrequent occurrence of large toggle heads might suggest that whaling was correspondingly infrequent among Thule groups. Another explanation would be the fact that only low frequency kills were necessary to provide food and material abundance. Still another reason for finding few whaling harpoon

heads is curation; "Important items are maintained and curated, thus their entry into the archaeological record, in terms of frequency, is inversely proportional to the level of maintenance and hence their technological importance, other things being equal" (Binford, 1976).

No one has yet discovered a separable set of whale hunting, butchering, and preparation implements based on material, placement in a site, incised decoration, or any other dimension. Because the ethnographic record also shows no set of whaling implements that are qualitatively distinct from other large sea mammal hunting, butchering, or preparation implements, the archaeological and ethnographic patterns seem congruent (see Taylor, 1979 for a description of a special whale cutting suit which may have been used prehistorically). Umiaks, kayaks, large harpoons, floats and related drag gear were often used in the pursuit of baleen whales as well as belugas, walrus, narwhals, and bearded seals (eastern Arctic), and sea lions (western Arctic; see e.g. Boas, 1888; Murdoch, 1892; Mathiassen, 1928; Holtved, 1962; Huntsman, 1963). This shifting of large harpoon gear to several large sea mammals is compatible with 1) the short hunting seasons of some of these species, 2) the economy of implement transfer rather than implementary redundancy, and 3) the ritual agreement between sea mammals versus land mammals.

In addition, harpoons and other gear identified as whaling-related in ethnographic collections derive their identity from being so categorized by their users, not because a whale harpoon (or its disarticulated and broken parts as would be found archaeologically) is significantly different from a walrus or other large sea mammal harpoon (e.g. Murdoch, 1892).

In short, few implements used exclusively in whale hunting have been identified at Thule sites and this observation is paralleled in ethnographic collections. Whaling procurement in all Eskimo societies seemingly stressed skill and technique, not technology *per se*; this skill applied also to elaborate ceremonial preparations and management of supernatural powers. Other than large toggle heads and perhaps some large lance heads and foreshafts which appear distinctive in shape and size, Thule assemblages do not reveal whale-specific artifacts. However, the widespread occurrence of such whaling heads throughout the Arctic, firmly identified by comparison with recent specimens (similar form = similar function), indicates that whale hunting did occur in Thule times.

#### *Whale Hunting Depictions*

Classic Thule Eskimos rarely decorated their implements with incised scenes from their own lives, but any large artifact collection will likely include an example or two. Pertinent to this discussion are three pieces showing large whale hunting in the Canadian Arctic. Collins (1951) found one example at a Thule site near Resolute Bay, Cornwallis Island (Fig. 1). This snow knife handle fragment has an engraving of five persons in an umiak harpooning a whale about the size of a boat. A harpoon is about to be cast or thrust into the whale from behind. The fat whale has roughly the profile of a bowhead and the fluke is clearly visible. Collins states that the house from which the piece came (House B) "appeared to be the latest of the group" of houses, but also that the specimens collected were

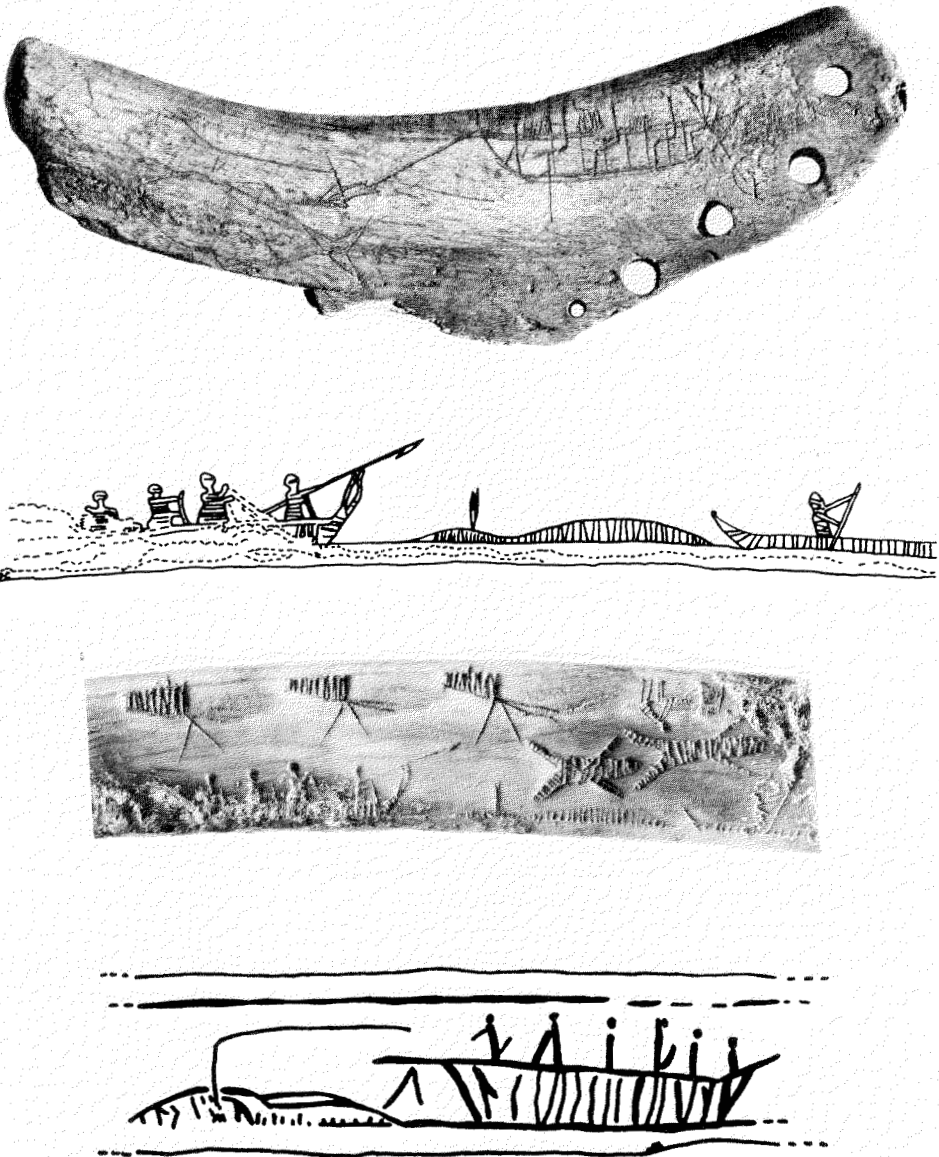


FIG. 1. Graphic representations of arctic whale hunting. *Upper*: Snow knife handle fragment found at a classic Thule site near Resolute Bay, Cornwallis Island, by Collins (1951:63). An umiak is shown pursuing a whale (lower left). *Middle*: Whaling scene redrawn from an ivory bow drill handle (inset) found in a Thule grave by Mary-Rousselière and Oschinsky on Admiralty Inlet (Mary-Rousselière, 1960). *Lower*: Whaling scene redrawn from an ivory bow drill handle found at the head of Cumberland sound by Schledermann (1975: 122). (Upper photo courtesy of Henry Collins and the Department of Anthropology, Smithsonian Institution; middle inset photo courtesy of Robert McGhee and the Archaeological Survey of Canada).

"typically Thule." The other artifacts illustrated from the same house, at or less than the same depth, are all classic Thule pieces. We may, therefore, assume that this incised representation of whale hunting dates to approximately A.D. 1000-1300.

A second Thule whaling scene is carved on a Thule bow drill handle found in a grave at Uluksan Peninsula near Arctic Bay, Baffin Island, by Oschinsky and Mary-Rousseliere (Mary-Rousseliere, 1960; Fig. 1). The artifact came from a burial cairn containing classic Thule artifacts such as ivory swimming bird figures, antler bolas weights, a snow knife, a sinew twister, bird dart barbs, and an ivory fish lure. However, Mary-Rousseliere estimates that the burial was only 300-400 years old based on skeletal preservation and cairn location. The cairn definitely dates prior to direct European contact. In contrast to the Resolute scene, this one from northern Baffin Island depicts a bowhead with characteristic double "hump" above the waterline about to be attacked by an umiak-load of Eskimos. A large harpoon is poised, ready to be cast at the spouting whale. A kayak is being paddled on the same water horizon, and it appears to be involved in the same hunting activity. Two additional umiaks containing harpoons and floats pursue a second whale to the right of the whale shown in Figure 1.

Thirdly, Schledermann (1975) illustrates a scene incised on an ivory bow drill handle found at the head of Cumberland Sound, Baffin Island (Fig. 1). The artifact was located "near site B-1," a site with classic Thule artifacts and houses. This whale hunting scene is more similar to the Arctic Bay example than the Resolute one in that the whale's back is exposed above the water surface. Although more crudely executed than the Arctic Bay whales, this whale is obviously a bowhead by virtue of its size and double "hump" back profile. Like the preceding examples, a harpoon is shown in the hunting scene, but this one appears to already have been thrust into the animal.

While these bowhead hunting depictions are infrequently found and thereby are subject to special provenience scrutiny, they serve nonetheless as incontrovertible evidence of prehistoric whale hunting. The ages of these three artifacts and their scenes have not been fixed with precision, but the first two, and probably the third, are firmly associated with classic or transitional (pre-A.D. 1600) Thule artifacts.

#### INDIRECT EVIDENCE

##### *Prerequisite Whaling Gear*

Bockstoe (1976: 43) calls attention to the prerequisites for successful post-Birnirk (Thule) whaling in northern Alaska: "the presence of whales within range of the hunters, the possession of an effective technology for taking whales, a sufficient population for efficient hunting, and an ability to organize a cooperative effort." Considering only whaling gear here (drag floats, toggle harpoon heads, and umiaks), we find evidence of all these in Canadian classic Thule collections (c. A.D. 1000-1300). Accepting Bockstoe's (1973: 798) emphasis on drag float development without which "it would be nearly impossible to kill any of the larger sea mammals while they are swimming," we note that float plugs



and mouthpieces are well known in Thule collections (e.g. Mathiassen, 1927; Holtved, 1944; McCartney, 1977a). Umiak and kayak parts, artistic representations, and toys of whaling gear appear infrequently in Thule collections but they are certainly known.

Thus the key hunting apparatus suitable for baleen whale and lesser sea mammal hunting occurs at Thule sites. There is not, in other words, a technological deficiency to preclude bowhead whale hunting.

#### *Community/Crew Prerequisites*

Freeman questions the early Thule community potential to field umiak hunting crews (two or more) for efficient whaling (see Bockstoce, 1976). He cites the local group size ( $\bar{X} = 40$ ) of early contact period Labrador Eskimos, and then proposes a similar low population size for central Arctic Thule communities characterized by McGhee (1976: 114) as follows:

The average size of a Thule winter village is four or five houses, suggesting that the migration of population expansion was carried out by small groups of perhaps 20-50 people who travelled together and who cooperated in hunting whales and other game. Such groups, travelling in umiaks during the summer and depending on a wide-ranging and evenly distributed food resource, the bowhead whale, must have been highly mobile.

The best ethnographic accounts of whaling in North Alaska suggest crews of six to ten men (Murdoch, 1892; Rainey, 1947; Spencer, 1959). However, we have no direct way of knowing if Thule crews also typically ranged between six and ten persons (perhaps a function of umiak size that is unknown), or if women ever participated in whaling crews. In the three whaling scenes shown in Figure 1, the umiaks hold four or five persons each and thereby suggest smaller rather than larger crews. We have no way of knowing if one umiak attacked whales or if several cooperated on whale hunting (whether from one camp or local group or from multiple camps). Single-man kayaks were possibly used to augment umiak harpoon power, as the kayak shown in the Arctic Bay specimen above (Fig. 1) appears in the same scene as the whale hunting umiaks. The late Sadlermiut and other eastern area Eskimos were known to employ kayaks in whale hunting (Boas, 1888; 1907; Mathiassen, 1927; Rasmussen, 1929).

As the above quotation demonstrates, McGhee finds no inconsistency with low group size and whale hunting ability. On the other hand, his figures of four to five houses per winter site are not explained. While some Thule winter sites do have four or five houses (or less), those of the eastern Canadian Arctic generally tend to contain more houses per site. A recent site survey of 120 Thule winter sites from five regions reveals that average site size by region varies as follows (expressed as houses per site): Broughton Island - 4.4, Clyde - 4.7, northern Baffin Island - 9.3, Cumberland Sound - 9.7, and Somerset Island - 14.0 (McCartney, 1971a). In every region there are several sites which are especially large when measured against the house figure. Some examples include Naujan - 20, Qilalukan - 24 (Mathiassen, 1927); Nunguvik - 50 (Mary-Rousseliere, 1979); Silumiut - 28, Kamarvik - 16, Igluligardjuk - 18, Inuksivik - 12 (McCartney,

1977a); Cape Garry - 26 and Learmonth - 16 (McCartney, 1979a). Taylor and McGhee (1979) report 28 houses for the Learmonth site. Finally, Taylor (1968: 13) states that "Thule winter villages commonly contain six to thirty rather large solid houses made . . . over a whalebone framework."

It would seem that Freeman has underemphasized the potential population at Thule sites in the eastern Canadian Arctic by relying on McGhee's four-five house average. If the 1:2 ratio of men to women and children found in ten Central Eskimo settlements (Boas, 1888) holds for earlier Thule settlements, then a camp of 40-50 persons could probably muster two or more male boat crews for whaling with little difficulty. Finally, Bockstoce's (1976) prerequisite of cooperation between boat crews for efficient whaling can only be assumed, as so elusive a quality cannot be detected archaeologically.

#### CIRCUMSTANTIAL EVIDENCE

##### *Ethnographic Continuity*

As the immediate predecessor culture of ethnographically-known Canadian Arctic Inuit, Thule culture dates back at most ten centuries. The classic, whalebone-associated Thule sites that are our focus here date mostly between A.D. 1000-1300. The continuity between implements of classic Thule through the transitional or modified Thule period (non-whaling emphasis; see McCartney, 1977a) up to the 18th-19th century ethnographic period is strong. The cultural and human genetic flow is unbroken by major migrations during the past millennium (but see Burch, 1978 for the reconstruction of a regional migration). It can safely be assumed that subsistence adaptations within a relatively narrow range of species possibilities for Inuit hunters and gatherers have not changed significantly during that period. This is not to imply climatic consistency, for dependence on various species has fluctuated with their climatically determined abundance (Vibe, 1967; McGhee, 1969/70; McCartney, 1977a). But when whales (or seals, walrus, belugas, etc.) were available and therefore hunted in the pre-contact and early contact periods, they were probably hunted through similar procurement systems based on limited successful ways to stalk, kill and retrieve such animals (McCartney, 1975; 1977b).

The general cultural continuity over the past millennium between early Thule and recent Inuit and the consistent behavior of bowhead whales lend support to uniform patterns of whale procurement over this period. In contrast, such an assumption of similarity between the ethnographically-known period and earlier Dorset or Pre-Dorset times would be much weakened by the several millennia separating these cultures.

##### *Resource Maximization*

As arctic hunters and gatherers, Thule Eskimos had few choices in reducing subsistence uncertainty and risk (see Johnston and Selby, 1978). Storage of meat from abundant species (caribou, ringed seal) and large species (bowhead, walrus, beluga) is well-documented in Eskimo literature. Using this measure, it is improbable that bowhead whales went un hunted by Thule groups due to their potential yield. There is no question about bowhead presence in early Thule

times, given the recognizable bone and baleen fragments and artifacts found in winter sites. To have the capacity to hunt large sea mammals but fail to broaden it to include whales for superstitious or any other reasons flies in the face of worldwide substantiation of minimum effort exerted for maximum yield by hunters and gatherers. The alternative to Freeman's suggestion of no active Thule whale hunting is passive whale collecting of dead or stranded whales, or even mere collection of bones without using meat and blubber. Rather than reduce Thule people to whale scavengers, I think it is more consistent with their arctic adaptation that they be viewed as actively planning hunting strategies around this largest of resources.

Based on ethnographic reports, Jochim (1976: 7, 23ff) identifies 1) weight, 2) density, 3) aggregation, 4) mobility, 5) fat content, and 6) non-food yields as the "resource attributes most often taken into consideration by hunters and gatherers." Bowheads are outstanding human prey according to all these qualities save density, and in this case one whale is equivalent to a high density of smaller game. No other Canadian Arctic animal matches the bowhead's potential contribution to food, fuel, tool and weapon materials, household implements, transportation and shelter. Bowhead whales are slow swimmers at 2-4 knots, feed near the surface, often can be approached while sleeping on the surface, congregate in gangs of several hundred animals during migration, tend to be timid and thus more easily approached than other baleen whales, are remarkable floaters when killed, and have large mouth bones and sheets of baleen (Banfield, 1974; Scoresby, 1820).

Table 1 gives weights and equivalents of arctic animals known from Thule and other Eskimo sites. While only a few bowheads would be harpooned annually by any one band, the surpluses provided were unparalleled in other animals. Using figures from humpback whales (Denniston, 1972) as approximate measures for bowhead parts, we would expect to find the following amounts of materials: meat - 42%, blubber - 26%, bone - 18%, and internal organs - 14%.

Table 1. Gross weights and equivalents of major species used by Thule Eskimos

Species	Source and Adult Weights		Ave. Adult Animal Weight (kg/lbs)	No. of Animals to Equal a bowhead:	
	Banfield 1974 (kg/lbs)	Peterson 1966 (kg/lbs)		25-ton	50-ton
Beluga ( <i>Delphinapterus leucas</i> )	m-1360/2998	m&f-362-680/800-1500 (average)	521/1150	43.5	87
Walrus ( <i>Odobenus rosmarus</i> )	m-760/1675 f-570/1257	m-680/1500 (average) f-566/1250 (average)	623/1375	36.4	72.8
Bearded Seal ( <i>Erigonathus barbatus</i> )	m&f-400/882	m-227-453/500-1000 f-181-317/400-700	294/650	77.0	154.0
Ringed Seal ( <i>Phoca hispida</i> )	m&f-91/201	m&f-36-113/ 80-250	75/165	303.0	606.0
Caribou ( <i>Rangifer tarandus</i> )	m-110/243 f-81/179	m-110/242 (average) f-82/180 (average)	96/211	237.0	474.0

m = male  
f = female

## ARCHAEOLOGICAL "BLINDNESS"

The archaeologist quite obviously works within a different data gathering and interpreting framework than the ethnographer. The cultural fraction has lost much of its context and coherence and lies beyond direct user explanation. Freeman punctuates this point by calling for archaeological evidence of a whale cult if, in fact, whaling was as important to Thule subsistence as archaeologists claim. Such special treatment of the whale would then parallel its treatment by ethnographically-known groups such as the Alaskan Eskimo (Lantis, 1938; 1947). While not faulting the logic in reaching this conclusion, I submit that the archaeological record cannot be read like the ethnographic record and that whale cult phenomena are highly unlikely to be recovered from a Thule site even though they once existed. This point can best be demonstrated by relying on Spencer's (1959) excellent rendition of whale treatment in North Alaska (see also Murdoch, 1892; Rainey, 1947; VanStone, 1962; Huntsman, 1963).

Here is a partial list of the rich whaling-related activities, beliefs, and materials to demonstrate the all-pervasive importance of whale hunting to the North Alaskan Eskimo: 1) allegiance of crew to the *umealiq* (whaling captain/boat owner), 2) gifts in the form of meat from the *umealiq* to the crew, 3) gear preparation and cleaning, 4) making of new clothes, 5) recovering umiak in snow block shelter, 6) sexual abstinence, 7) symbolic meals, 8) ritual retirement of the crew to the *karigi*, 9) ritual food taboos, 10) singing of whale songs, 11) ritual mittens worn by the *umealiq*, 12) special ritual bowl for offering the whale a drink, 13) ritual treatment of whale floats, 14) cleaning ice cellars and distributing previous year's whale meat, 15) treatment of whale charms (e.g. beetles in boxes, stuffed raven skins, stuffed lemming skins, baleen cut in shapes of whales, walrus, and seals, pieces of fossil ivory, wolf skulls, and hair of dead whalers, 16) preparation of umiak and gear at ice edge, 17) wearing of raven skins during whaling along with other charms, 18) painting of faces to mark previous taking of whales, 19) singing of songs for all the whaling gear, 20) whale greeting ceremony, 21) formal butchering practices and division of whale parts, 22) mask dances in *karigis* over piles of whale meat, etc. (Spencer, 1959). This list is by no means exhaustive (see Lantis, 1938 for a detailed analysis of 32 elements in the Alaskan whale cult), but the critical point is that little of this special whale hunting cult behavior can be distinguished archaeologically. Whaling behavior in the eastern Canadian Arctic is equally lacking in materials that an archaeologist might find (see e.g. Boas, 1888; 1907; Rasmussen, 1929).

The North Alaskan archaeologist a thousand years hence will find only an occasional whale carving (Nelson, 1899; Spencer, 1959) that need not necessarily represent whale hunting, and essentially none of the other physical apparatus or structures used will distinguish whale hunting from other whale use. Most of the whale charms, for instance, do not depict whales or whaling. Masks, beads, labrets, nose pins, drums, and other ceremonial objects are rarely whale-specific (see Lantis, 1947; Spencer, 1959). What the archaeologist will find are permanent villages (suggesting whaling crew potential), umiak parts and large sea mammal hunting gear (suggesting whale hunting potential), meat caches and whale bones (suggesting whale meat and blubber storage and reliance), faunal evidence of

mixed hunting and fishing subsistence (suggesting that whale was not the sole dietary animal), remains of *karigis* (suggestive of ritual and supernatural activity), and bits of "foreign" materials that derive from exchange with interior and other coastal groups (suggestive of food surpluses). Each of these features or artifacts is also found at large Thule winter sites in the Canadian Arctic. Whereas future archaeologists may devise methods of discerning, with a higher degree of confidence, ritual wooden bowls from other bowls, whale charms from other site debris, and ceremonial clothing from non-ceremonial clothing, we have not successfully made these distinctions thus far. Thule winter houses, our richest source of archaeological data, are characterized by heavy reuse since their original occupation through re-occupation and the acquiring of whale bones for other purposes. Decay and disturbance preclude a pristine view of early Thule behavior, and snow houses possibly used around permanent village sites leave no structural traces. Finally, Lantis observed the difficulty of detecting whale cult phenomena archaeologically 40 years ago:

When the Thule culture was still active in this area (between the Mackenzie Eskimo and the Iglulik Eskimo), there was certainly whaling, it being a very prominent feature of the Thule culture. Whether it was accompanied by any of the elements of our whale cult is another question, and *one that would be difficult to answer with certainty* (emphasis added; Lantis, 1938: 448).

In the main, Freeman is asking for direct evidence of whaling cults and ceremonialism, and what evidence we can provide is indirect and inferential. Even with reliance on ethnographic analogy, materials and associations excavated at Thule sites must be evaluated against alternative ethnographic explanations and within the larger cultural context. The complex and subtle functions and meanings of ceremonial objects may be clear to participant observers, but once used and discarded, these objects often lose these qualities. Only some recurring spatial or contextual patterning within a site is likely to suggest the special or ceremonial meanings of such objects.

#### A DEFENSE OF THULE WHALE DEPENDENCY

The foregoing arguments support the view that Thule whale hunting did, indeed, take place. However, a far more important anthropological issue than procurement technique is that of whale dependency. No matter whether whales were hunted or were searched out once beached or floating dead, the products from a fresh whale were both varied and vastly abundant (see Table 2). The key questions posed at the outset regarding whale use are not mutually exclusive since whale hunting implies the opportunity to use all parts of the whale for subsistence as well as heat, manufacturing materials and house construction. However, Freeman suggests that Thule people may have used collected whale bones to the exclusion of the soft parts (meat, blubber, oil, etc.). Examples of direct, indirect, and circumstantial evidence are offered in addressing this position.

Table 2. Eskimo use of bowhead whales

Category	Product	Ethnographic Evidence	Thule Archaeological Evidence	
Food	Skin/muktuk	X	-	
	Meat	X	-	
	Organs-brains	X	X	
	tongue	X	-	
	intestines	C	-	
	kidneys	X	-	
	heart	X	-	
	liver epithelium	X	-	
	white gum	X	-	
	Blubber/oil	X	-	
	Fuel	Oil for lamps	X	(lamps used)
	Structures	Bones for house rafters and lattice	X	X
		Bones for burial cairns, caches, etc.	X	X
Transportation	Bones for sled shoeing	X	X	
	Bones for umiak parts	X	?	
	Meat/fat for dog food	X	-	
	Baleen for sleds	X	-	
Household Items	Baleen matting for platform	-	X	
	Toys	X	X	
Implements	Liver/lungs for drum heads	X	-	
	Bones for: mattocks	X	X	
	picks	X	X	
	shovels	X	X	
	foreshafts	X	X	
	socket pieces	X	X	
	adze heads	X	X	
	lance and harpoon heads	X	X	
	handles	X	X	
	snow beaters	X	X	
	paddle blades	X	X	
	knives	X	X	
	etc.			
	Baleen for: cups and containers	X	X	
	traps	X	?	
	cordage/lashing	X	X	
	fishline	X	?	
	nets	X	?	
	wolf-killers	X	?	

References: Carroll, 1976; Marquette, 1976; McCartney, 1977a, 1979a. b; Murdoch, 1892; Nelson, 1899; Rainey, 1947; Spencer, 1959; and similar works.

#### DIRECT EVIDENCE

##### *Whale Bone Use*

Freeman infers that Thule Eskimos could collect bones and baleen from whale skeletons along the beach to use in their houses and for their numerous whale bone and baleen tools. The durable bones were recycled long after their original gathering. One could conclude from the house remains that while Thule Eskimos used whale bones extensively, bones alone are no proof that soft parts were utilized as well.

I concur with Freeman that hunting whales and house building with whale bones are sequential and therefore separate activities (McCartney, 1979b). It is unlikely that a family would set out to hunt seven to ten whales for 14-20 oil-saturated mandible rafters when abundant clean ones could be collected from past hunted and beached animals. Assuming that several houses were built simultaneously to form a winter base camp, then we must multiply the 7-10 figure by the number of houses. Even five to ten houses, less than half of the total for large sites, would require 35-100 whales which a small band could not possibly produce in one year from a local area. Secondly, house construction probably took place in summer when foundation digging and whale bone retrieval by umiak were possible (see Spencer, 1959; McCartney, 1979b).

Turning to direct whale bone evidence of soft part use, we note that bones used in house construction could conceivably come from both stranded and hunted skeletons scattered along beaches. To my knowledge no archaeologist has reported butchering mark patterns on whale bones, which would support dual soft part-hard part use. But we discovered an interesting bone alteration pattern at all southeastern Somerset Island Thule winter sites in 1976 and 1978 that confirms the use of fresh whales. In almost every whole whale cranium of more than 200 inspected in old house ruins, we found a large, irregular hole chopped or broken into the brain case just superior and anterior to the foramen magnum (Fig. 2). This area of the skull has the thinnest bone ( $< 1$  cm) and the hole was probably

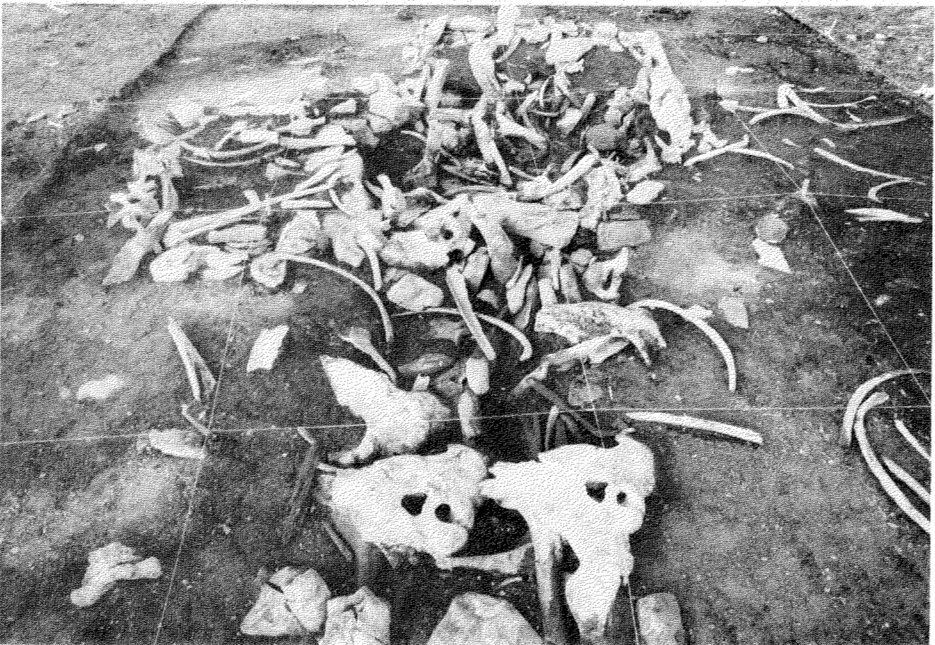


FIG. 2. An excavated Thule winter house at Cape Garry, Somerset Island (PcJq-5). Note the irregular holes broken into the brain cavities of the whale crania in the foreground. The other whale bones, primarily mandibles, ribs, vertebrae and scapulae, are scattered from their original positions in the house superstructure.

knocked out with a boulder or stone maul or was chopped out with an adze or other cutting tool. This hole was likely made for removal of the brain, an organ considered a delicacy and still eaten by North Alaskan Eskimos (Carroll, 1976). Even if the holes resulted from symbolically "releasing" the souls of whales, they imply a fresh rather than a skeletal condition.

How typical this Somerset Island skull alteration is in adjacent areas is difficult to ascertain because of infrequent presence of skulls in Thule sites and because archaeologists have paid little attention to these skull holes. However, these cranial holes are noted at least on adjacent Cornwallis Island and as far away as the northwestern Hudson Bay coast (McCartney, 1977a; McGhee, 1978).

#### *Whale Bone Construction and Distribution*

There is a significant difference between a single whale's providing 2-4 bones (mandibles and maxillaries) and 30 bones (ribs) suitable for house construction. Freeman refers to ribs used as rafters, as do Hawkes (1916) for Labrador houses and Schledermann (1976a) for Baffin Island houses. If these houses are comparable in size to most Thule houses of the central Canadian Arctic, then either very large bowhead ribs or ribs of whales larger than bowheads were required. For instance, ribs located at Somerset Island in 1976 measured a maximum of 120 cm. Even with some variation, such ribs are neither long enough nor strong enough to serve as rafters or primary supports for a 4.5 m wide house. Numbers of



FIG. 3. An excavated Thule house foundation at Cape Garry, Somerset Island (PcJq-5). Eight large whale skulls are positioned around the interior house wall, supported on stones to give them height above the floor. Because of the position of the skulls, it is assumed that maxillary bones were originally attached to them, forming rafters to support the sod roof.



naturally curved mandibles, and secondarily maxillaries (upper jaws), are the limiting factor in house building and if a maximum of four such rafters come from each whale, then a significant number of whales must be found prior to constructing several houses. Maxillary-premaxillary jaw bones used alone for rafters would be slightly shorter and weaker than mandibles. If maxillaries were used with the skull base attached for greater length (as found in House 7, Cape Garry; Fig. 3), the resulting rafter would be weaker because the suture connecting the two bones separates easily when dried. Ribs were likely incorporated into the roofs of *qarmat* structures during the transitional period (c. A.D. 1300-historical period) to hold up skins rather than a heavy sod roof. Ribs were probably lashed as cross pieces between mandible rafters during the early Thule period under discussion here.

In regard to distribution, Freeman (1979: 280) refers to:

- a) an undue absence of emphasis on whale bone technology through Thule history; b) the presence of Thule settlements in areas where whales do not occur or cannot be hunted; c) Thule settlements characterized by lack of whale bone in areas where whales are found; (and) d) presence of Thule whale bone houses in areas where whale hunting is unlikely to have occurred.

Because he offers no citations or examples, it is not clear just what data or areas he has in mind for each of these points. In a), the lack of whale bone technology (houses and to a lesser extent tools) later in the Thule period has been covered by discussions of changing climatic adaptations away from whaling during the transitional or modified Thule period (see e.g. McGhee, 1969/70; McCartney, 1977a; Schlederman, 1976b). In b) Freeman may be referring to non-whaling settlements along the mainland coast from Coronation Gulf east to Committee Bay, for instance, and it is true that stone and sod houses prevailed where whale bones were unavailable in quantity (see Mansfield, 1971; McCartney, 1979a; and Dunbar and Greenaway, 1956 for bowhead and ice distributions). He may refer in c) to house sites badly picked over which reveal no present whale bones, or sites such as those around Broughton Island where whales were available in the region (Davis Strait) but, because of local ice conditions and/or water depths, were not taken locally in abundance (Sabo, 1979a, b). In this case stone houses were built in the Broughton Island area while contemporary bone and stone houses are located north and south of this area. In response to d), I can only reiterate that heavy bones were probably not carried far for house building; the presence of bone houses suggests that whales were available in the area at one time.

The following distributional generalizations could perhaps be used for further testing Freeman's observations:

- 1) The bulk and weight of whale meat, blubber, and bones restrict direct Eskimo use of these materials to the local area of hunting and/or beaching; exchange or secondary use of blubber and meat was more likely than exchange of bones because the most useful bones (skulls, maxillaries, mandibles) are very heavy and are more difficult to section than soft parts;

- 2) Houses incorporating whale bones in their construction should, therefore, reflect the approximate distribution of contemporaneous whales; whale bone and baleen artifacts will be transferred to adjacent areas with greater ease than house and other feature construction elements;
- 3) Binford (1978: 459) emphasizes the role of animal culling or "selective removal or use of low-utility parts of the anatomy" in Eskimo societies, and generalizes that "the greater the distance over which meat is to be transported" and/or "the greater the bulk of material to be transported, the more radical will be the culling of low-utility anatomical parts." This principle is reflected in the presence of few *diet-derived* bones of bowhead, beluga, walrus, and bearded seal in Thule middens; however, abundant *shelter-derived* bones at Thule sites show that what is marginal in a dietary context is primary in a building context; summer whale hunting camps (procuring and butchering station) need only be in the general area of the winter house settlement (storage and consuming station) and the two need not coincide exactly;
- 4) Because the ancestral North Alaskan Birnirk people constructed permanent houses using a combination of wood timbers *and* whale bones for supports, houses constructed solely of wood or stones with no whale bones suggest that bones were unavailable in those areas; the superior shape and strength of whale crania, mandibles, ribs, and scapulae for house supports and lattice make it unlikely that whale elements were overlooked, when available, in lieu of stone for house superstructures; the fact that whale bone is used in early North Alaskan houses provides cultural precedence for its use in the central and eastern Arctic;
- 5) Areas evidencing house forms other than those using whale bones are likely those where Thule Eskimos depended on other animals for food and raw materials due to ice or other marine limitations;
- 6) Use of whale hard parts (bones and baleens) for construction and manufacturing can be viewed as roughly proportional to use of soft parts (meat and blubber) for food, but these uses represent two separate transporting efforts; the more hard materials available for use, the greater the likelihood that soft parts were also available for local use (from hunted or stranded whales);
- 7) Going beyond abundance of raw materials, numbers of tools and implements of whale bones and baleen or other materials (ivory, stone, etc.) pertaining to a possible whale hunting complex (large harpoon gear, bladder floats, inflation mouthpieces and plugs, umiaks, etc.) will be roughly proportional to the importance of whale utilization locally; on the other hand, there are very few and perhaps no artifacts used exclusively for baleen whales and not for belugas, narwhales, walrus, and bearded seals, and therefore only whaling potential is measured by these artifacts, not actual whaling success; and
- 8) Features requiring few or no whale bones or those which tend not to protect whale bones (surface tent rings, meat caches, boat supports, burial cairns, etc.) will be of little value in establishing the prehistoric use and distribution of whales.

## INDIRECT EVIDENCE

*Meat Caches*

Large Thule winter sites are always characterized by the presence of many meat caches. While it may not be possible to discriminate between whale and non-whale blubber and oil residues found in old meat caches and thereby prove whale storage, clearly there was the capacity to store a large quantity of meat and blubber — for winter use. Meat caches or storehouses take the form of 1) simple depressions in which meat and blubber could have been buried (Somerset Island sites; Fig. 4), 2) stone-lined and covered subsurface caches (northwestern Hudson Bay coast; McCartney, 1977a), and 3) small hut storehouses with semi-subterranean entrances (Somerset island and northwestern Hudson Bay coast). These various caches are the counterparts to the “ice cellars” of north Alaska where whale meat and blubber are stored. While excess seals, walrus, and belugas could be stored in such caches or storehouses, the most obvious and bulky meat and blubber surplus would come from a bowhead whale. Therefore, the greatest simultaneous storage equipment would derive from large whale use. Snow block storage houses could have been used in winter as well but these could not be traced today.

The PeJr-1 (Learmonth) site is used here as an example of meat/blubber storage capacity. I consider the 50-odd small depressions of approximately 2 m

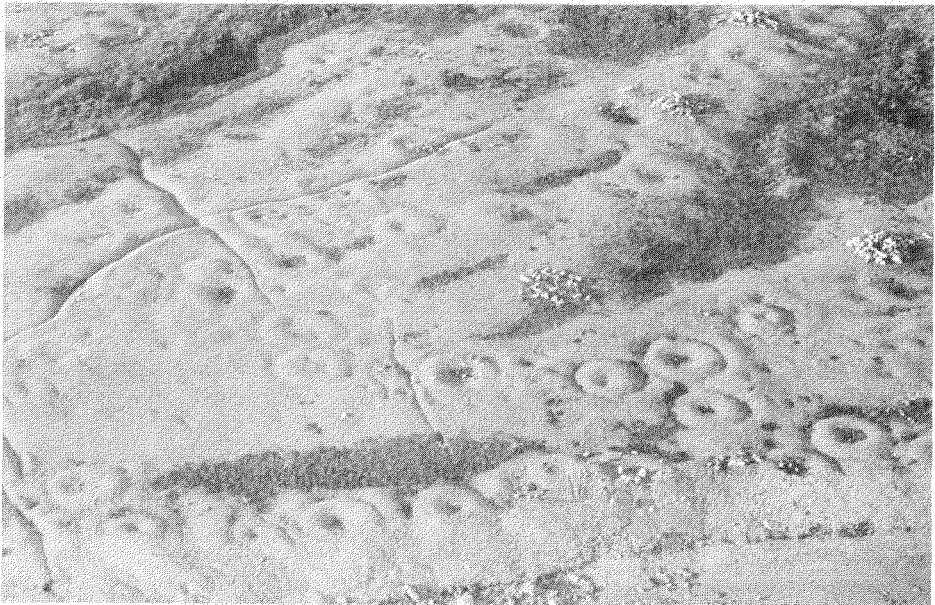


FIG. 4. An aerial view of cache pits dug into gravel beach ridges at PaJs-2, a classic Thule winter site near Fort Ross, Somerset Island. The large number of caches at this site, and at other Somerset Thule sites, would accommodate the meat and blubber of more than one 25-ton bowhead whale. (Photo courtesy of William Kerr).

diameter found at the site to be caches in contrast to winter house ruins (see Taylor and McGhee, 1979). Using the volume equation

$$\frac{1 \text{ lb fatty (pork) meat}}{.0005119 \text{ m}^3} = \frac{41,000 \text{ lbs whale meat/blubber/organs (25-ton whale)}}{21 \text{ m}^3}$$

and assuming that each depression will hold 1.7 m<sup>3</sup> of meat/blubber, then the bulk of four 25-ton whales could fit into the approximately 50 caches noted at the site. Or, assuming that 125 people and dogs each ate 4 lbs of meat/blubber for 150 days, sufficient food storage for 75 000 lbs of food would be required. This weight would fit easily within the 50 caches and would amount to slightly less than two 25-ton whales per year. Using these figures, it would appear that meat and blubber of several whales plus smaller mammals could be stored simultaneously at the site for winter use.

#### *Permanent Settlements*

Following the Alaskan whaling pattern, early Thule migrants moved across the Canadian Arctic, establishing permanent "winter" base camps similar to those in North Alaska. None turned out quite as permanent as those on the Chukchi and Beaufort Seas, but the classic Thule winter sites mentioned thus far were definitely established on a food surplus. The subsequent transitional Thule peoples (post-c. A.D. 1300) established less permanent *qarmat* or snow house sites and based their subsistence on species other than bowheads (McCartney, 1977a). Evidence of the seasonal return to the whale bone house sites comes from midden accumulations around these houses. While the years or decades of occupation can only be approximated, there was some form of surplus food cached in adjacent cellars and storehouses to sustain the occupants over the difficult winter months. We can only establish occupation at such sites to more or less the winter months, sometime in the fall to sometime in the spring.

Meat storage is a prerequisite for keeping dogs alive as well as people; the extensive use of whale bone for sled runners demonstrates the importance of sledge use (and probably dog traction) to Thule Eskimo subsistence. Feeding dogs some 800 lbs of meat per year creates an even greater demand for meat to feed the winter settlement.

The most important single food resource in sustaining recent North Alaskan permanent villages was the baleen whale, and the largest potential food and oil supply in the Canadian Arctic was the bowhead. For this reason, the greatest demand would have been placed on eastern bowheads to satisfy the annual meat and blubber supply. This is not to deny the variety of other food animals identified through bone remains at Thule sites from Mathiassen's (1927) day to the present (see e.g. Staab, 1979). Essentially all of the large land and sea mammals and some smaller species are represented in Thule site faunal counts as demonstrated, for example, from Naujan and Silumiut: walrus, beluga, bearded seal, ringed seal, harbor seal, bear, musk-ox, caribou, arctic hare, wolverine, arctic fox, dog, wolf, marmot, several fish, several shellfish, and many birds. All these species were presumably used for food and/or raw materials, and their presence serves as a measure of thorough biome exploitation.

## CIRCUMSTANTIAL EVIDENCE

*Slow Whale Decay*

Given the high mobility of Eskimos within a relatively large hunting and fishing area, beached whales would surely be noted and exploited. Northern natives of the 18th-19th centuries have been observed flocking to a whale stranding site to feast and cut up the surplus (see e.g. Krasheninnikov, 1755; Turner, 1886). Whales floating in cold arctic waters could probably be used for many weeks after death. Partially decomposed meat was no deterrent to human consumption as Eskimos are widely known for eating various kinds of decaying animals. Because of prolonged beach exposure during the months of greatest Eskimo mobility (spring through fall), stranded whales had a good chance of being discovered and used before they were reduced to skeletons by foxes, birds, or crustaceans.

## DISCUSSION

Freeman calls attention to the uneven research devoted to the large "winter" base camps of Thule Eskimos. I share that concern, as do many who are engaged in Thule research, and realize that very little emphasis is placed on studying the other seasonal camps which represent a significant portion of the Thule annual cycle. It is not whale bones alone that draw us to the larger sites but rather the concentration of accumulated cultural materials — the impressive architectural details, the abundance and variety of artifacts and faunal refuse, and the frozen midden debris — which help answer a broad series of archaeological questions. The permanent winter sites are of high archaeological value because the semi-subterranean houses are immediately recognized, whereas summer tent ring sites are less diagnostic and are less reliably assigned a cultural context and age. These house sites probably indicate the total winter base camp population and distribution, and their recognition is a prerequisite for land use estimates. The archaeology of any region tends to begin at the largest and richest sites, regardless of whether they best typify a group's annual life cycle, and the Canadian Arctic is no exception.

A second phase of Thule research is fast approaching wherein study of settlement patterns, adaptive strategies, demography, and carrying capacity, to name only a few foci, will require us to broaden our perspective to summer and fall seasonal camps and other small sites marked by surface features only. Accordingly a sensitive methodology must be developed to cover such expanded research.

Permanent whale bone, stone, and sod houses are particularly good indicators of whaling and conversely are good indicators of where whaling or whale utilization did not occur or occurred only infrequently. As partially buried features with relatively well-preserved artifacts and other debris, whale bone houses are the best evidence we have of prehistoric whale bone distribution and use. Whale use is basically a subsistence activity and Thule subsistence has not, until recently, been particularly questioned. Formal studies of harpoon heads and other arti-

facts are excellent for showing cultural origins, spread, and acculturation, but they have only limited value in determining subsistence. Thule Type 2 harpoon heads, for instance, are spread between any number of Thule features including whale bone houses and houses of stone only, and thereby suggest cultural continuity. Yet a Type 2 harpoon head does not discriminate between a whaling subsistence and a non-whaling subsistence.

The logic used in the preceding arguments includes ethnographic analogy within the Arctic and between other hunters and gatherers, a limited universe of animal species, consistency in animal behavior, correspondence of Eskimo and whale ranges, climatic similarity, economic probability, and direct observation through artistic representations. The archaeological evidence indicates that Thule Eskimos 1) spread into the Canadian Arctic and eventually overlapped much of the bowhead range in the archipelago and adjacent regions, 2) possessed a technology capable of taking baleen whales, 3) had an economic impetus to maximally use whales in terms of energy return for effort expended, 4) left the expected by-products of whaling at their sites, and 5) graphically rendered the whale hunt in artistic form. The archaeological record thus supports a significant whale dependency that parallels the whale dependency of many ethnographically-known native groups of the North. Mathiassen's (1927) original characterization of Thule whaling adaptations appears to be substantiated by both his own and more recent investigations. The crucial issue now is to determine the *degree* to which bowhead whales were utilized by early Thule bands.

The overriding significance of this discussion, beyond the whaling example, is whether specialists with differing theoretical and methodological biases can find general accord in reconstructing the Thule-to-modern cultural continuum. The Thule archaeological domain merges and overlaps in an imprecise manner with the domains of ethnohistory, ethnology, history, and human geography, not to mention the human aspects of zoology, botany, climatology, geology, and other disciplines pursued in the Arctic. Yet what we need is not an archaeological or an ethnological or an historical rendering of segments of the Thule-to-modern continuum, but rather a synthetic rendering that includes the maximum perspectives of arctic scholars. The last millennium begs for detailed explanations that have been slow in coming since Mathiassen defined Thule culture 50 years ago. If the relatively well-known late prehistoric-to-early ethnohistoric period eludes us, what discrepancies are likely to occur in comparing recent Inuit culture with Dorset and Pre-Dorset cultures of several thousand years ago?

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