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Disease and the Development of Inuit Culture [and Comments and Reply]

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# Disease and the Development of Inuit Culture<sup>1</sup>

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by Robert McGhee

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Early ethnographic descriptions of the Inuit, the original inhabitants of Arctic Canada and Greenland, depict a culture and society assumed to have been relatively untouched by European influence. Archaeology has shown that this way of life had developed over the past five centuries from the Thule culture, which was technologically richer and more economically secure than that of the historic Inuit. The transformation from Thule to Inuit culture has generally been explained in terms of adaptation to a deteriorating environment. This paper argues that the development of Inuit culture can be more satisfactorily interpreted as a response to early and continued contacts with Europeans and the effects of repeated epidemic diseases resulting from such contacts.

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The Inuit of Arctic Canada share a relatively uniform language and a way of life distinct from that of related Eskimo groups of Alaska and Siberia.<sup>2</sup> Traditional Inuit communities were small and dispersed by Eskimo standards and Inuit economies relatively unproductive and insecure. Inuit technological, artistic, and cultural accomplishment has been generally characterized as "impoverished" in comparison with that of Alaskan Eskimos.

The Inuit entered European consciousness primarily through the published narratives of 19th-century explorers, whalers, and missionaries. The Arctic was a barren and alien environment to such venturers, and its indigenous occupants were generally portrayed as a simple people remarkably adept at surviving under circumstances which Europeans found appallingly meagre. John Ross's (1835:248) thoughts on his 1830 encounter with the Inuit were typical: "It was for philosophers to interest themselves in speculating on a horde so small, and so secluded, occupying so apparently hopeless a country, so barren, so wild, and so repulsive; and yet enjoying the most perfect vigour, the most well-fed health, and all else that here constitutes, not merely wealth, but the opulence of luxury; since they were as amply furnished with provisions, as with every other thing that could be necessary to their wants." The existence of such a people appealed to the romantic tradition of 19th-century exploration literature, and there is little doubt that European explorers and travel writers accentuated the simplicity, the isolation, and the alien quality of Inuit life. The reward structure of exploration literature has many elements in common with what Keesing (1989), describing how academic anthropology rewards descriptions and interpretations which stress the alien nature of a subject group, has termed "the quest for the exotic." The pristine nature of Inuit culture, isolated and uncontaminated by contact with Europeans, was an especially appealing aspect of 19th- and 20th-century exploration accounts.

For the developing science of anthropology, the existence of a secluded arctic culture provided exciting opportunities for the study of human adaptation and of social and cultural development in isolation from parallel developments elsewhere. The Inuit soon became a staple of anthropological discussion, and descriptions of their culture have served as oft-repeated illustrations of the concept of adaptation. This paper questions the validity of characterizing Inuit culture as a pristine example of an arctic way of life formed through adaptational forces and minimal contacts with adjacent indigenous populations of northern North America and Asia. Many attributes of traditional Inuit culture as it has been described by European explorers and anthropologists of the

1. I thank the many colleagues whose discussions have helped to form the ideas on which this paper is based. I am especially grateful to those who read and commented on an earlier draft of the paper: Ernest S. Burch, Jr., Yvon Csonka, Jerome Cybulski, Ian Dyck, Max Friesen, Hans Christian Gulløv, Susan Kaplan, Igor Krupnik, Allen P. McCartney, Jørgen Meldgaard, David Morrison, James Saville, Patricia Sutherland, and W. E. Taylor, Jr.

2. The term "Inuit" is used in accordance with the self-identification of the Eskimos of Arctic Canada and refers to speakers of the Inuttit language living in the area between the Mackenzie River and Greenland. The term "Eskimo" is used to refer to the broader grouping of peoples speaking languages of the Eskimo family, most of whom live in Alaska and adjacent regions of Canada and Siberia.

past two centuries may instead be viewed as recent developments in response to unrecognized or ignored contacts with Europeans and the disease pathogens which they carried.

## The Archaeology of Inuit Culture

Systematic archaeology in the Inuit area dates from the Danish Fifth Thule Expedition of 1921–24. The evidence recovered through this work indicated that Inuit culture, as known from historical accounts, had very little time-depth. The expedition archaeologist, Therkel Mathiassen, excavated at several locations across arctic Canada and in each location discovered the remains of a past occupation which he named the Thule culture. The expedition recorded the remains of numerous Thule winter villages consisting of large and permanent winter-houses built from stone and turf and suggesting a way of life which appeared to be richer and more secure than that of the Inuit.

Mathiassen (1927) interpreted Thule culture as representing the movement of ancestral Inuit eastward across arctic North America from Alaska, bringing with them an essentially Alaskan maritime hunting way of life (fig. 1). The Thule people spent their summers in open-water hunting of sea mammals, including the bowhead whales (*Balaena mysticetus*) that were their most important prey in most areas, and amassing food for the winter season. In a few areas where land animals were more abundant than sea mammals, summer hunts were directed to caribou and fish, but the accumulation of winter stores remained part of the Thule economic pattern.

Winters were spent in villages of permanent houses, well-insulated and protected from winter storms, and were passed in the sedentary consumption of supplies accumulated during the previous summer.

Mathiassen's characterization of Thule culture has been supported by more recent archaeological work, and its essential elements remain valid today (Dumond 1977, McGhee 1978, McCartney 1979, Maxwell 1985). The excavation of Thule winter houses yields plentiful evidence of a technologically sophisticated and artistically rich way of life: efficient and ingenious harpoon equipment, fittings for boats and dogsleds, games, children's toys, finely formed ivory combs, needle cases, chains, and pendants. The vast quantity of animal bones in the refuse of these houses, the large ceramic or soapstone lamps and cooking pots, and the saturation of entire village middens with sea mammal oil testify to a stable and secure economic basis for this way of life.

The Thule adaptation stands in sharp contrast to that of the Inuit described by 18th- and 19th-century explorers (Savelle 1987, Savelle and McCartney 1988). Although many elements of the Thule way of life survived along the subarctic coasts of Labrador and Greenland, few historic Inuit living in arctic regions maintained the essential attributes of Thule subsistence. Whaling had been abandoned in most areas; in others, all open-water hunting of marine mammals had been forsaken, and kayaks were used only to fish and hunt caribou in interior rivers. Most groups could not accumulate a large supply of winter food from summer hunting and consequently were forced to spend much of the winter in transient snow-house villages depending on local populations of seals living beneath the sea ice. Inuit technology

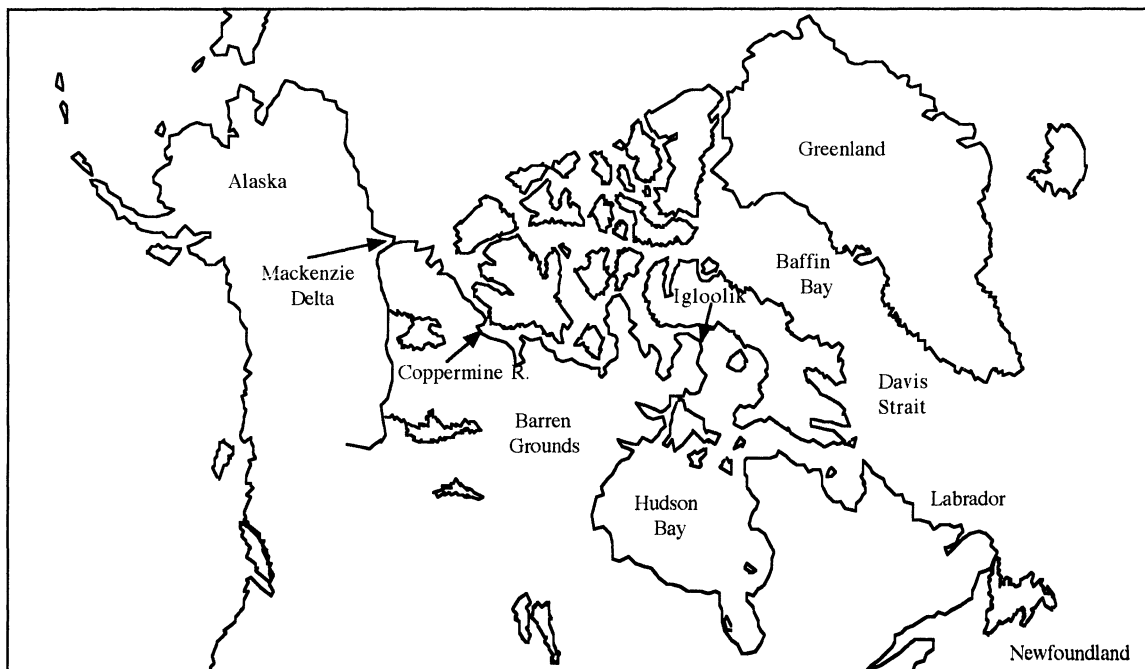


FIG. 1. Place-names mentioned in the text.

was simpler and more limited than that of the Thule people, and the production of decorated or ornamented artifacts had practically disappeared from most regions (McGhee 1972, 1976, 1980).

The difference between Thule and Inuit cultures was so pronounced that anthropologists as experienced as Birket-Smith (1930) considered that the Central Arctic Inuit were descended not from the Thule people but from a simpler and more primitive culture which had recently expanded from the arctic interior to supplant Thule occupation. This view maintained some currency for several decades, but by the 1960s it had become apparent that Thule culture was ancestral to the culture of the historic Inuit and that the transition between the two had occurred surprisingly quickly between approximately the 16th and the 18th centuries A.D. (Harp 1961, VanStone 1962, Taylor 1966).

### Climatic Change and the Thule–Inuit Transformation

Archaeologists who investigated the nature of this transformation worked almost exclusively within a paradigm of cultural ecology, in which “adaptation” was seen as the major engine of cultural change among arctic hunting peoples (Dekin 1972, Fitzhugh 1972, McGhee 1972, McCartney 1977). From this viewpoint, environmental change was perceived as the most plausible explanation for the decline of the Thule way of life. The limited palaeoclimatic information available in the 1960s indicated that arctic North America had participated in the postmediaeval climatic cooling known from European records as the “Little Ice Age.” This evidence was sufficient to postulate that sea ice conditions in arctic Canada had deteriorated to such an extent that the traditional maritime hunting economy of the Thule people was no longer productive and the Inuit were forced to develop a series of alternative strategies in order to cope with a drastic environmental change. These strategies involved abandoning many elements of their technology relating to sea hunting and winter village habitation and simplifying the rest of their technology and culture to accommodate a transient and economically insecure way of life.

The past two decades have produced an increase in the amount of information relating to past climatic change in arctic regions; palynology, glaciology, the coring of ice caps, and marine studies have all contributed to a much more detailed picture than was available previously (Vasari, Hyvarinen, and Hicks 1972, Fredskild 1973, Koerner 1977, Andrews and Miller 1979, Short, Mode, and Davis 1985). This information has tended to confirm the existence of a postmediaeval cool period that can still be called the Little Ice Age, but it has also shown that the environmental effects of climatic change varied greatly from one region to another both in their extent and in the time periods when they occurred. In some areas, episodes of climatic cooling are evidenced as early as the 12th or 13th century, when Thule culture

was at its height. Other areas have produced no evidence of significant environmental change until centuries later. We now know that not all of arctic North America was afflicted by sudden and synchronous climatic deterioration. The climatic changes and consequent environmental changes of the past few centuries are much more diverse and complex than envisioned at the time when the Little Ice Age was used to explain the decline of Thule culture (Barry et al. 1977).

Even at the time that archaeologists were interpreting the Thule–Inuit transition in terms of climatic change, it was apparent that this phenomenon could not adequately account for all elements of the transition. Climatic cooling and an increase in sea ice served to explain the withdrawal of Thule settlement from the ice-choked channels of the High Arctic and an apparent decline in the importance of bowhead whaling in some areas of the Central Arctic. In the Eastern Arctic core of the Thule settlement area, however, the decline in whaling could not be directly explained by extensive sea ice and a consequent absence of whales. When European ships penetrated arctic waters during the 18th and early 19th centuries, at the height of the Little Ice Age, they reported large numbers of whales in areas which had previously supported Thule whaling villages but where the explorers found only small bands of seal-hunting Inuit. According to estimates made by Mitchell (Reeves et al. 1983: fig. 1), approximately 12,000 whales migrated into the area each summer during the early 19th century. Mitchell’s maps show consistent reports of whale sightings in areas as far west as northwestern Hudson Bay, Barrow Strait, and Prince Regent Inlet. If bowhead whales frequented Eastern and even Central Arctic waters in numbers sufficient to support a massive European commercial whaling effort throughout the 19th century, why was Inuit whaling a relatively minor occupation compared with that of Thule times?

A simple adaptational explanation cannot adequately account for other elements of the Inuit cultures of arctic Canada as they have been described by European explorers and anthropologists over the past two centuries. These cultures were clearly not as economically secure, as socially complex, or as culturally rich as the Eskimo cultures of the Western Arctic. The differences between Inuit and western Eskimo cultures, like those between historic Inuit and prehistoric Thule culture, have traditionally been explained in terms of relative economic opportunity. Such explanations may well account for differences in population density and in the degree of social complexity related to the size of social units, but the link between environmental deterioration and reduction in other aspects of cultural accomplishment has not been adequately resolved. What is the mechanism, for example, which connects environmental change to changes in the nature of a group’s mythology or the degree to which it decorates its tools and weapons?

When the ethnologist Knud Rasmussen (1929:251) travelled into the Central Arctic in 1921, he was appalled at the low level of memory and of interest in the mythology and folklore of the Central Arctic Inuit

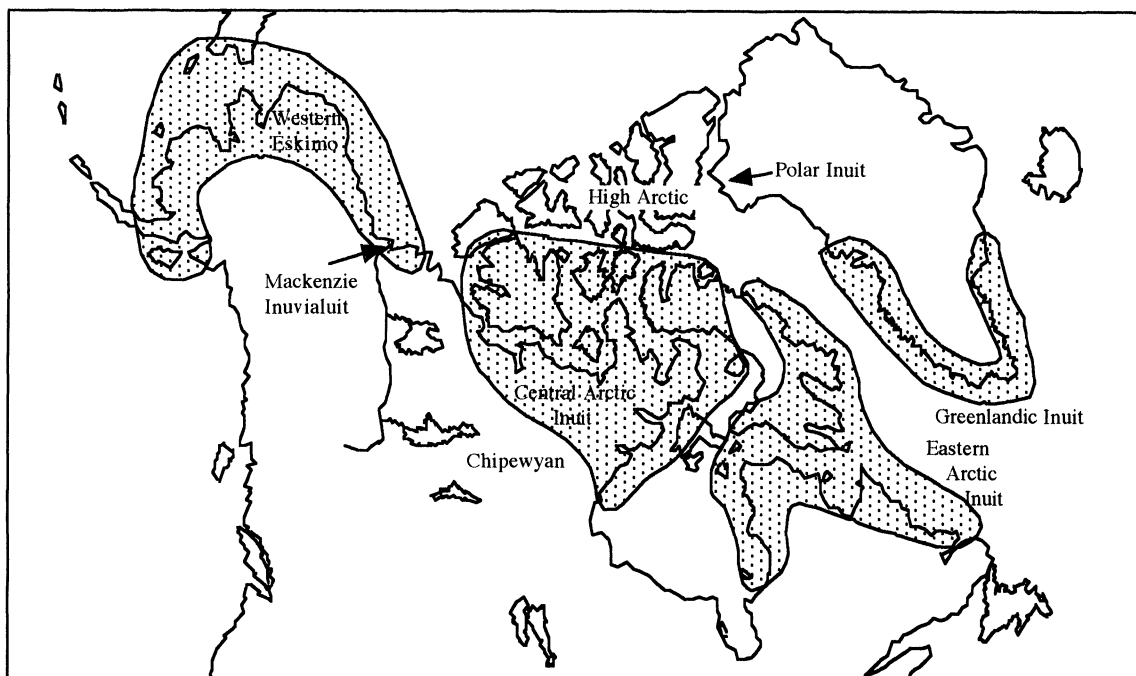


FIG. 2. Locations of groups mentioned in the text.

compared with that which he had known among the Inuit of Greenland: "The stories are related in a naive and incoherent fashion, so that it was often difficult to follow the plot." A decade earlier, Diamond Jenness (1924:1) had noted a similar discrepancy between the folklore of the Alaskan Eskimos and that of the Coronation Gulf region of the Central Arctic: "The Alaskan stories are more sophisticated. . . they are longer and more detailed, and have a definite beginning and ending. . . The Copper Eskimo tales, on the other hand, have the appearance of disjointed fragments without any setting, and lacking both beginning and ending."

In a parallel fashion, anthropologists noted that most of the artifacts made and used by the Central Arctic Inuit lacked much of the decoration, and even the craftsmanship, characteristic of Greenlandic Inuit artifacts, which themselves were somewhat poorly finished and decorated by Alaskan Eskimo standards (McGhee 1976, 1980). Mathiassen (1928:103), writing of the Igluligmiut people of the Central Arctic, judged them "on the whole very poor craftsmen; what they make is mostly badly and carelessly finished, without much thought for beauty and form of decoration. In this respect they are far inferior to the people who formerly inhabited their land (the Thule culture people) and also to many Eskimo tribes alive today, especially in Greenland and Alaska." Archaeological assemblages such as that from the mid-19th-century Kunana site in the Central Arctic (McGhee 1972) indicate that this characterization of Inuit material culture can be extended to the period of initial direct contact with Europeans.

A more striking instance of cultural loss is known from the groups known to anthropologists as the Polar

Inuit of northwestern Greenland (fig. 2). Archaeology has shown the existence of a classic Thule occupation of this area extending until approximately the 16th century (Holtved 1944). By the early 19th century, however, the Polar Inuit no longer used the umiak, kayak, bow and arrow, fish spear, and other important items of Thule technology. These losses greatly impaired their economic efficiency, and the reintroduction of these items by Baffin Island Inuit in the mid-19th century may have saved a dwindling local population from extinction. According to Polar Inuit historical accounts, the use of these artifacts had been lost when an epidemic carried off all of the experienced hunters and those who knew how to construct kayaks. This explanation has been discounted on the grounds that the Polar Inuit's extreme isolation not only protected them from epidemics but prevented them from obtaining wood to construct kayaks and other items of hunting technology (Gilberg 1975). Perhaps, however, the Inuit account should be reconsidered; Hansen (1970) points out that the Polar Inuit were in at least occasional contact with West Greenland Inuit and notes that the only known crossing of Melville Bay by umiak was by a noted 18th-century shaman named Tuluvaq fleeing an epidemic in his native Upernavik region. The oral history of the Polar Inuit may be correct in ascribing cultural loss to health problems rather than environmental problems.

The linking mechanism between environmental deterioration and a loss of interest in cultural elements such as folklore, mythology, and the production of finely finished artifacts cannot be simple lack of time and energy as has been commonly implied (McGhee 1976). For an arctic hunting people whose energies are focused by the

movements of animals and the conditions of the weather, poor weather and poor hunting conditions create leisure rather than subtracting from it. If we wish to explain Inuit lack of interest in storytelling, the maintenance of complex genealogies, and craftsmanship, we must postulate a linking mechanism which goes beyond simple lack of time and energy. We might refer to this mechanism as "cultural distress" and think of it as a shared state of anxiety, powerlessness, and exhaustion induced in the members of a human society by a series of economic or cultural shocks.

If such a mechanism is required in order to explain the development of Inuit culture, is it clear that environmental deterioration is the only, or even the primary, cause for the existence of cultural distress among the Inuit of the past few centuries? In an extension of the argument related to the transformation of Polar Inuit culture, is it possible that the spread of epidemic disease, originating in contacts with 16th-to-18th-century Europeans, may have played a significant role in the decline of Thule culture in the Central and Eastern Arctic?

One of the results of the 1992 commemoration of the Columbus quincentenary, marked by numerous conferences and publications addressing the consequences of European contact for the indigenous peoples and cultures of the Americas, has been an increased sensitivity on the part of archaeologists dealing with the recent history of the Americas to arguments involving historical rather than purely cultural or ecological factors. Undoubtedly the most devastating impact, during the first years of European contact, was the effect of Old World diseases on previously unexposed populations. Throughout the Caribbean, in Central and South America, and along the Atlantic coast of North America, indigenous peoples who came into contact with Europeans suffered repeated epidemics and major reductions in the sizes of their populations. The actual extent of postcontact depopulation throughout the New World is a subject of intense controversy illuminated by remarkably poor historical, archaeological, and biological evidence (Deneven 1976, Dobyns 1983, Verano and Ubelaker 1992, Thornton, Miller, and Warren 1993).

Regardless of the numbers involved, however, cultural distress must be seen as a major by-product of the episodes of disease and depopulation which afflicted the New World during the 16th and 17th centuries. The social and cultural disruption attendant on repeated epidemics must have been more effective than simple population decrease in making New World populations vulnerable to European conquest. Mexico and Peru quickly succumbed to Spanish rule, and the eastern seaboard of North America was so depopulated that Europeans were able to establish colonies with only token opposition. The numerous indigenous chiefdoms which had controlled the regions between the Atlantic and the Mississippi were so reduced that their peoples had lost all contact with the political and ceremonial centres which dotted the landscape. To many 19th-century scholars the people who constructed these centres had become legendary "mound builders," postulated to be

an ancient race unrelated to the Indians of the historic period (Silverberg 1968). Similar interpretations played a part in early anthropological hypotheses which saw the Inuit as recent immigrants from the interior of northern Canada, taking over lands which had been abandoned by the more sophisticated Thule-culture people.

## Inuit-European Contact

We generally think of the Inuit as an isolated population which has only recently come into sustained contact with Europeans. Many 19th- and 20th-century explorers claimed to be the first whites to have been met by local Inuit groups. Given such claims, was there opportunity for sufficiently extensive contact to allow the spread of European diseases through the Inuit population during the 16th and 17th centuries?

The Thule-culture Inuit of the Eastern Arctic may have had as much or more opportunity to contract European diseases as did the Indians of eastern North America whose cultures rapidly declined during the same time period. The Inuit were the first North American group to contact Europeans, and by the time of Columbus's voyage they had been experiencing encounters with the Greenlandic Norse for approximately 300 years (McGhee 1984). There is no evidence that this contact had a biological consequence, and the Greenlandic Norse were probably too isolated from Europe to serve as a vector for the transmission of disease. However, continued European knowledge of Greenland was probably a factor in attracting early European exploration into Eastern Arctic regions.

Vague records hint at occasional continued contacts between northern Europe and Greenland during the 15th century, and similarly equivocal evidence suggests that Portuguese explorers may have reached Newfoundland or Greenlandic waters by the 1470s (Hoffman 1961, Morrison 1971). The Treaty of Tordesillas of 1494, dividing the world into Spanish and Portuguese domains, promoted Portuguese exploration in the area, since the only portions of the New World to fall to the Portuguese were Brazil and the complex of coasts comprising Newfoundland, Labrador, and Greenland. By 1500 there is a well-recorded voyage to Greenland by João Fernandez, the *lavrador* whose title first appeared on maps of Greenland before moving to its present Labrador location. The following year Fernandez led the first of a series of joint English/Portuguese explorations to the area, and the same summer his fellow-Azorean, Gaspar Cortereal, raided for slaves somewhere along the coast between Greenland and Newfoundland. By 1520 the Portuguese had established a colony on the northeastern coast of North America, in either Cape Breton Island or Newfoundland, and about the same time the Basques began major whaling efforts in southern Labrador (the most complete summary of this period can be found in Hoffman 1961).

For the remainder of the 16th century, the coasts from

Nova Scotia to Labrador saw a concentration of European activity second only to that of New Spain (Hoffman 1961, Morison 1971, Tuck and Grenier 1989). Fleets of several hundred European fishing and whaling vessels worked the coasts of eastern Canada in most summers of the middle and late 16th century, and it seems likely that some of these may have occasionally strayed to the north. In contrast, the coasts between the Gulf of Maine and the Caribbean were relatively unfrequented by Europeans, yet the 16th century seems to have begun the process of decimation of populations living behind these coasts. Given the major northern thrust of European enterprises in the northwestern Atlantic, it seems likely that the populations of Greenland, Labrador, and Baffin Island had at least as much opportunity to contract European diseases as did those of the mid-Atlantic coast.

Sixteenth-century European contact with the Inuit is evidenced by accounts of Inuit kayaks published in 1555 by Olaus Magnus and in 1558 by Nicolo Zeno (Lucas 1898). The Zeno account is especially interesting in that it appears to describe Inuit construction of domed snow-houses. Zeno's narrative has been generally discredited as a fraud, since it purports to describe a set of voyages made in the 14th century; however, it stands as an account of mid-16th-century European knowledge of the New World, and in describing domed snow architecture it implies that Europeans had not only visited areas occupied by Inuit but wintered in arctic regions.

A series of handbills depicting an Inuit woman and child kidnapped by French sailors from "Terra Nova" in 1566 (Sturtevant 1980) provides evidence of continued contact. When Martin Frobisher voyaged to Greenland and Baffin Island in 1576–78 he found the Inuit to be in possession of European goods and apparently familiar with Europeans (Stefansson and McCaskill 1938). Frobisher's three voyages and mining endeavours on Baffin Island were followed by a series of European ventures into Greenlandic and Davis Strait waters. A Danish expedition in 1605 collected samples identified as silver ore from Greenland; this set off another mining expedition on the model of Frobisher's, including a similar pattern of trading with, fighting with, and kidnapping Inuit (Gad 1971:219–20).

By 1614, Dutch whalers were beginning to expand out of the Spitzbergen/Jan Mayen fisheries and to work Davis Strait. They also traded with the Inuit, who seemed to be accustomed to European visitors, and between 1605 and 1650 an estimated 30 Greenlandic Inuit were kidnapped and taken to Europe (Gad 1971:237–38). At the same time, Iceland was attracting European pirates (as well as the English, who had been raiding Icelandic coasts since 1420); Spanish raids occurred in 1614 and 1615, and in 1626 a fleet of Barbary Coast pirates raided Icelandic settlements and carried away many young people as slaves to North Africa (Gjerst 1924: 318–19). Considering the proximity of Greenland and its reputation for wealth in silver and in trade goods, we might suspect that Greenlandic Inuit traditional stories of early attacks from the sea might be well founded (Gad 1971:158). These events occurred a full century or more

before Hans Egede's missionary venture to Greenland provided the first relatively comprehensive records of affairs in the Eastern Arctic.

Contacts between Europeans and the Inuit of Labrador were probably equivalent in scale to those which occurred in Greenland. The Labrador Inuit were probably aware of 16th-century Basque whaling in the Strait of Belle Isle area and in sporadic contact with whalers and fishermen of the region (Kaplan 1983:161). By the early 17th century Labrador was within the area frequented by Dutch traders in "the Strait of Davis," and a 1626 map shows 17 Dutch place-names along the Labrador coast (Kupp and Hart 1976:6). Cargoes of whale blubber, baleen, ivory, and skins continued to be collected by Dutch traders from northern Labrador throughout the 17th and early 18th centuries (Kupp and Hart 1976:5–12). In 1694, almost a century before the first comprehensive accounts and population estimates for the Labrador coast, the Inuit were using European wooden boats, tools, and even some items of European clothing (Taylor 1984:510). Meanwhile, French trading interests expanded northwards from the Gulf of St. Lawrence and came into increasing conflict with the Inuit of the area (Kaplan 1983:164–68). The establishment of the Moravian Missions in northern Labrador in 1771 grew out of more than a century of increasing violence between Inuit and Europeans.

In the Central Arctic, the years between 1610 and 1630 saw European penetration and exploration of Hudson Bay. English trading posts were established at the southern end of the bay by 1670, and although the early trade was restricted to subarctic Indians, over the following century indirect trade penetrated the Central Arctic (Neatby 1984:377). Occasional direct contact occurred between Inuit and English ships supplying Hudson Bay posts during the ships' annual passages through Hudson Strait and northern Hudson Bay.

## Inuit Trade and the Spread of Disease

Sixteenth-to-18th-century European contact along the coasts of Greenland, Labrador, Baffin Island, and even Hudson Bay may have been sufficient to allow the repeated transmission of Old World disease to local Inuit groups. If such transmissions did occur, could they have spread extensively throughout the Inuit population and caused the sort of widespread devastation which occurred among eastern North American Indian populations? McCartney's (1991) study of the distribution of metal goods through Thule Inuit trade networks suggests that intergroup contact and the transmission of material items over long distances was characteristic of Thule culture. Umiak and dogsled technology provided the means for rapid and dependable transport, and McCartney sees Thule villages and local groups as linked in a social interaction sphere which accomplished the efficient distribution of metals and other trade goods. As among the Indian populations of eastern North America, the agents of disease may have accom-



panied the metal trade into regions far from those where direct contact with Europeans had occurred.

Most of the areas in which Thule culture underwent a notable decline during the 16th and 17th centuries coincide with those in which Thule sites have produced items of Norse metal (McGhee 1984:15). This distribution reflects the existence of early trading links extending to Inuit groups living along the Davis Strait and Baffin Bay coasts, and such links probably continued into the post-Norse period. The Central Arctic regions between Hudson Bay and Coronation Gulf, where no Norse metal has yet been identified from Thule sites, were within the sphere of 18th-century metal trade from Hudson Bay and presumably were in earlier contact with the Inuit of the Eastern Arctic. When Samuel Hearne's Chipewyan companions plundered the Inuit living at the mouth of the Coppermine River in 1771, they found them in possession of small quantities of iron, as well as trade beads unlike those imported by the Hudson's Bay Company. Hearne (1958:224) surmised that this material must have derived from "dealings with the Danes," probably referring to Dutch traders in Davis Strait.

The Coppermine River area lies in the westernmost portion of the Inuit cultural area. The uninhabited regions to the west have traditionally marked the cultural break which occurs between the Inuit and the Eskimos of the Mackenzie Delta. The same cultural break marks the western limit of areas where Thule culture underwent a significant decline and coincides with the traditional break in aboriginal trade between areas receiving metal from the east and those whose trade relations extended to Bering Strait and Siberia. Morrison (1991) has pointed out that the traditional trade occurring across this boundary between the Copper Inuit and the Mackenzie Delta Inuvialuit was a very brief phenomenon which began in the mid-19th century just prior to direct European contact in the area.

Would the Inuit, living at low population densities and in relatively small and dispersed groups, have been subject to the widespread ravages of infectious diseases? The processes of epidemic disease transmission in such a population are not well known, but we may guess that the Inuit were extremely susceptible. The population densities and settlement sizes of the Thule period may have been larger than those of the historic Inuit and the technology of long-distance travel more highly developed (Savelle 1987, McCartney 1991), and this may have increased the efficiency of disease transmission. Other arctic populations living in adjacent areas and at somewhat similar population densities appear to have been vulnerable to epidemic disease. Contemporary fur traders estimated that over 90% of the Chipewyan living in the Barren Grounds region of the Central Arctic died as a result of the smallpox epidemics of the 1780s. This figure may be mistakenly high, although it may represent a reasonably correct estimate of the families which visited Prince of Wales's Fort and were known directly to the traders (Hearne 1958:115). It is not, however, inherently unlikely, since Krech (1978:99) estimates that

another northern Dene population, the Kutchin, was reduced by more than 80% by disease episodes in a 19th-century fur-trade contact situation. The adjacent Inuvialuit (western Eskimos) of the Mackenzie Delta and nearby coasts were practically eradicated by the epidemics of the 19th century (Keenlyside 1990:11, table 2), and the same period saw population reductions of between 50% and 85% in most aboriginal groups of Alaska and northwestern Siberia (Krupnik 1990). North American populations living under arctic conditions and at relatively low population densities appear to have been as vulnerable to introduced diseases from the Old World as were populations living in temperate latitudes.

The evidence of the Thule-to-historic-Inuit transition does not require or even suggest the type of massive depopulation which befell the Chipewyan or the Inuvialuit. Rather, it would be more consistent with a long series of epidemics, each severely affecting a local population or a series of contiguous local groups and producing impacts of the kind reported in the oral history of the Polar Inuit. The situation among Inuit of the 16th to 18th centuries may have been similar to that described by VanStone (1967:100) for 19th-century Eskimos of southwestern Alaska: "there is every indication that once European diseases had been introduced, they took a yearly toll that was not only great in terms of numbers of dead, but that greatly weakened the resistance of the survivors. In the many years of sickness, a few stand out as epidemic years, but the spectre of ill-health and death was continually present."

These early and unrecorded disease episodes may have been the precursors of the epidemics listed by Keenlyside (1990:table 1) as an important consequence of Inuit contact with the whaling industry over the past two centuries. Fortune (1989:199-254, 316) lists a similar series of historically recorded epidemics which swept through the indigenous populations of Alaska. Together, these catalogues include the following identifiable diseases: smallpox, influenza, measles, scarlet fever, mumps, diphtheria, whooping cough, syphilis, gonorrhoea, typhoid, chicken pox, poliomyelitis, and tuberculosis. All of these diseases, as well as others which have not been diagnosed from inadequate historical records, obviously flourished among the small and scattered populations of arctic North America.

Gad (1984:558) suggests that tuberculosis was probably established among the Greenlandic Inuit population prior to the 1721 founding of the Danish mission and the beginning of historical records. Other epidemic diseases, if not already present, were soon recorded: within 15 years a disastrous smallpox epidemic had spread through the Inuit communities of western Greenland (Gad 1973:166-70). Episodes of epidemic disease were occurring among the Labrador Inuit when the Moravian missions first began to record occurrences on that coast in 1771. The epidemic, probably smallpox, which swept the Hamilton Inlet area in 1773 (Taylor 1974:8) was, as is suggested by Richling (1993:70), probably only one of a series of similar events which had been occurring over the previous one or two centuries.



Epidemics on a much smaller scale were probably more frequent visitors to Inuit communities, often occurring well in advance of direct European contact. When Parry's naval expedition first penetrated the areas west of Baffin Island and wintered at Igloolik in 1822, the British witnessed an epidemic which killed over 10% of the local Inuit population (Parry 1824:404, 492). This was Parry's second winter in the Arctic, and no serious illness had been reported among the Inuit with whom he had wintered the previous year, so this epidemic probably did not originate with the expedition. Rather, it was probably one of a series introduced to the area along with the trade goods which were abundant among the Iglulingmiut of 1822. By this time the Inuit of the Igloolik area may have been sufficiently familiar with epidemic disease to have developed means of coping with it through the isolation of sick individuals. According to Parry's account, a sick person refused to associate with or even be seen by others and would never use a knife or a cup used by others. (The British, who set up a hospital to treat the Inuit, soon put a stop to this inconvenient practice, which they considered to be based on a primitive theory of disease caused by contagion rather than by diet.) Accounts of the neglect of a sick person's dependents and of the abandonment of corpses to be scavenged by dogs or wild animals (Parry 1824:404) are reminiscent of epidemic behaviour reported from other regions of the New World subject to infection by European disease.

The Inuit must have shared with other New World populations a low level of genetic or immunological protection from the disease pathogens which originated in the large pool of Old World populations. Their recent descent from a common Thule immigrant ancestral group and consequent genetic uniformity may have put them at even higher risk than other indigenous American groups. If Black (1992) is correct in contending that viral infections are particularly destructive in populations with limited genetic diversity, the vulnerability of the Thule-culture Inuit may have been enhanced by their genetic uniformity.

Aside from their biological susceptibility, the social, cultural, and physical environment of the Inuit may have made them particularly susceptible to infectious disease. Aaby's (1984:333-35) research on susceptibility to measles leads him to conclude that intensity of exposure to the pathogen, caused by crowded living conditions, may be an important contributing cause to the high mortality rates of "virgin-soil epidemics." The close quarters in which most Inuit traditionally lived, especially during the winter months, when several families occupied small, tightly closed dwellings, must have contributed to the ease with which a disease could be spread and the number of exposures to which an individual was subject. The isolation of sick individuals reported by Parry, even if it was widely practised, could not have been effective in curbing the initial dissemination of disease in a small community. Rowley (1985), in her study of Inuit migrations of the past two centuries, notes disease as one of the reasons for them. Such a

reaction would have been particularly effective in spreading infectious disease within a small and scattered population.

Finally, the rigours of an arctic climate, with damp cool summers spent in unheated tent dwellings and long dark winters at temperatures continuously in the vicinity of  $-30^{\circ}\text{C}$ , must have contributed to the deadly effects of many diseases. Warmth, rest, and effective nursing must have been very difficult to provide in small arctic communities under the stress of epidemic disease. The necessity of maintaining supplies of food and fuel through strenuous hunting activities in cold weather must have placed further burdens on sick or weakened hunters. Historical records assembled by Krech (1983: 137) for subarctic Dene populations indicate that 19th-century disease episodes were often accompanied by starvation. In arctic regions, where seasonal timing was supremely important to successful hunting, starvation resulting from hunters' decreased ability to accumulate a necessary supply of food and fuel must have significantly added to the toll of deaths indirectly caused by disease.

## Inuit Population History

Aside from early exploration accounts such as those noted above, only indirect evidence can be cited in support of the view that epidemic disease played a major role in the decline of Thule culture and the transformation of the Inuit way of life. A particularly interesting field of evidence relates to the response of Inuit populations to the direct European contacts which became pervasive in most arctic regions during the 19th and early 20th centuries. In contrast to adjacent populations such as the northern Dene groups or the Eskimos of the Western Arctic, the Inuit do not appear to have been subject to widespread depopulation during the period of historically recorded contact.

Krupnik's (1990) careful analysis of population changes in Alaska and adjacent regions of northeastern Siberia suggests a consistent picture of population decline. These declines developed at variable rates, and populations reached nadirs at various times in the process of contact between local and European populations. For Alaskan Eskimo groups, population nadirs ranged between 15% and 50% of the populations at the time of first European contact and typically occurred during the late 19th or the early 20th century (Krupnik 1990:16). In the Western Arctic, the Inuvialuit of the Mackenzie Delta and nearby coasts were subject to the same pattern of depopulation and were almost eradicated by the epidemics of the late 19th century (Keenlyside 1990:11, table 2).

No such population decline over the past two centuries is apparent among Inuit groups. The West Greenland Inuit population approximately doubled during the century following the first comprehensive census in 1789 and doubled again by the mid-20th century (Kleivan 1984:table 1). In northern Labrador, Kaplan (1983:

324, 327) notes an apparent population decrease during the 17th century based on the scarcity of recognized archaeological sites dating to this period but cannot determine whether this is due to disease and famine or to a movement of the population to more southerly regions. Her archaeological evidence suggests a population increase during the 17th or 18th century (Kaplan 1983: 331). Historical records and sporadic census information suggest a relatively stable population throughout the late 18th and 19th centuries despite occasional epidemics. Census figures fluctuate between approximately 1,000 and 1,500 throughout this period, with no apparent trend but with low points associated with disease episodes, an apparent epidemic of rabies among the dogs and wild animals of the area, and movements of groups between recorded "Christian" and unrecorded "Heathen" regions of the Ungava-Labrador coast (Hawkes 1916:19–22; Taylor 1984:513). The most profound disease episode seems to have been the influenza epidemic which attacked North America in 1918–19 and to which approximately one-third of the Inuit population of Labrador succumbed (Taylor 1984:513).

For the adjacent regions of Hudson Strait and the eastern coast of Hudson Bay, Saladin d'Anglure (1984:480) estimates an early-19th-century population of approximately 2,000. This is very similar to the figure of 1,848 counted in the 1931 census, which by 1951 had grown to 2,244 and continues to increase to the present day (Saladin d'Anglure 1984:506). The western coast of Hudson Bay and adjacent interior regions were occupied during the 19th century by Inuit groups who were heavily involved in the fur trade and later in the European whaling industry (Clark 1977). Hearne (1958:217) reported in the early 1780s that, under British auspices, these Inuit traded "in perfect peace and friendship" with the Chipewyan whose population was drastically reduced by epidemics during the following decade; it seems likely that Inuit groups in the area would have been afflicted by the same events. By the early 20th century the major Thule-culture occupation of the area, which is well attested by archaeology, had been replaced by wandering bands of caribou hunters whom Birket-Smith (1930) saw as the exemplars of an ancient and primitive "Proto-Eskimo" culture recently arrived from the unknown interior of arctic North America. The earliest reliable census of the area was carried out in 1922 and 1923 by the Fifth Thule Expedition; 432 persons were counted, and the total population was estimated at something under 500 (Birket-Smith 1929:65–68). Temporary reductions in the local population have usually been ascribed to famine resulting from heavy reliance on an unpredictable caribou resource and to excessive dependence on a trapping economy. By 1955 the population had approximately doubled (Arima 1984:460), and it continues to grow.

In the Central Arctic, the most reliable early information comes from the Igloodik region. Here, Parry's (1824: 492) estimate of 500 to 600 Inuit living between Repulse Bay and Pond Inlet on northern Baffin Island during his 1822 wintering in the area compares closely with Mathi-

assen's (1928:15) 1922 census of 504 inhabitants and the 1931 census of approximately 550 occupying the same area (Manning 1943:103). Population age and sex ratios also seem to have remained fairly uniform over this period (Damas 1963:23); by the mid-20th century the ratio of children to adults had increased markedly, and the local population had almost doubled (Damas 1963:28).

The population history of the Netsilik Inuit, who occupied the region centred on Boothia Peninsula and King William Island to the west of the Igloodik area, is less clearly known. Boas (1888:454) estimates the population at 350 in 1829–30 when John Ross's British naval expedition wintered in the area. Rasmussen's (1931:84) 1923 census counted 259 Netsilingmiut, but this figure excludes an unknown but significant number of Netsilik who had moved from the area during the later 19th century to join Inuit associated with European whalers along the west coast of Hudson Bay (Manning 1943:102). By 1955 the local population had more than doubled to 550 (Balikci 1984:429).

In the Copper Inuit area at the western margin of the Central Arctic, the first adequate census was made by Rasmussen in 1923; his figure of 816 individuals is consistent with earlier and vaguer estimates made by Stefansson in 1911 and Jenness in 1914–16, at the time of the first significant direct European penetration of the area (Damas 1984:400). Jenness considered that the population had decreased significantly during the century prior to his visit (Jenness 1922:37–40). This judgement was based in part on evidence for the disappearance of named local groups and the formation of new social units in the Coronation Gulf region. In the Bathurst Inlet region, at the southeastern edge of Copper Inuit territory, oral history told of an epidemic which depopulated what had been a densely settled area three generations before 1915; again, the tradition was supported by family histories indicating that the area had been repopulated from surrounding regions. The Inuit of Bathurst Inlet traditionally made annual trading journeys southwards to the Thelon River, where they acquired European goods from Inuit groups living on the west coast of Hudson Bay. As in other early trading situations, disease may have been a frequent companion of European goods for well over a century before Jenness first recorded local histories.

At the time of Jenness's sojourn, he found the Copper Inuit to be remarkably healthy in comparison with the Eskimos of Alaska and the Mackenzie Delta (Jenness 1922:42). Although a disease-related population decline occurred during the late 1920s and 1930s, largely associated with tuberculosis, a 1941 census again counted 793 Copper Inuit. The local population has grown continuously since that time (Damas 1984:410).

Boas (1888:425) was the only investigator to report a drastic decline among a major Inuit population in arctic Canada during the 19th century: a decrease of over 80% between 1840 and 1857 for the Inuit occupying the Cumberland Sound region of eastern Baffin Island. However, his very large initial population figure, based on vague estimates made by the whaling captain William

Penny, is very questionable and almost certainly incorrect (Keenlyside 1990:11). Boas (1888:425) himself characterized the estimates as "not absolutely reliable, as they are compiled largely from hearsay and conjecture," and indeed they would suggest a population for Cumberland Sound approximately the same size as that of the entire Labrador coast.

The only recorded extinction of a local Inuit group occurred among the Sallirmiut of Southampton Island, a band of fewer than 60 persons remarkable for the distinctiveness of its culture and its isolation from adjacent Inuit groups. This isolation was broken in 1898 with the establishment of a whaling station on the island, and four years later the group had succumbed to a disease introduced from the whaler *Active*. The disease spread throughout the Inuit populations of western Hudson Bay during the winter of 1902–3 but with significantly less dire effect than among the isolated Sallirmiut (Ross 1975:114–17). It seems possible that the isolation of the Sallirmiut so clearly evidenced in the distinctiveness of their material culture may have prevented their attaining the degree of immunity to ship-borne disease which characterized their neighbours.

Inuit population stability during the past two centuries of direct European contact is very unusual among New World populations. Ross (1975:111–18) contrasts the disastrous effects of the 19th-century whaling industry on Western Arctic populations with the situation in Hudson Bay, where (aside from the Sallirmiut) Inuit populations appear to have been stable or increasing during the whaling era. Keenlyside (1990:14) notes the same discrepancy and suggests that it may be attributed to more intensive contact between whalers and Eskimos in the Mackenzie Delta than in the Eastern Arctic. Richling (1993:70), in attempting to explain the fact of apparent population increase in Labrador "at a time when Aboriginal peoples virtually everywhere else were under assault from diseases and their socioeconomic consequences," suggests that the estimates of 18th-century population may have been incorrect. A possible explanation for these anomalies might involve Inuit survival of widespread population trauma during the 16th to 18th centuries and subsequent stabilization of semi-immune populations. A similar explanation might be advanced for the comparable pattern of population stability or growth between the 18th and the 20th century among the Chukchee of northeastern Siberia and the Yakut and Buryat of the Siberian interior (Krupnik 1990:12, 16); these groups had experienced much earlier contact with Russians than had the coastal peoples of northeastern Siberia and may have reached their population nadirs earlier.

If Inuit groups were subject to significant depopulation from the 16th to 18th centuries, the associated shock would have been particularly effective in bringing about the cultural loss which seems to have occurred with the decline of Thule culture. This loss is particularly apparent in the cultural impoverishment of the Central Arctic Inuit in comparison with their compatriots of the Western Arctic, whose traditional cultures

were recorded and collected by anthropologists prior to the cultural loss which accompanied depopulation around the beginning of the present century.

## Archaeological Evidence

Archaeological evidence which might relate to these events is difficult to isolate. Ramenofsky (1987), whose impressive archaeological study of changes in eastern North American societies supported theories of depopulation prior to direct European contact, concentrated her analysis on changes in population size and settlement patterns. Evidence of population decrease at the end of the Thule period depends on prior estimation of population sizes during the Thule period, and this is a question which has not been approached in a comprehensive or successful manner. Saville (1987:229) and McCartney (1991:34) suggest that Thule settlements were significantly larger than those of the historic Inuit. However, the distributions of Thule and historic populations were quite different in many regions, and comparisons of total population size cannot be accomplished on the basis of available information.

Changes in the settlement and burial patterns of the late Thule period might be more easily investigated, but such changes are difficult to interpret. In both Greenland (Petersen 1974) and Labrador (Schledermann 1971), the 17th and 18th centuries saw a change from nucleated single-family dwellings to a more dispersed settlement pattern involving multifamily "longhouse" structures. This shift in settlement pattern has been variously explained as an adaptation to a deteriorating climate and as the result of social developments associated with the acquisition of European trade materials and the rise of powerful entrepreneurial traders (Kaplan 1983:345–49; Richling 1993). The possible relationship of settlement change to episodes of disease or depopulation is not clear but perhaps worthy of investigation. Elsewhere in arctic Canada, similar attention might be given to the widespread abandonment of the permanent winter-village pattern so characteristic of the Thule way of life and, in many areas, the disappearance of the rock-cairn burial practised by the Thule people.

An alternative approach might involve investigating the changes in Inuit technology which occurred between the Thule and the historic period. The most obvious of these changes relate directly to the economic shifts which occurred with the widespread abandonment of or decrease in whaling and the development of alternative economic pursuits such as intensive summer fishing or winter sealing at breathing-holes. Other changes, however, are not so directly and obviously associated with changing subsistence pursuits. Rather, they relate to the apparent technological simplification and decline in craftsmanship which Mathiassen (1928:103), among others, considered characteristic of the Inuit cultures of the Central Arctic.

Over the past decade, a great deal of archaeological ingenuity has been devoted to exploring the social and

symbolic dimensions of technology. Although this conversation has not produced consensus or even clarity on the disparate ways in which societies invest their technologies with symbolic meaning, it has made archaeologists aware of interpretational paths hitherto ignored. Perhaps these trails may lead to some understanding of the characteristics exhibited by historic Inuit technologies compared with those of their Thule-culture ancestors or those of Alaskan Eskimos. In turn, these differences may reflect the processes of cultural distress associated with traumatic experiences of epidemic disease.

Two case studies of Inuit technology may bear on these problems. The first investigates an apparent break in the linkage between symbolic and artifact systems. The second describes a situation of marked decrease in the stylistic standardization characterizing an important class of artifacts during a brief period in the history of one Inuit community.

An intriguing difference between Thule and historic Inuit technologies was noted in an earlier study of the symbolic attributes of Thule-culture artifacts (McGhee 1977). This analysis developed from the observation that Thule craftsmen made differential use of walrus ivory, caribou antler, and sea-mammal bone. The functional attributes of these three hard organic materials, which were basic to much of traditional Inuit technology, are very similar; the materials were apparently considered to be equivalent for many classes of Thule artifact, and the pattern of use directly reflects the relative availability of these materials in a community. Yet Thule assemblages produced by both walrus-hunting and caribou-hunting communities showed a significant preferential use of ivory and secondarily of sea-mammal bone as raw materials for artifacts associated with certain activities: sea-mammal hunting, sewing, and other women's activities and activities associated with winter life on the sea ice. Conversely, antler was used exclusively as the raw material for arrowheads designed for hunting caribou.

Mauss's (1906) classic analysis described Inuit culture in terms of a central dichotomy between summer and winter life, land and sea. This dichotomy was expressed in traditional Inuit societies through a set of practices and taboos designed to maintain a clear separation between the animals of the land and sea. The mythology, beliefs, and hunting practices of the traditional Inuit can be interpreted as reflecting a symbolic system which associated women with sea mammals and winter life and men with terrestrial hunting and summer life (McGhee 1977:146–47). Aspects of this symbolic system appear to have been expressed through the differential use of ivory and antler in the material culture of the Thule Inuit.

Although the symbolic system on which this expression was based can be reconstructed from the mythologies and beliefs of the historic Inuit, the link between symbolic and artifact systems appears to have been broken during the transition between Thule and the historic period. Ethnographic collections from Canadian Inuit groups and descriptions of the traditional cultures of

these groups contain only vague hints of the distinctions made during the Thule period (McGhee 1977:145). The link seems to have been maintained in the Western Arctic, where 19th-century North Alaskan Eskimos described to Murdoch (1892:205–25) an essentially Thule system of appropriate materials for the manufacture of hunting weapons. The apparent abandonment of symbolic associations between artifacts and belief systems may have been significant in producing the perceived "low level of craftsmanship" of the historic Inuit technology. Such a breakdown in the symbolic system may also support an argument for cultural change produced by factors more drastic than simple economic modification.

A second example of technological change during the transition between Thule and the historic period comes from an assemblage excavated from the Kunana site on Victoria Island in the Central Arctic (McGhee 1972). This site was occupied at some time during the latter half of the 19th century and was an important autumn caribou-hunting location for the group known as the Kanghiryuarmit, which numbered approximately 200 during the early 20th century. The direct European contact experienced by this Copper Inuit society was limited to two brief encounters with British naval expeditions searching for Sir John Franklin during the 1850s. The group had, however, participated in the salvaging of the *Investigator*, which had been abandoned by one of these expeditions on the northern coast of Banks Island over 300 km to the north. Numerous fragments of metal and glass were recovered from the site, suggesting that the main occupation occurred at the time of the salvage operation. The absence of functional European artifacts such as metal-bladed knives, axes, carpenter's tools, and needles may reflect curation or the widespread dispersion of these valuable materials through trade; it may, however, suggest that the salvage efforts were not particularly effective or productive.

Most of the approximately 500 artifacts described in the Kunana assemblage (McGhee 1972:76–97) are similar to specimens purchased by Jenness a few decades later from neighbouring Copper Inuit groups (Jenness 1946). They are for the most part less finely manufactured than those collected by Jenness and other travelers, but this discrepancy could simply reflect the different routes through which the specimens reached a museum collection. One would expect a difference in the finish of lost, broken, or discarded artifacts recovered by archaeology compared with artifacts selected for purchase and perhaps manufactured for sale. This explanation, however, would not seem entirely to account for the crude craftsmanship, lack of standardization, and extremely poor finish of the 53 sealing harpoon heads which comprise the largest single artifact class in the assemblage. The relatively large numbers reflect the fact that an important task carried out at such autumn camps was the preparation of hunting equipment for the coming season. The most common form of harpoon head, accounting for 18 specimens, is a simple cylinder of antler whittled to a sharp point at one end, the oppo-

site end containing a drilled socket for the harpoon fore-shaft and sawn obliquely to a simple spur; the artifact is completed with a drilled or gouged hole for attachment of a harpoon line (McGhee 1972: pl. 11). Aside from these similarities in general form, there is no apparent attempt at achieving a standardized pattern; only one very small specimen, apparently a toy, has been smoothed and polished to the surface finish characteristic of harpoon heads in most other assemblages. The remaining specimens (McGhee 1972: pls. 12, 13) demonstrate an astonishing variety of forms: some have closed drilled sockets, while others have open sockets closed with a supplementary piece of antler; some have one, two, or three irregularly carved lateral barbs or additional barbs inserted as pins into drilled holes; some are whittled from apparently fortuitously shaped fragments or are composed of two such fragments rivetted together. None are of styles known to have been used by other Inuit groups, and some appear to have been only marginally functional. Only two specimens have finely formed and polished surfaces, and these are of the very standardized form used by all Copper Inuit groups at the time of Jenness's early 20th-century visit to the area; they may have been left on the site at some time later than the main occupation.

Archaeologists dealing with Arctic cultures have traditionally used harpoon heads in much the same way that those in more southerly regions use decorated pottery or metal pins: as artifacts subject to relatively regular processes of stylistic change and consequently as markers which enable an assemblage to be temporally placed relative to others. As complex artifacts requiring considerable effort to manufacture and designed for a function—the final act of killing a sea mammal—which was central to the subsistence of most Arctic groups, traditional Eskimo harpoon heads are generally made with care and designed to a standard which shows little variation within a community. In the normative paradigm which characterizes most culture-historical archaeology, Inuit harpoon heads are ideal candidates for inferring cultural and temporal relationships between archaeological assemblages. A normative view of style does not, however, provide a useful stance for interpreting the stylistic developments seen in the Kunana harpoon head assemblage. These artifacts do not demonstrate the slight stylistic changes, with reference to those made by a previous generation of harpoon makers, which culture historians would expect in an isolated cultural tradition; nor do they exemplify a rapid shift to a new set of styles which could be interpreted as the result of changes in population or cultural influences. Rather, this assemblage seems to represent a breakdown of the concept of "style" in a local community.

Recent archaeological approaches to the study of style (Hodder 1982, Conkey and Hastorf 1990), emphasizing the social and symbolic correlates of artifactual form, would seem to provide a firmer footing from which to investigate a case of "stylistic breakdown." Yet these studies provide little light by which we may decipher the social or environmental situations which are re-

flected in this technological phenomenon. Perhaps the most useful approach is that developed by Wiessner (1989), who envisions style as an element in the creation of self-identity through comparison. Viewed as a means of communication through which individuals negotiate their social identities, the entire system of style may be vulnerable to disruptions in the society within which it operates. Most germane to this inquiry, Wiessner (1989: 59) suggests that style may serve as "an indicator of the balance between the interests of the individual and society." Thus, uniformity in the artifacts used by a social group may reflect a strong social identity and the need for cooperation in the face of intergroup competition. Conversely, a decline in uniformity should reflect conditions of decreasing social identity, including "breakdown in the social order that would force individuals to find solutions to their own problems" (Wiessner 1989:59).

Whether or not the Kunana assemblage can be considered an example of the precise stylistic mechanisms postulated by Wiessner, it seems likely that the phenomenon reflects occurrences in the environment or social life of the 19th-century Kanghiryuarmit. A persistent story in local tradition gives various accounts of a 19th-century depopulation event in this group. In 1911, Stefansson (1919:29) was told that the northern members of this group had been exterminated during the past century by Europeans avenging some murders. No such murders are recorded in the accounts of European exploration; it is tempting to interpret this story as referring to magically mediated events, including an epidemic which may have followed contact with one of the mid-19th-century Franklin Search Expeditions. Neighbouring groups advised Jenness (1922:41) in 1915 that many Kanghiryuarmit had drowned in about 1875 when the ice broke up early one spring. A later tradition (Jimmy Memogana, personal communication, 1965) is that all but one child died of starvation when the Kanghiryuarmit attempted to spend the summer on an isolated offshore island. Given the remarkable nature of the Kunana collection, which dates from this period, it may not be unreasonable to suggest an association between this depopulation event, whatever its cause, and the nature of the technology recovered from this site.

The Kunana assemblage documents what appears to be a very temporary situation in Kanghiryuarmit material culture. A few decades later, when travellers and ethnographers collected harpoon heads from this and neighbouring groups, these artifacts were standardized to the functionally elegant form used throughout the Copper Inuit area. The technology of the early-20th-century Copper Inuit was simple, relatively unadorned, and poorly finished in comparison with that of Thule culture or Alaskan Eskimo cultures but was manufactured with much more care and concern for stylistic uniformity than that applied by their Kunana-site ancestors.

The types of technological change documented in these two case studies—an apparent break in the linkage between symbolic and artifact systems and the collapse of a local stylistic system in apparent response to a cata-

strophic social event—may be examples of the processes which produced a historic Inuit technology characterized by most observers as exemplifying a low level of craftsmanship. These processes in turn may have been set in motion by social or demographic events related to the penetration of European culture, technology, or disease pathogens. Further archaeological studies devoted to the poorly known period of transition between Thule and historic Inuit culture may provide further insights into the nature of the processes which produced this cultural transformation.

Any archaeological approach to this question must assume that disease episodes, no matter how significant their consequences may have been to the decline of Thule culture, did not act in isolation. There is little question that the climatic deterioration which was occurring throughout the period of Thule occupation had important and complex effects on the distribution of the animals on which the Inuit depended. Sixteenth-century European whaling in the northwestern Atlantic may also have contributed to a reduction in animal stocks (Tuck and Grenier 1989:6, 7). As in many other known cases of human disaster, we will probably find that disease, famine, and environmental problems worked together in precipitating the Thule decline. Archaeology is severely challenged in attempting to distinguish the effects of these various factors. However, in searching for a primary cause of the changes which marked the end of the Thule period, we may suggest that the nature and extent of these changes are more consistent with widespread disease episodes than with a massive and uniform climatic or environmental change which is not evidenced in the palaeoenvironmental record.

### The Greenlandic Norse as a New World Population

As a sidelight on the main argument, it may be worth considering the disappearance of the Greenlandic Norse colonies as an event which may have been associated with the decline of Thule culture. Shortly before A.D. 1000 the Greenlandic Norse had established a society, based on an economy which blended stock raising with hunting and fishing, along the southwestern coast of Greenland. Their settlements persisted for approximately 500 years before vanishing during the 15th or early 16th century. Various reasons have been suggested for the disappearance of the colonies: deteriorating climatic conditions, depleted pastures, competition from a growing Inuit population, disease, the decline in value of Greenlandic products on the European market, and the inability of Greenlandic Norse society to deal with economic changes (Gad 1971:153–66; Berglund 1986; McGovern 1991).

Discussions of disease as a factor in the downfall of the Greenlandic Norse have generally been framed in terms of the Black Death, which ravaged northern Europe during the mid-14th century. The influence of disease has been generally discounted, however, since there

is no historical or archaeological evidence that the bubonic plague ever reached Greenland. In addition, the more populous Eastern Settlement of the Norse survived for at least a century after the time of the Black Death in northern Europe. However, from a biological perspective the Greenlandic Norse of the 15th or 16th century should perhaps be thought of not as Europeans but as a New World people with approximately the same susceptibility to European diseases as aboriginal New World populations. The long island-hopping ocean voyages across the North Atlantic that probably protected Greenlanders from bubonic plague may have been equally effective in shielding them from other Old World diseases. Genetically and immunologically, the Greenlanders had been isolated from Europe since before that continent undertook projects, such as the Crusades, which brought its population into contact with the disease centres of Asia and Africa.

Undoubtedly, by the 15th or early 16th century the Norse Greenlanders were suffering under a deteriorating climate, Inuit competition for animal resources, and a decline in the economic value of their exports. The small Norse population, living in crowded farmhouses on an inadequate diet, would have been extremely vulnerable to diseases brought to their shores by European explorers and raiders. The possible existence of such early contacts is suggested by hints in both the historical record and Greenlandic Inuit tradition (Gad 1971:157–82). The same combination of environmental and historical factors which is invoked to explain the Thule decline may in large part account for the mystery of the Norse disappearance from Greenland. If significant numbers of Greenlanders emigrated to Iceland or Norway during the 14th and 15th centuries, as is suggested by Berglund (1986), we may suspect that they would have experienced the same pattern of disease and early death which characterized aboriginal New World peoples transported to Europe during the early years of transatlantic contact. In fact, the rapid disappearance of an emigrant population through disease may account for the absence of historical records relating to such a movement.

### Implications

If the Thule decline and the development of Inuit culture can be ascribed to the results of European contact rather than to natural forces, what are the implications for our understanding of arctic cultures? Anthropology and history have long treated Inuit traditional culture as pristine, the result of long development in isolation from historical influences emanating from other parts of the world. The Inuit way of life has been widely cited as a prime example of human adaptability and even of the human capacity to survive a marginal environment by reducing cultural needs to a minimum. Even when it became apparent that this way of life had recently developed from the richer and more sophisticated Thule culture, the evidence of decline was interpreted as a sim-



ple response to environmental change, an interpretation which reinforced the importance of adaptation as a factor shaping the Inuit way of life. Thule culture was seen as an anomaly in the culture history of the Eastern Arctic, brought about by a brief and fortunate coincidence of historical and environmental circumstances. When these very special circumstances no longer existed, Thule culture was thought to have been quickly reduced to the more typical arctic life-style epitomized by the historic Inuit.

Anthropology's view of traditional Inuit culture is based almost entirely on descriptions which date to the past 200 years: a few 18th-century missionary reports, the notes and narratives of 19th-century explorers and whalers, and ethnographic descriptions dating from the late 19th and 20th centuries. In view of archaeological evidence indicating the rapid decline of Thule culture during the two centuries preceding these descriptions and the evidence for European contact and the possibility of extensive disease transmission during this period, we may suspect that the Inuit culture known to anthropology was not a long-term and stable phenomenon.

If Inuit culture is seen as the product of widespread disease shock consequent upon centuries of contact with Europeans rather than of environmental adaptation, then it must be considered as an anomaly in Arctic culture history. Such a view has significant consequences for academic interpretation. Archaeologists, who have traditionally used the Inuit way of life as the prototype for interpreting and reconstructing archaeologically known Arctic cultures, must reconsider the appropriateness of this model. The same recommendation might be made to anthropologists and other social theorists, who have long relied on Inuit culture as a source of information on human adaptability. More important, Inuit themselves may find significance in having their heritage portrayed as a relatively rich and complex culture which has long participated in world history rather than as a way of life formed purely by natural forces working on an ancient human cultural pattern.

## Comments

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McGhee has given us yet another of his stimulating and iconoclastic papers. He must be congratulated for forcing us, once again, to reconsider positions generally considered unassailable. His argument contains two basic elements: (1) the population decline and accompanying cultural simplification that occurred during the transition from Thule to Inuit culture in the Central and Eastern North American Arctic was due to imported European diseases and (2) the Inuit population, hav-

ing acquired some immunity while passing through this bottleneck, gradually recovered. There are many grounds on which I could challenge McGhee, but I restrict my comments to an examination of his thesis in the light of data from the so-called Caribou Inuit of the central west coast of Hudson Bay (Arima 1984).

McGhee's information on Caribou Inuit demographic history is out of date. This is not altogether his fault, since the results of recent historical research on that population have appeared only in my own general summary (Burch 1986:110-14), Csonka's (1991) Ph.D. thesis, and Jones's (1989) M.A. thesis. The first informed estimate of the size of the Caribou Inuit population was not, as McGhee states, that of the Fifth Thule Expedition (Birket-Smith 1929:65-68; Rasmussen 1930:22-23) but that of Andrew Graham, in 1774 (Williams 1969:213). Other early estimates or actual counts of portions of this population date from 1820 (Franklin 1823:263), 1881 (HBCA 1881, 1885), 1898 (Boas 1901:7), 1904 (Boas 1907:377-78; Borden 1903-4:62; Low 1906:135), 1906 (Turquetil 1907:496), 1907 (Bernier 1909:46), 1908 (Comer, cited in Ross 1975:112), 1911 (Populations 1911), 1912 (Turquetil 1912:406), 1917 (Hudson's Bay Company 1917), and 1918 (Ford 1918). These materials, when combined with dozens of explorers' accounts and the hundreds of journals, maps, reports, and letters contained in the Hudson's Bay Company Archives, permit the reconstruction of a population history spanning more than 250 years. It is quite different from the one postulated by McGhee.

The first attested contact between Caribou Inuit and Europeans was in 1718 (Burch 1978:11). In 243 of the 266 years since then, at least some Caribou Inuit have been in direct contact with Europeans. Despite the length of the interaction between the two groups, the Inuit did not become "heavily involved in the fur trade" (McGhee) until the early 20th century. The failure of the Inuit to succumb to the smallpox epidemic which devastated the neighboring Chipewyan in 1781-82 had nothing to do with acquired immunity as McGhee suggests. It stemmed from the fact that the disease came from the south during the winter (Cooke and Holland 1978:100), a season when the two peoples were separated by some 300 km of uninhabited country. By the time the surviving Chipewyan began their annual northward migration the following spring, the epidemic had run its course.

Most important, instead of declining in numbers as the result of newly imported diseases, the Caribou Inuit population expanded, both in size and in geographic extent, for nearly two centuries after contact. This is not to say that it was disease-free during this period. Measles, for example, struck in 1846 (HBCA 1844-47:70), and dysentery carried away some two dozen people in 1871 (HBCA 1891:27), and these are only two instances among many. However, despite the fact that a number of European diseases, including measles and influenza, were periodically present, they did not spread beyond a small segment of the population in each case.

Despite occasional local setbacks due to famine and



disease, the population as a whole continued to grow. It probably attained a level of some 1,500 people around 1915. Then, the caribou, on which the economy was based to an overwhelming degree, abandoned the country. This resulted in a multiyear famine which eventually yielded the devastated population encountered by the Fifth Thule Expedition in 1922 (see Burch 1988:88). Hunger and disease continued to afflict the population over ensuing decades, culminating in an epidemic of poliomyelitis in the late 1940s (Adamson et al. 1949, Peart 1949). It was only through the provision of vastly improved medical care in the 1950s and 1960s that the onslaught of epidemic diseases was brought under control. Since then, the population has grown at an exponential rate.

The data on demographic change in the Caribou Inuit area show a pattern exactly opposite to the one predicted by McGhee. Instead of crashing upon contact and then slowly recovering, the population grew slowly but surely, despite the periodic presence of European diseases, for nearly two centuries after contact. It was resource failure, not disease, that ultimately caused the crash. Environmental deterioration may not account for all aspects of the Thule–Inuit transition, but it must still be considered the most compelling of the various possible factors.

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This paper has the merit of placing certain things in the right perspective: in particular, that ecological explanations alone are insufficient to explain the Thule–historic Inuit transition. True, even at the height of the cultural ecological regime some doubts had been expressed: to quote but Taylor, “one wonders how long the weather will rule interpretation of Thule prehistory” (1979:iv; see also Damas 1969:10). I wonder if, having significantly contributed himself to the ecological explanation, McGhee is not now introducing a new trend of the same sort, where “the weather” resulting from the direction of the wind of intellectual activity determines which paradigm will rule in the years to come. This is why I feel more at ease with the assertion “We will probably find that disease, famine, and environmental problems worked together in precipitating the Thule decline” than with the establishment of a new “primary cause of the changes which marked the end of the Thule period” in the sentence that follows.

In its milder form—disease may have contributed to the decline in Thule culture in the Central and Eastern Arctic—McGhee’s hypothesis is plausible and heuristically stimulating. Clearly, validation of the argument will require detailed local historical studies and perhaps—but how will this be feasible in today’s context?—examination of Thule people’s skeletal remains for evidence of disease. In one of the local contexts alluded to, that of western Hudson Bay, current historical

interpretation doesn’t entirely support the assertions made. McGhee (1972:28) had already hypothesized that the epidemic of smallpox which reduced the Dene population at the end of the 18th century might have affected the Inuit too, and he is right in stating that Dene–Inuit socializing was rather intense. However, although a few, including myself, have looked for evidence of population reduction among the Inuit, none at all has been found, and current knowledge about the demographic evolution of this population rather disproves it (Csonka 1992). Eckert (1987:232) does quote earlier archival sources from that region documenting illness around Fort Churchill, but the only one about Inuit is equivocal. Further, the author states (he is not alone in doing so) that Bathurst Inlet Inuit “traditionally” traded with Inuit from the west coast of Hudson Bay. In fact, the intensity of interactions, as far as is known, varied widely through time, and there is no evidence of contact in the second half of the 19th century (Csonka 1994); it is far from proven that Copper Inuit were regularly infected by that channel. What I want to point to is that one can fruitfully use McGhee’s paper as the platform for detailed new researches, but one should not equate the plausibility of the deductive argument with its proof.

“The Mechanisms of Arctic Infection” will ideally open productive new fields of research. Models taking into account the incubation periods for different types of diseases might help establish how far infected individuals would have had the ability to travel before either succumbing on the way or ceasing to be contagious. Within the annual cycle, the timing of European early sojourns and those of the key moments of hunting and stocking meat may also stress the synergy, well recognized by McGhee, between epidemics and starvation. We might thus verify what he aptly points out: disease may have had enormous *local* consequences.

In the Central and Eastern Arctic, archaeologists have adduced convincing evidence of the decline of Thule culture. However, non-material (i.e., “mythology, folklore,” “interest in telling tales, maintaining complex genealogies”) aspects of culture and cultural decline, no matter what the achievements of symbolic archaeology, can only be “established” by the old method of ethnographic comparison. This is exactly what is done here: in order to measure non-material cultural loss from early Thule to historic Inuit in the Eastern Arctic, one compares contemporary Inuit/Eskimo cultures east and west. The degree and direction of cultural drift in one and the other region are hypothesized on the basis of an image of Thule culture which is built not on archaeological observations alone but also on ethnographical analogies. On the formal level, the argument is circular. It may be added that if under western “Eskimos” McGhee includes Yupik, then the population reductions of about two-thirds by epidemics documented by Oswalt (1990) for the Kuskokwim region in the 1830–40s weaken the argument that depopulation and attendant cultural stress came later in the Western Arctic.

The concept of “cultural distress” can be used about other native populations of the Americas to explain the

cultural loss which accompanied massive depopulation following contact with, and conquest by, Europeans. In any other context than such catastrophes with obvious consequences, "cultural distress" remains a very coarse concept, especially when applied to all cultural manifestations simultaneously. And McGhee does not imply here that depopulation was as dramatic in the Arctic as elsewhere on the continent. Since "cultural stress" has been plausibly argued to stimulate artistic production in certain circumstances (Dorset art during ecological deterioration and Thule invasion [see Taçon 1983]), one has to identify the threshold between stimulating "stress" and inhibiting "distress" for each specific facet of a human culture, all the more so since McGhee (1976) himself has already come to the conclusion that Eskimo art can hardly be correlated with other variables.

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I admire McGhee, an early proponent of climate change as a major causal factor in the development of historic Inuit culture, for his nimble ability to change his mind or at least to entertain alternative possibilities. Nevertheless, there are strong reasons for reservations with regard to this present statement.

Lacking in the Arctic are vectors for the mosquito-borne diseases such as malaria and yellow fever that wreaked such havoc in warmer parts of the Americas, where a few chronic carriers and many mosquitoes provided the conditions necessary for pathogens to become lethally endemic, rendering portions of the hemisphere essentially uninhabitable for centuries following European contact. Rather, the major disease killers of the far north of the continent, listed by McGhee (following Fortune 1989 and Keenlyside 1990), are almost exclusively those for which there are no chronic carriers but which are acquired through direct personal contact with individuals who are suffering an active illness of limited duration (cf. Dumond 1986). (Tuberculosis is an exception with regard to carriers, but its recent effects are the result of relatively gradual and cumulative development over a century or more.) Such diseases require face-to-face host populations of substantial size for the causal pathogens to be maintained—populations large enough that while the disease is active in one section, it is quiescent in others in which it will eventually break out.

Diseases of this kind can have been transmitted only seldom by the time-consuming and long-distance voyages of one or two small ships like those credited by McGhee with Inuit contacts before the beginning of the 19th century, for these sicknesses would have completely run their course through ships' crews long before any landfall was reached. Only after voyages became frequent enough, short enough, and numerous enough were the Inuit or their western Eskimo relatives effectively incorporated into populations of the critical size: then epidemics struck repeatedly.

For the same reasons, these diseases are the least likely to have been transmitted between societies scattered across the arctic vastness. Despite evidence for long-term trade in items such as iron and copper, available information says that commerce between groups was funneled through a very few individuals who had the appropriate contacts, for in general "stranger" was equated with "enemy." McGhee himself notes that in the 19th century epidemic disease was much less clearly present among the thinly settled northern Canadian Inuit than among their more densely settled (and more intensively contacted) cousins of the west. Such conditions must have mirrored those in existence earlier. Indeed, conditions in the Arctic before the 19th century must have duplicated those that existed at the end of the Pleistocene, when the Americas were evidently populated by immigration through an effective filter of extreme climate and attendant social adaptation that eliminated so many of the diseases endemic to major parts of the Old World.

Although a few interpretations are convincing when they posit situations in which newly introduced Old World diseases spread so rapidly through areas of the New World that they outdistanced actual contact with Europeans, more of them are too extreme to be credible: one, for instance, holds that smallpox (a disease transmitted face-to-face by droplets of spittle), which appeared in the Basin of Mexico in 1520, spread overland from there through the native American population to arrive on the Columbia Plateau within five years (Campbell 1990). Although perhaps not so extreme, I fear the present argument must find its place among the less believable fraction of these suggestions. Such arguments are a part of the nihilistic modern (or "postmodern") tendency throughout anthropology to propose that our perceptions of historical, ethnographic, and archaeological reality are so seriously flawed that we may as well give up the attempt to make sense of them. Some of us cannot accept this view.

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This paper demonstrates the difficulty of attempting to draw inferences from the sparse historical sources at hand about the realities behind archaeology and vice versa. Questioning the Inuit culture known to anthropology as a pristine example of an arctic way of life, McGhee easily points out that the notion of pristineness is a mistake, the Inuit having long participated in the world history of the white man. Calling our attention to the description of the Inuit culture of the Central Arctic as impoverished in comparison with those of Greenland and especially Alaskan Eskimos, he suggests that recent developments be viewed as the result of hitherto overlooked contacts with Europeans and the pathogens they carried. However, one can hardly infer that

poorly finished artifacts indicate cultural impoverishment and European contact. The replacement of harpoon heads by screwdrivers in 20th-century East Greenland has nothing to do with the hunting situation and economic development of the society in question, in which a hunter is judged by his catch (e.g., Nooter 1988, Robbe 1994).

McGhee guides us through the 16th-to-18th-century historical sources to see whether there is evidence for depopulation predating the stabilized semi-immune populations of the period of European records. This tour de force enables him to postulate that Inuit groups may have been subject to significant early depopulation that brought about a cultural loss particularly apparent in the cultural impoverishment of the Central Arctic Inuit in comparison with their compatriots in the Western Arctic, where depopulation took place around the beginning of this century. I can agree with him that the Inuit culture known to anthropology was not a long-term, stable phenomenon, but I cannot share his view that the transition from Thule to Inuit is linked to European contact and the possibility of extensive disease transmission during this period. The Greenland case differs from the accounts he cites. Comparing the Inuit of Arctic Canada with their compatriots in Greenland and Alaska with regard to European impact makes no sense, because "archaeological evidence which might relate to these events is difficult to isolate."

Following the native trade routes described in the archaeological literature, it seems obvious that diseases were introduced into Inuit communities in this way. However, if Europeans were treated like migratory animals because of the newly discovered resource that they represented (see Graburn 1969:101), the archaeological context around the trading centres shows an increase in settlement concentrations and a heterogeneity of artifacts, as in similar situations in northeastern North America (e.g., Ramsden 1978). Temporary population centres are known in precolonial southwestern Greenland, where Inuit gathered to meet the Dutch whalers and later the Danish-Norwegian colonizers. They came mostly from Disko Bay and the southernmost Greenland known as their home region in the 17th and 18th centuries (Egede 1925:362). But when the first virgin-soil smallpox epidemic, recorded in 1733–34, carried off about 90% of the population some hundreds of kilometres north and south of the mission station, it did not spread along the native trade routes farther north and south to the home regions of the Inuit traders (Egede 1925:283, 288). As is demonstrated elsewhere (Aaby 1985), the most commonly accepted epidemiological explanation for increased severity is the sociocultural breakdown during virgin-soil epidemics due to crowding and intensive exposure.

McGhee is incorrect in suggesting that continued post-Norse European knowledge of Greenland was probably a factor in attracting early European exploration into the eastern Arctic. It was the fisheries around Iceland, dominated by the English, and the newly discovered fisheries off Labrador-Newfoundland, the Bacalnaos

("land of the stockfish"), that attracted the competing European nations in the first half of the 16th century. Greenland and the Eskimo Arctic were no longer included in the sphere of 16th-century European interest.

The Zeno map and the 1558 description are both compilations from medieval sources referred to by Olaus Magnus in his *Carta Marina* of 1539 and in his comments published in Venice (Bjørnbo 1911:266–68) and a Portuguese chart known to McGhee's source (Lucas 1898:113). The domed snow houses mentioned are not to be found in the Zeno brothers' account, which gets its information from Magnus's *History of the Nordic Countries* and describes and illustrates the houses in question as built of whale bones (Magnus 1555:chap. 9). Reasoning about domed snow architecture in Greenland and its implications for wintering in the Arctic requires more documentation.

The mercantile initiatives of the European nations were the economic motive force behind whaling in the North Atlantic, and penetration of the North American Arctic was the result of the search for a northwest passage to Asia (Hakluyt 1589; Kupp and Hart 1976:4). But the Dutch whalers did not expand out of the North Atlantic by 1614 to work in Davis Strait as McGhee writes; whaling here was, even in its 18th-century heyday, not always a profitable undertaking and was comparatively unimportant before 1670 (de Jong 1872:41; Gulløv 1987; Gulløv and Kapel 1979; Kupp and Hart 1976:14). Nor was sporadic contact sufficient to allow the repeated transmission of Old World diseases to local Inuit groups in the Eastern Arctic before the 18th century as McGhee, mixing secondary sources from the Danish historian Finn Gad, suggests. His claim that Greenland's reputation for wealth in silver and in trade goods indicates that traditional stories of early attacks from the sea may be well founded is based on a haphazard use of the accounts at hand. The Inuit story in question was told to Egede's son Niels in 1769, four years after he had received news from Denmark about a new-found papal letter from 1448 mentioning a pirate attack on the Norse colonies. Niels closely questioned Greenlanders about this and recorded the traditional story that was first published in 1939 (Gad 1967:193–94; *Grønlands Historiske Mindesmærker* 1845:166; Ostermann 1939:268). The wealth in silver was an exaggeration and a misunderstanding of the 1636 account mentioning that the cargo of golden sand was of no value and was therefore thrown overboard, after which the captain committed suicide (Bobé 1936:18; Gad 1967:281–82). Using secondary sources is dangerous in history.

The poor whalers suffered from osteoarthritis caused by chronic stress and rickets and scurvy caused by vitamin D and C deficiency respectively (Maat 1981:172). There is no evidence in Arctic history of the spread of disease before crowding and intensive exposure were registered from an epidemiological point of view. Bacteriological investigations of the Greenland mummies from the 15th century showed the presence of *Clostridium perfringens* in an abdominal cavity as the only potentially pathogenic bacterium; the four-year-

old boy suffered from Down's syndrome and Legg-Calvé-Perthes' disease and therefore had lowered resistance to infections and other disorders. One of the individuals probably died of a nasopharyngeal carcinoma. For the other mummies the cause of death has not been established with any certainty; infectious diseases, starvation, hypothermia, drowning, and poisoning have been mentioned in this connection (Hart Hansen 1989: 69–82).

In interpreting the apparent impoverishment of the culture of the Central Canadian Inuit, McGhee has fallen victim to the lack of historical sources and become dependent on speculation. He writes that Inuit must have shared with other New World populations a low level of genetic or immunological protection from pathogens originating in the large pool of Old World populations, and in this way his paper echoes ethnocentric statements from our own era about excessive mortality in virgin-soil epidemics that greatly facilitated European expansion into the Americas and elsewhere (see Aaby 1985:335). Infectious disease is as old as humanity and will surely remain one of the fundamental determinants of human history (McNeill 1985:268), but this is no excuse for not being careful with our ethnohistorical sources.

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The Canadian Arctic covers an area of over 2 million km<sup>2</sup>. Few archaeologists have worked in this vast region. Much of the Arctic is unsurveyed, and relatively few sites have been excavated. In many cases the nearest excavated site of the same period is several hundred kilometers away. In addition, problems with radiometric dating in the Arctic make it difficult to compare sites. Therefore, our knowledge of past cultures is both limited and patchy. As a result, one might expect Arctic archaeologists to be reevaluating their interpretations constantly. In fact, this is not the case. It takes a radical interpretation to shake us up and make us reconsider interpretive frameworks we had begun to view as set in concrete. We have recently received two wake-up calls. The first is Park's 1993 paper in *American Antiquity*. The second is this article by McGhee. Whether one agrees or disagrees with these researchers, we owe them a debt of gratitude for forcing us to question our acceptance of the status quo.

In one layer of this article, McGhee argues that the ethnographic Inuit are not "a pristine example of an arctic way of life." I agree entirely; to suggest otherwise would be to argue that the North was a closed system. The more we learn through archaeology, oral history, and ethnohistory the clearer it becomes that this was almost never the case. In the other layer, the cake, he argues that the ethnographic Inuit culture was "impoverished" and that this was the product of "cultural dis-

stress" resulting from introduced diseases. I have some serious reservations about this contention.

First, I am uncertain that the change from Thule culture to historic Inuit culture is as dramatic as has been postulated. The hypothesized economic change from sedentary communities surviving on bowhead whales to nomadic hunters living off smaller marine mammals is based primarily on changes in material culture and dwelling structures. While both are problematic, I will discuss only dwelling structures. Archaeologists perceive a change in dwelling structure from large semi-subterranean houses constructed from sod, stone, and whale bones to snow houses on the sea ice. In fact, this change is not an abrupt one. What we see of the past is generally the most obvious; large sod and whale-bone dwellings are undeniably more visible than melted snow houses! However, when the first Europeans arrived they found people living in a mixture of these two dwelling types, frequently at the same site. Also, the large semi-subterranean houses were not abandoned, as is frequently implied in the literature. Inuit continued to live in them well into this century. Also, in certain areas Inuit lived in permanent settlements similar to those of their Thule forbears. Therefore it seems more likely that the change from Thule culture to historic Inuit culture was ongoing and was affected by many forces both internal and external to Inuit culture.

Second, I am concerned that we are always looking to outside sources to explain any culture change that is perceived as rapid. The most popular explanation for culture change has been climate change, followed by population replacement and culture contact. It is almost as if we viewed cultures in the frozen North as frozen themselves. In order for dramatic changes to occur in Northern cultures is a *deus ex machina* required?

To deconstruct the individual foundations of McGhee's "disease-shock" hypothesis would be simple but unsatisfactory. The ethnographic data are as patchy as the archaeological data. The population figures he uses as the basis of his argument are, as he points out, highly questionable. We have valuable "snapshot" records for a few specific locations but little or no information about the population in most regions. With the exception of Greenland, almost all the population estimates are either guesses or qualitative observations by explorers and whalers. While these can provide valuable information they need to be used with greater attention to their context than is exhibited by McGhee.

Despite the weakness of many of the components of McGhee's hypothesis, the essence of his argument remains compelling. The suggestion that introduced diseases struck many Inuit prior to European contact makes sense intuitively. To McGhee's suggestions for further archaeological research I would like to add two other areas: ethnohistory and oral history. Inuit had extensive, well-traveled trade routes. News, innovations, and trade goods moved rapidly along these routes. As McGhee notes, they would also have provided a conduit for the transmission of diseases. An examination of the

population figures and the ethnographic and archaeological data along these routes should be undertaken. Oral history is also a fruitful area for research. For example, in 1902 whalers introduced dysentery to the Inuit of Lyon Inlet, and it resulted in many deaths. The people believed they had been bewitched by their neighbors (Ross 1975:117). Other examples of possible disease locations can be found in Inuit place-names. Accounts of epidemics and cursed populations and locations in conjunction with archaeological research will prove valuable in evaluating McGhee's "disease-shock" hypothesis.

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McGhee has presented an interesting case for the possible role that disease may have played in shaping the Thule culture prior to 18th-century contact. I will confine my comments to the "cultural distress" argument, the validity of the interpretation of the Kunana artifact assemblage, and the possible introduction of disease through Norse contact.

As McGhee points out, many investigators have leaned heavily on the thesis that environmental and ecological changes during the "Little Ice Age" were dominant factors in shaping the Thule culture. Without necessarily detracting from the argument that disease-related depopulation may have played a role in this regard, I remain partial to the environmental/ecological causality argument. It may be true that the importance of whaling in the Thule culture lessened considerably in an area such as Cumberland Sound at a time when whales remained plentiful in Baffin Bay and Davis Strait. However, as has been pointed out (Schledermann 1976, 1979), severe ice conditions along the east coast of Baffin Island could have resulted in a shift in economic strategy and settlement patterns of many Eastern Arctic Inuit groups. Obviously, the effects of a long-term deteriorating climatic episode would have played out differently from one geographical region to another. The way of life of the Polar Eskimos and some of the Central Arctic Inuit populations was certainly different from that of contemporaneous West Greenland and Baffin Island populations.

The extent to which McGhee's argument for a proto-historic disease-related depopulation episode of the Thule culture is sustained by evidence of "cultural distress" represented by the Kunana material remains debatable. One of the assumptions underlying his argument for a breakdown in symbolic and artifact systems is the proposition that prior to the distress period there was "significant preferential use" of ivory or sea mammal bone for artifacts associated with sea mammal hunting, such as harpoon heads, and exclusive use of antler

for arrowheads used in caribou hunting. This argument may hold in certain Central Arctic situations but is not supported by evidence from the Eastern Arctic. McGhee also suggests that a breakdown between symbolic and artifactual systems is reflected in the occurrence of considerable stylistic variation in harpoon heads at Kunana. Such incidents supposedly reflect occasions when traumatic events result in individual, nonconforming experimentation overriding common social identity expressed as conformity of style. This theory has also been discussed in terms of Paleoeskimo developments and, while appealing, appears somewhat doubtful when one looks at the conformity expressed by the Late Dorset people at a time when one might expect "cultural distress" to have been a factor in their lives, just prior to cultural extinction. Notwithstanding these comments, I find McGhee's argument compelling, particularly the consideration that most Inuit populations apparently did not experience major and widespread depopulation during the historic period. Noticeable exceptions are the extinction of the Sallirmiut and the devastating epidemic that ravaged West Greenland shortly after Hans Egede moved his mission to the site of present-day Nuuk.

I find it difficult to accept McGhee's speculation that the Greenlandic Norsemen can be viewed, from a biological perspective, as a New World population and that they had been isolated to the point where they were as susceptible to European diseases as Native North Americans. As far as the plague was concerned, no one was immune, Old or New World. Nor were the Norse Greenlanders so isolated from events like the Crusades, a long struggle that Norsemen were eventually asked to support through special taxation. To my knowledge, the only reference to some sort of pestilence or plague reaching Norse Greenland is a saga-related incident in Vesterbygd about A.D. 1002 which resulted in the death of many people including Erik the Red's son, Torstein (Meldgaard 1982). At that time there would have been no contact with Inuit on Greenlandic soil at least. There are no further recorded incidents, yet it remains a striking coincidence that the major Norwegian commercial port of Bergen was devastated by the plague in the summer of A.D. 1349 (Gasquet 1893), about the time when the Greenlandic settlement of Vesterbygd is thought to have been abandoned. It seems implausible that the plague, which took thousands of lives in Iceland (Hastrup 1985), never reached Greenland.

McGhee's suggestion that we reconsider the appropriateness of "the Inuit way of life" as a model for reconstructing prehistoric Arctic cultures is reasonable enough, but I don't see why the apparent "decline" of the original Thule culture, regardless of its cause(s), should be treated as a historical anomaly. Perhaps the anomaly is the original state of the Thule culture as it expanded eastward into the Canadian Arctic and Greenland. The response of the Thule culture to traumatic episodes in whatever form shows an impressive capacity to adapt to periods of cultural stress.

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I consider McGhee the dean of Canadian Arctic archaeology, so when he speaks I listen closely. In this article he says many things of great interest, some plausible, others unconvincing, and some downright confusing. I hope his dialogue with me and other commentators will illuminate some of the doubts and confusion I suffer.

As far as I can tell, McGhee's account of the historical facts is authoritative, albeit hemmed in by our pervasive ignorance of many relevant matters. But it would have been much easier to evaluate his argument had he provided a systematic summary of the timing of the archaeological events he is attempting to explain (i.e., the Thule-Inuit "transition") in relation to the timing of direct or indirect European contact with these populations. Perhaps he could provide such a table in his reply.

McGhee's hypothesis that Thule people suffered an early and devastating series of epidemics is a difficult one to test; as he notes, "the processes of disease transmission in such a population are not well known." I see the evidence for early and widespread disease events in the Thule-Inuit realm as equivocal at best. The hypothesis requires that pandemics spread in very low-density populations not in direct or sustained contact with European vectors. From Ramenofsky's (1987) evidence and other studies it does seem likely that early pandemics occurred widely in Native North America, but it appears that these primarily befell dense, sedentary populations and that even some of these were spared. For example, although there is archaeological evidence of sustained contact between California Indians and the Pueblo peoples, massive disease effects did not apparently hit the relatively dense and sedentary California populations until the mission era despite two centuries of Spanish settlement (and disease transmission) in the Pueblo region.

The hypothesis that European diseases essentially drove the Thule-to-Inuit transition is an intriguing one, worthy of serious examination, and I commend McGhee for beginning this process. But I respectfully pose the following questions:

1. If disease and contact led to the Thule decline, shouldn't this be both earlier and more pronounced in Labrador and Greenland? (In fact McGhee suggests that the opposite is closer to the truth, as "many elements of the Thule way of life survived along the subarctic coasts of Labrador and Greenland.")

2. If epidemics led to cultural simplification, why would Alaskan Eskimos in 1910 have had a "more sophisticated" folklore than contemporaneous Copper Inuit when the Alaskans had suffered a series of devastating epidemics in the preceding decades (Burch 1980, Fortune 1989)?

3. Why were Alaskan Eskimos apparently spared the worst until the 19th century? As McGhee notes, they had maintained ongoing trade relations with surrounding groups for centuries. His model of disease

transmission through trade would seem to allow or even require that pandemics would sweep through Alaska as soon as Russians began expeditions in the area. Or why not centuries earlier than that, given the trade links between the Bering Sea Eskimos and (via Siberian intermediaries) the courts of China? Instead, it appears to have taken direct and sustained contact with resident Europeans or Euro-Americans to bring epidemic disease to Alaskan natives—and this despite their much higher population density (as compared with Inuit) throughout the prehistoric and historic periods.

4. Given that domed snowhouses are characteristic of historic Inuit, not Thule, do European descriptions of them in the 1550s cited by McGhee suggest that European influences on Thule culture occurred early, as he argues? Or that the transition to Inuit settlement patterns had already occurred before such influence?

5. Why is Jenness's (1922) surmise that depopulation occurred among Copper Inuit in the 17th century evidence for disease as the cause of the Thule-Inuit transition? Did the transition occur this late in the Copper area? Or is this not counterevidence that Inuit were highly susceptible to Old World diseases centuries after the transition?

McGhee asks, "What is the mechanism . . . which connects environmental change to changes in the nature of a group's mythology or the degree to which it decorates its tools and weapons?" The same question could be asked with respect to epidemic disease as causal. McGhee's answer is "cultural distress" or death of culture bearers, but environmental deterioration can lead to fragmenting of formerly nucleated populations and even to starvation or other types of "economic shock." More subtle is the hypothesis that oral literature and stylistic attributes function as ethnic markers in the delineation and maintenance of social and territorial boundaries. If the Little Ice Age or similar climate changes led to resource decline, this could have driven a shift toward increased mobility and from ethnically and territorially bounded groups like those noted for Alaskan Eskimos (Burch 1980, Andrews 1994) to a more open and mobile set of populations lacking incentives to maintain clear ethnic markers. I state this as a hypothesis—ideally testable (see Dyson-Hudson and Smith 1978, Andrews 1994).

Finally, what is the distinction between Thule and Inuit culture? McGhee certainly knows the archaeological material far better than I. Clearly Thule winter house structures were larger and materials more permanent than among historic Inuit; by implication, mobility was lower and food storage more important. Equally obvious is the greater artistic decoration of artifacts and perhaps a larger inventory of artifact types. But the terminology used, characterizing Thule culture as "rich," "sophisticated," "complex," "secure," and "artistic" and Inuit as "impoverished," "distressed," and suffering from "cultural loss," is troubling. Although it is certainly possible to measure the number of components making up a tool assemblage and to label traditions with more components more "complex," the full inventory of terms that



McGhee draws from the archaeological and ethnographic literature is not (and probably cannot be) objectively defined. Rather, these are terms that imply superiority and inferiority and betray an ethnocentric assumption that many material objects and limited residential mobility define a superior existence for human beings. By this account, surely contemporary Inuit communities, with their prefab houses and garbage dumps, their inventories of machinery and consumer goods, are far more "sophisticated," "rich," "complex," and "secure" (though perhaps not "artistic") than any Thule settlement from Mackenzie to Labrador ever was. I wax rhetorical, but only to call into question the tradition of rhetoric that McGhee's article unfortunately perpetuates. The stereotyping of Inuit culture as a pristine life-way adapted to the margins of existence is not remedied by portraying it as a degeneration of a once proud people laid low by disease and culture loss.

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The emergence of Inuit culture from a Thule base is a complex subject but one that has been approached simplistically by arctic prehistorians. In an interesting essay, McGhee examines the role in this transition of epidemic disease and its contribution to the decline of the Thule culture and to the "impoverished" state of historically described Inuit populations. There are no points in the article with which I have a major disagreement, and I think it is noteworthy that McGhee, who is widely recognized as one of the first archaeologists explicitly to link Thule cultural developments with climatic change, raises doubts about the efficacy of the climatic model for understanding the Thule-Inuit transition. While I doubt that anyone ever envisioned this model as the last word on Thule cultural dynamics, it has dominated Thule archaeological research for over 20 years and requires serious reevaluation (see McGhee 1982).

Because it reeals a central part of his argument, I think McGhee could have expanded on the concept of cultural distress. In particular, there is little discussion of potential responses to what are described as repeated epidemics. There seems to be no provision for the emergence of coping mechanisms to deal with the source of the stress other than the eventual (and fortuitous) development of immunity in a number of individuals. This implies either that the groups initially affected failed to establish a link between disease and contact (direct or indirect) with Europeans or that, having established the connection, they were simply unable to cope with the disaster. The latter seems plausible if, as suggested, epidemic disease was beyond the experience of the groups affected. In any case, I suspect that migration coupled with avoidance of other groups during disease episodes was a common response.

There are also difficulties in demonstrating archaeo-

logically the links between epidemic disease and cultural distress. As McGhee notes, archaeologists have a poor understanding of the size of coresident social groups during the Thule period. Population estimates based, for example, on the number of winter house ruins in a site and assumed levels of contemporaneous occupation are little more than speculation and thus offer no means of reconstructing Thule population dynamics.

In considering the postulated breakdown in the symbolic-technological sphere, I don't necessarily disagree with McGhee's position, but it occurs to me that the types of changes discussed need not have involved epidemic disease. New types of raw materials, tools, and weapons obtained through trade with Europeans could have produced a similar result in the technology of Inuit groups documented during the historic period. A well-known example is the secularization of hunting that evolved as a result of the availability of firearms. In more practical terms, firearms also contributed to technological simplification as guns gradually replaced a range of specialized weapons (e.g., Balikci 1964). Admittedly, it is unclear whether other forms of technology introduced during the early contact period had a similar effect on symbolic or technological systems. Nevertheless, I believe the archaeological data presented offer limited support for the postulated connections between epidemic disease, cultural distress, and the collapse of these systems.

A subject not discussed by McGhee is whether epidemic disease could have been a factor in the fairly rapid decline of another arctic population, the Dorset culture. While it is clear that archaeologists have limited understanding of Thule-Dorset interactions (Park 1993), the Thule and Dorset populations developed in isolation from one another, their initial contact was potentially more sustained than that of the Thule and Europeans (i.e., Thule and Dorset groups competed for essentially the same resources, and there is ample archaeological evidence that they occupied [sequentially?] the same sites), and the decline of the Dorset population appears to have been quite rapid in most areas. Is it possible that the Thule introduced diseases that wreaked havoc in Dorset populations?

Reconstructing the processes that produced the Inuit way of life requires models that incorporate concepts other than climatic deterioration. This paper raises important questions about many long-standing assumptions central to archaeological interpretations of the late prehistoric period in Arctic Canada. In doing so, it promotes new avenues of research, and I applaud McGhee's efforts in this regard.

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McGhee raises a serious, if highly speculative, alternative to the Little Ice Age hypothesis commonly put forward to explain the demise of prehistoric Thule Eskimo



culture and the appearance of a stylistically pauperized Historic Inuit variant. In so doing he postulates that (1) Thule culture persisted several centuries longer than the Little Ice Age hypothesis generally credits; (2) Thule peoples may not have been as culturally isolated from other, especially European, societies as previously supposed; (3) European-introduced epidemic diseases imposed severe cultural distress on Thule Inuit; and (4) Thule Inuit-European contact(s) occurred earlier than is currently believed.

In developing his basic argument, particularly with regard to the second and third postulates noted above, McGhee draws heavily on two very current ideas. The first is that hunter-gatherers did not exist in pristine cultural isolation from at least socially differentiated aboriginal neighbors (see Headland and Reid 1989, but this argument is expressed most vividly in the recent "Bushman debate"). The other is that disease was the most formidable early European introduction to the New World. McGhee extends these two notions into the uncharted cultural landscape of the Arctic. While not denying the merit of the overall argument here presented, I think that there are a number of particulars which could do with considerable fleshing out or reexamination if such an alternative hypothesis is seriously to challenge its predecessor.

First, it seems to me that there is considerable temporal blurriness in the present discussion. While accepting that Little Ice Age cooling struck different parts of the Arctic at different times, it is by no means clear here when such a deterioration befell the core Eastern Arctic portion of the Thule settlement area referred to or, in fact, what were the geographic bounds of this core. In the course of his argument McGhee draws examples from areas as distinct as Victoria Island and Northwest Greenland. Likewise, except for Norse folk in southern Greenland, he establishes no clear temporal case for any other European presence in the Eastern Arctic much farther north than central Labrador before the middle of this millennium. The lack of temporal (and spatial) specificity seems to leave his first and fourth postulates most problematic.

Second, at several junctures McGhee places considerable emphasis on the deteriorated stylistic and craft quality of historic Central Arctic Inuit artifacts, especially citing Mathiasen (1928:103) in this regard. Throughout there is the repeated suggestion that this deterioration is the result of "cultural loss" comparable to, and presumably the same as, the situation that prevailed among the 19th-century Polar Inuit. However, reading Mathiasen's chapter on "Tools and Techniques," I found that his discourse on the poor quality and crafting of Igluligmiut [*sic*] artifacts and his comparison of these with those of the Thule culture is prefaced by direct reference to "factory-made implements," presumably European in origin, supplanting "their old forms of implements, and this destroys their good old technique, too." While later reference to the craft situation as found by Jenness may better bear out McGhee's cultural-loss argument, it is my feeling that the Mathiasen Igluligmiut example is of another order.

The last and perhaps rather small point concerns

McGhee's statement that "poor weather and poor hunting conditions create leisure rather than subtracting from it." It seems here that while the notion of Inuit as pristine hunter-gatherers is being challenged, they are still members of the "original affluent society." A bad-weather day or week can indeed create some enforced leisure among Inuit (at least from their labours away from village or camp), but oral and observed data from Baffin Island Inuit dating from the 1960s and 1970s suggest that prolonged environmental stress can deeply, and negatively, affect them. Two examples are worth citation. In one incident, occurring in spring 1967, on-shore winds delayed the dispersal of sea ice for over a month and ultimately forced a band of some 30 Inuit to abandon its main winter settlement and undertake a walking migration of almost 200 km to a new site. Following this, two nuclear families lost confidence in the band's leadership and removed themselves to a third locale. In the other, 22 consecutive days of blowing snow and late freeze-up in 1971 immobilized 4 hunters and their 15 dependents, caused the group to consume the (rotted) ringed and bearded seals cached two months earlier as dog food, saw some dozen dogs starve or die in dog fights, and induced the camp leader to publicly question the wisdom of his own decision making. While neither incident was of especially long duration by Little Ice Age "standards," each was beyond the ordinary for eastern Baffin Island and clearly had serious sociocultural ramifications for the Inuit involved. Who can say what degree of cultural loss might accompany Little Ice Age levels of environmental stress?

While there are other points in this contribution of which I am critical (especially regarding Canadian Inuit demographics in the past 40 years), I will pass over these and say by way of conclusion that, in my view, McGhee has gotten matters half-right. I think he is correct in his hypothesis that the decline in stylistic quality and uniformity and loss of craftsmanship evidenced in Historic Inuit material culture relates to, as he quotes from Wiessner, "breakdown in the social order." Why, however, can only devastating episodes of disease account for this breakdown? In my view, prolonged environmental uncertainty such as might accompany Neo-Atlantic conditions (i.e., delayed or missed break-ups, disrupted sea mammal migrations) could very possibly have caused Thule Inuit to question aspects of their social identity and world image (see Stairs and Wenzel 1992). In fact, the disease scenario espoused here, to me, well characterizes the conditions that appear to have prevailed among many Inuit groups, especially those of the barrens on both sides of Hudson Bay, between ca. 1920 and 1960 (see Tester and Kulchyski 1994)—TB-related endemic morbidity, weakened demographic and task units, prolonged ecological stress (related to cyclic caribou declines), and localized starvation. I offer the above not as a rejection of McGhee's hypothesis but to point out how complex the Little Ice Age perspective can be. In any case, I think that he arrives at a very correct conclusion in regard to Historic Inuit appearance out of Thule culture. I am just not very sure I agree with the route he takes in getting there.

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McGhee has done us a service by focusing on the possibility that epidemic disease had a significant impact on late-prehistoric Arctic cultures, specifically the Inuit of Arctic Canada. Since such dreaded killers as tuberculosis and syphilis appear to have been long resident in northeastern Asia (Bogoras 1904-9:41; Krupnik 1993:221) it seems probable that disease may have crossed Bering Strait along ancient trade routes (Bogoras 1904-9:53) to plague sedentary Alaskan coastal populations before the arrival of Europeans. Dumond (1986:35, 62) has briefly considered this possibility for western Alaska. McGhee provides information with emphasis on Eastern Arctic events and possibilities.

The issue is worthy of serious consideration. Although he does not always appear to heed it himself, I wholeheartedly endorse McGhee's caveat that the possible effect of disease be considered in conjunction with other factors, including changing environments, in attempting to explain late-prehistoric culture change in the north.

Perhaps the strongest argument in favor of a significant late-prehistoric role for disease in the Central and Eastern Arctic is the figures McGhee marshals to demonstrate minimal disease-caused population decline among Inuit during direct European contact from the 19th century onward, plausibly indicating hard-won immunity acquired by earlier exposures. Here we must ponder the implications of Krupnik's (1993:221-22) recent suggestion that the aboriginal population of Siberia expanded dramatically during the centuries of European expansion characterized by epidemics, genocidal wars, and other unparalleled disruptions. Other lines of evidence also render the suggested role for prehistoric disease less conclusive.

It is strange that Canadian Inuit apparently have no traditions regarding such traumatic events postulated for the relatively recent past, especially when informants in the 1920s recounted in almost photographic detail encounters of their ancestors with the ill-fated Franklin expedition over 70 years earlier. Also, while the western Athapaskans frequently indicated that they had formerly been far more numerous (e.g., McKennan 1959:19), the Canadian Inuit apparently had no similar tales to tell the ethnographer. In fairness it must be noted that disease-caused decimation of the Athapaskans occurred in the more recent past. Another apparent anomaly is the fact that Canadian Inuit retained their confidence in shamanistic procedures for curing illness well into this century. A very significant effect of the appalling population losses suffered by 19th-century Alaska Natives was the discrediting of the indigenous belief systems due in large part to the obvious inability of traditional shamanistic practices to deal with epidemics (Fortuine 1989). In Siberia, in contrast, where exposure to such diseases was both perhaps more gradual and more ancient, a form of ideological armor plating of traditional beliefs developed whereby certain diseases

were conceived as under the control of such powerful spirits that not even the greatest shamans could be expected to confront them (e.g., Bogoras 1904-9:460-61). Incidentally, the Chukchi developed a thoroughly rational approach to epidemic control which featured flight, quarantine, and avoidance of visitors from infected camps, even though they thought such diseases were conveyed by spirits rather than germs. The etiological distinction may be more apparent than real. Few Western scholars have ever seen a "germ," although we, like the Chukchi with demons, confidently invoke them on the say-so of colleagues learned in such matters.

A few specific points in McGhee's paper also invite comment. Major disease-induced Native population decline in Alaska was more strikingly a 19th-century rather than an early 20th-century phenomenon (Dumond 1986, Fortuine 1989). Most of the Alaskan ethnographic record, which is notably inferior to that of Canada and Greenland, postdates the population nadir by generations. Although the Black Death may never have reached Greenland, its role in the decline of the Norwegian city of Bergen, which controlled the Greenland trade (Jones 1984:309-10), makes it hard to accept the judgment that this disease was without effect in Greenland. Finally, Norse colonists in Greenland apparently kept livestock until the bitter end. One thus wonders to what extent they can be considered a New World population in light of the well-established links between humans, domestic animals, and disease (Cohen 1989:45-47).

In summary, McGhee has correctly pointed out the need to consider the impact of introduced diseases in the population history of late-prehistoric New World northern peoples. Cohen has summarized information suggesting that no population structure and density achievable in Arctic Canada would provide a setting for the long-term maintenance of the classical Eurasian killer diseases (1989:49-51). Prehistoric disease episodes, while possibly highly traumatic locally, would have been sporadic and incomplete in areal coverage. We must critically search the archaeological record for signatures of such diseases rather than invoking them as a panregional all-purpose explanation for culture change without careful and specific local study.

## Reply

ROBERT MCGHEE

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I wish to thank the colleagues who devoted considerable time and effort to critiquing this essay. I appreciate their regard for my ingenuity in formulating a new hypothesis accounting for the development of Inuit culture as it is known to anthropology but could wish that some of them had found it more persuasive. I am heartened to conclude that the faults seem to lie primarily in communication rather than in the evidence or the reasoning

Years A.D.	Inuit History	Climatic Conditions	European Penetration
1900		Climatic Warming Begins	Exploration, trade, imposition of political control
1800	Inuit culture begins to be recorded		British and American whaling in eastern Arctic Moravian missions established in Labrador
1700		"Little Ice Age"	Danish missions established in Greenland English trading posts in Hudson Bay
1600	Decline of Thule culture		Dutch traders in Davis Strait and Labrador English mining expedition to Baffin Island
1500			Major European whaling and fishing efforts in Newfoundland waters Cortereal voyage to Greenland
1400		Continued Cooling	Remainder of Norse settlements disappear
1300			
1200	Thule occupation expands throughout Arctic Canada and Greenland	Cooling Climate Begins	More northerly Norse settlements abandoned
1100			
1000	Thule culture Inuit occupy Arctic Canada and Greenland	"Mediaeval Warm Period"	Norse establish colonies in western Greenland

FIG. 1. Climatic and cultural events in the eastern Arctic, A.D. 1000–1900. (The critical period for the Thule–Inuit transition is shaded.)

which led to the conclusions presented, and the following pages will attempt to clarify some matters which apparently led to misunderstanding. As a first step in elucidating the arguments, and at the suggestion of Smith, a chart has been prepared that summarizes the temporal relationships between developments in Inuit

history, climatic change, and European penetration of the North American Arctic (fig. 1).

Burch's response might have been more helpful if such a chart had been offered earlier. His information on the historical demography of the "Caribou Inuit" is more current and complete than mine. However, his pic-

ture of slow population growth over the past 250 years of European contact is not, as he states, "a pattern exactly opposite" to the one I predicted. On the contrary, this is exactly the pattern which has been noted from other regions of the Central and Eastern Arctic and which is so anomalous in the larger context of the response of New World populations to early contact with Europeans. My hypothesis would suggest that disease-related population decreases had occurred during the poorly known interval between approximately A.D. 1500 and 1750, when the numerous large Thule winter villages along the west coast of Hudson Bay were abandoned. This was considerably earlier than the period dealt with by Burch, as well as by Csonka. The Caribou Inuit described in late 18th-century European accounts may have been the descendants of the people who had occupied the earlier Thule villages, or they may have moved into an abandoned region from elsewhere as Burch (1978) has elsewhere suggested. In either case, their way of life appears to have been considerably less sedentary and their populations perhaps significantly smaller than those of the Thule-period occupants of western Hudson Bay. The information presented by Burch supports rather than challenges the hypothesis of an early disease episode resulting in the acquisition of resistance to later disease introductions.

Gulløv is another respected ethnohistorian who is critical of my use of sources with which he has greater familiarity. While I freely admit his superior knowledge of Greenlandic history, I am not inclined to accept uncritically his statement that European penetration of Greenland was minimal and ineffectual prior to the "official" establishment of a Danish presence with Hans Egede's mission in 1721. In early 16th-century Europe, Greenland, Labrador, and the cod-rich Newfoundland were considered a single geographical entity. Information on local geography and resources acquired during the recorded early 16th-century English and Portuguese voyages to Greenland may have led to the Northwest Passage expeditions of Frobisher in the 1570s and Davis in the 1580s, as well as to unrecorded commercial voyages including those of the 17th-century Dutch traders sailing the coasts of Greenland and Labrador. I agree with Gulløv that the historical and archaeological sources relating to post-Norse and pre-Danish history in Greenland are extremely vague and difficult to assess. However, the amount of European traffic to the island (and the veracity of Inuit historical accounts relating to such traffic) during the two centuries preceding the establishment of Danish colonies is a matter for discussion rather than for simple dismissal. Gulløv himself notes that toward the end of this period "temporary population centres are known in precolonial southwestern Greenland, where Inuit gathered to meet the Dutch whalers." One suspects that such centres would have been as well suited to the transmission of disease as was the mission settlement to which a visitor brought the disastrous smallpox epidemic of 1733.

On a less consequential point, I am puzzled by Gulløv's statement that "domed snow houses" are not

described in the 1558 Zeno account of Greenland. The description of domed and arched structures built of a white and very light substance (interpreted as volcanic scoria) is associated with the accurate description of kayaks in the Zeno compilation; although not entirely convincing, it hints that the fraudulent Zeno had gathered some information on Inuit architecture as well as boats.

While on the subject of Greenland, I am tempted to agree with Schledermann and Workman regarding the possible relationship between the mid-14th-century bubonic plague epidemic which ravaged western Norway and the apparently contemporaneous abandonment of the more northerly of the Norse settlements in Greenland. However, I should note that archaeologists and historians working with Greenlandic Norse material have found no evidence that plague reached Greenland and generally discount the possibility. Their view of a Norse population which was sufficiently isolated to escape infection by plague supports my suggestion that the 15th-century Greenlandic Norse could have been as susceptible to European diseases as were native North Americans.

Several commentators (Dumond, Smith, Workman) assume that the Inuit populations of Arctic Canada were too small and scattered to support the transmission of epidemic disease. In fact, Dumond explains the low rate of epidemic disease among Inuit of the past two centuries in terms of demography and argues that a similar situation would have held true in the more distant past. As I pointed out, the mechanisms of disease transmission among arctic populations living in aboriginal conditions are very poorly understood. However, the evidence presented does indicate that neighboring populations living under rather similar demographic conditions were subject to disastrous disease episodes which were recorded during the 18th and 19th centuries. The early-18th-century smallpox epidemic in western Greenland "carried off about 90% of the population some hundreds of kilometres north and south of the mission station" but, according to Gulløv, spread no farther through native trade routes. Perhaps the Arctic situation was not conducive to regional or continentwide pandemics such as those which occurred in more southerly and more densely settled areas. However, epidemics may have been as effective locally, in individual Arctic communities where populations lived in very close quarters, especially under winter conditions. The frequent occurrence of local epidemic episodes over a period of one or two centuries may have been as effective in changing the demography and culture of the Inuit as were the massive pandemics which struck more southern populations.

Smith is alone in raising a question about which I also have concerns: Why did disease not impact the Inuit cultures of Labrador and Greenland to the degree suggested for the Inuit populations of Arctic Canada? The Inuit of Labrador and Greenland were the first to be exposed to Europeans, and throughout the 16th-to-18th-century period under discussion these regions saw the most intensive contact between Inuit and Europeans.

We might suggest that this situation is related to the types of local epidemics postulated above. If the direct effects of repeated epidemic disease are local rather than regional, then regions with relatively productive economies and consequently a larger number of local groups, such as the subarctic coasts of Labrador and western Greenland, may be less vulnerable to widespread cultural effects than the more sparsely settled arctic regions to the north. The 18th-century smallpox epidemics recorded in Greenland and Labrador, as well as many of the 19th-century epidemics recorded in the Western Arctic, almost eradicated local populations, but cultural continuity was maintained by groups not directly affected by them. As Workman notes, disease episodes among such populations, "while possibly highly traumatic locally, would have been sporadic and incomplete in areal coverage." However, if similar epidemics struck small and isolated communities, such as the ancestors of the Polar Inuit in the Thule District of northwestern Greenland, entire regions could be depopulated or entire areas of cultural knowledge destroyed.

The same arguments may explain the survival of Alaskan cultural traditions despite the existence of disease episodes prior to the period of Euro-American contact. Alaskan Eskimo populations were not as isolated as those of Canada and Greenland, and, as is noted by Smith and Workman, archaeology demonstrates the existence of trade across the Bering Strait for at least the past 2,000 years. The sporadic appearance of Asiatic pathogens was probably a fact of existence among Alaskan groups, with localized impacts on a regionally continuing population and cultural tradition. The disastrous epidemics of the late 19th century may have marked an intensification of a long-existing pattern.

Smith's final two questions can be briefly answered. Domed snow houses and permanent boulder and turf houses were both in the construction repertoire of the Thule people, as they were for the historic Inuit. We suspect (although the archaeological evidence is minimal) that Thule people used snow houses primarily as travelling shelters or while spending brief periods of time away from their primary winter villages. As Rowley points out, permanent houses continued to be used into the present century where conditions permitted; however, winter-long occupation of such permanent houses was possible only where families could secure and store a sufficient supply of winter fuel and food for humans and dogs. Lacking the ensured supplies of stored whale meat and blubber which seem to have been a basis of many Thule economies, later Inuit groups were forced to spend much of the winter in temporary shelters; in most Central Arctic regions, the historic Inuit had abandoned permanent houses and spent the entire winter in tents and snow houses. The Copper Inuit were one such group; Smith is correct in surmising that the evidence for 19th-century disease among this group is not evidence relating to the Thule-Inuit transition, which occurred much earlier; rather, it is evidence of a continuing pattern of epidemic disease occurring in a group which seems to have been totally isolated from direct European contact.

Stenton introduces another archaeologically known Arctic population which may have been impacted by the introduction of disease from Alaska and northeastern Asia: the Dorset-culture Palaeo-Eskimos who occupied the Central and Eastern Arctic before the advance of Thule Inuit to the area approximately 1,000 years ago. The Palaeo-Eskimos had arrived in Arctic North America approximately 4,000 years earlier and developed a distinctive culture in apparent isolation from neighboring groups. We might suspect that such a population would have been very susceptible to introduced disease, while the Alaskan ancestors of the Thule people belonged to a population which had at least periodic experience of pathogens transmitted across the Bering Strait. I agree with Stenton that disease may have been an important factor in the apparent replacement of Palaeo-Eskimo by Inuit populations across much of Arctic North America.

Csonka, Smith, Stenton, and Wenzel comment on the concept of "cultural distress" and on the probability that factors other than disease could have produced such a reaction among Arctic populations. I agree that "cultural distress" is a coarse notion, formulated in response to the need for a linking mechanism between local disaster and cultural change. In attempting to make my point, I have probably been guilty of emphasizing the primacy of disease as the creator of cultural distress, thus ignoring my own injunction that we must see disease and climatic factors as processes working together to encompass the transition from Thule to historic Inuit culture. The contemporaneous introduction of European technology and associated changes in economic activities further obscure the archaeological signal of such processes, as is pointed out by Wenzel and Stenton. Wenzel's specific examples illustrate vividly the distress which "prolonged environmental uncertainty" can cause to Inuit hunting groups. His description of the situation among early 20th-century populations in the vicinity of Hudson Bay, subject to endemic tuberculosis, weakened local task groups, and ecological stress, illustrates precisely the interplay between biological and environmental factors which may have existed over the centuries when Thule culture declined.

In a related note, Smith objects to the use of concepts which cannot be objectively measured in characterizing Thule and Inuit cultures. The use of terms such as "rich," "sophisticated," "impoverished," and "decline" is more common in archaeological writing than in that of other social sciences and can be defended as a shorthand for describing subjective judgments on materials which are too complex and vaguely known to permit objective comparison. The nature of most archaeological evidence is such that attempts to restrict research to factors which can be objectively measured serves only to limit our understanding of complex events in the past. Current understanding of scientific processes suggests that archaeology is probably no more ethnocentric than other scientific disciplines, and the overt recognition of such ethnocentricity is a positive accomplishment. Within this framework, I agree with Smith that the archaeological remains of a modern Inuit community

(which to an archaeologist would look more like a typical North American suburb than a Thule settlement) would be judged as representing a way of life which is more complex and secure than and perhaps as artistic as that of the Thule people.

Finally, I am compelled to reply to Dumond's comment that, with regard to disease, "conditions in the Arctic before the 19th century must have duplicated those that existed at the end of the Pleistocene, when the Americas were evidently populated by immigration." Not precisely. Although both the Inuit and the ancestral Amerindians had passed through an effective Arctic disease filter, the first peoples to cross Beringia did not encounter occasional visitors who had arrived directly from Europe, even at the relatively low level that such visits occurred between the 16th and 18th centuries in Arctic North America. One wonders how ancestral native Americans would have fared if they had met individuals such as Martin Frobisher, who, prior to his 1576–78 encounters with the Inuit of Baffin Island, had passed a sea-wandering life including several months in a Portuguese prison in West Africa and must have been exposed to many of the more serious diseases of the Old World. We know Frobisher's personal history but can only assume that many of his shipmates were living similar lives shortly before they left on their Arctic adventures. Frobisher's ships, like those of most other early venturers across the North Atlantic, made the relatively short passage from Europe to Arctic North America in approximately three weeks; with 400 men on his final expedition, this transit time was certainly sufficient for the maintenance of infectious diseases contracted before leaving port.

Dumond characterizes the arguments presented as "a part of the nihilistic modern (or 'postmodern') tendency throughout anthropology to propose that our perceptions of historical, ethnographic, and archaeological reality are so seriously flawed that we may as well give up the attempt to make sense of them." On the contrary, the questioning of accepted perceptions and propositions has always been a healthy quality of the discipline, and my essay is presented in this spirit rather than in one of nihilism. I do, however, share Csonka's legitimate concern that these interpretations may owe as much to the "direction of the wind of intellectual activity" as to the inherent value of the arguments. Certain of these arguments undoubtedly developed from exposure to the currents of contemporary discussion, particularly the recent discussions of disease-shock associated with commemorations of the 500th anniversary of the Columbus voyage. However, I am less concerned that my ideas owe a debt to current fashion than I am that neither I nor my colleagues had previously noticed a potential association between epidemic disease and the Thule–Inuit transition. Given the fact of a Thule decline which occurred at the same time as the disease-related devastation of many aboriginal populations of the Western Hemisphere, as well as the anomaly of Inuit population stability throughout the more recent period of recorded history, our apparent inability to consider disease as a factor in Inuit history is a remarkable tribute to the

strength of the cultural ecological perspective in archaeology.

## References Cited

- AABY, PETER. 1984. "Epidemics among Amerindians and Inuit: A preliminary interpretation," in *Native power: The quest for autonomy and nationhood of indigenous peoples*. Edited by Jens Brosted et al., pp. 329–39. Bergen: Universitetsforlaget.
- ADAMSON, J. D., ET AL. 1949. Poliomyelitis in the Arctic. *Canadian Medical Association Journal* 61:339–48. [ESB]
- ANDREWS, ELIZABETH F. 1994. "Territoriality and land use among Akulmiut of Western Alaska," in *Key issues in hunter-gatherer research*. Edited by Ernest S. Burch Jr. and Linda J. El-lanna, pp. 65–93. Oxford: Berg. [EAS]
- ANDREWS, J. T., AND H. H. MILLER. 1979. "Climatic change over the last 1,000 years. Baffin Island, N.W.T.," in *Thule Eskimo culture: An anthropological retrospective*. Edited by Allen P. McCartney, pp. 541–54. Mercury Series, Archaeological Survey of Canada, Paper 88.
- ARIMA, EUGENE Y. 1984. "Caribou Eskimo," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 447–62. Washington, D.C.: Smithsonian Institution.
- BALIKCI, A. 1964. *Development of basic socio-economic units in two Eskimo communities*. National Museum of Canada Bulletin 202. [DRS]
- . 1984. "Netsilik," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 415–30. Washington, D.C.: Smithsonian Institution.
- BARRY, R. G., W. H. ARUNDALE, J. T. ANDREWS, R. S. BRADLEY, AND H. NICHOLS. 1977. Environmental change and cultural change in the eastern Canadian Arctic during the last 5,000 years. *Arctic and Alpine Research* 9:193–210.
- BERGLUND, JOEL. 1986. The decline of the Norse settlements in Greenland. *Arctic Anthropology* 23 (1 and 2):109–35.
- BERNIER, J. E. 1909. *Report of the Dominion Government Expedition to the Arctic Islands and the Hudson Strait on board the C.G.S. "Arctic" 1906–1907*. Ottawa: Department of Marine and Fisheries. [ESB]
- BERKET-SMITH, KAJ. 1929. *The Caribou Eskimos: Material and social life and their cultural position*. Pt 1. *Descriptive part*. Report of the Fifth Thule Expedition 1921–24, vol. 5, pt. 1. Copenhagen: Gyldendalske Boghandel, Nordisk Forlag.
- . 1930. The question of the origin of Eskimo culture: A rejoinder. *American Anthropologist* 32:608–24.
- BJØRNBO, A. A. 1911. *Cartographia Groenlandica. Meddelelser om Grønland* 48:1–322. [HCG]
- BLACK, FRANCIS L. 1992. Why did they die? *Science* 258: 1739–40.
- BOAS, FRANZ. 1888. *The Central Eskimos*. Bureau of Ethnology, Sixth Annual Report, 1884–85, pp. 399–669. Washington, D.C.
- . 1901. *The Eskimo of Baffin Land and Hudson Bay*. American Museum of Natural History Bulletin 15, pt. 1. [ESB]
- . 1907. *The Eskimo of Baffin Land and Hudson Bay*. American Museum of Natural History Bulletin 15, pt. 2. [ESB]
- BOBÉ, L. Editor. 1936. *Diplomatarium Groenlandicum 1492–1814. Meddelelser om Grønland* 55:1–431. [HCG]
- BOGORAS, W. 1904–9. *The Chukchee*. Memoirs of the American Museum of Natural History 11 (Johnson Reprint). [WBW]
- BORDEN, LORRIS ELIJAH. 1903–4. The lost expedition, being the diary of L. E. Borden, surgeon and botanist with the first Canadian expedition to the Hudson's Bay and the Arctic Islands, as recorded on board the D.G.S. "Neptune" 1903–04. Public Archives of Canada, MG30, C52, vol. 2. [ESB]
- BURCH, ERNEST S., JR. 1978. Caribou Eskimo origins: An old problem reconsidered. *Arctic Anthropology* 15:1–35 [ESB]
- . 1986. "The Caribou Inuit," in *Native peoples: The Canadian experience*. Edited by R. Bruce Morrison and C. Roderick Wilson, pp. 106–33. Toronto: McClelland and Stewart. [ESB]
- . 1988. Knud Rasmussen and the "original" inland Eski-

- mos of southern Keewatin. *Etudes Inuit/Inuit Studies* 12:81–100. [ESB]
- CAMPBELL, SARAH K. 1990. *Post-Columbian culture history in the northern Columbia Plateau A.D. 1500–1900*. New York: Garland. [DED]
- CLARK, BRENDA L. 1977. *The development of Caribou Eskimo culture*. Mercury Series, Archaeological Survey of Canada, Paper 59.
- COHEN, MARK NATHAN. 1989. *Health and the rise of civilization*. New Haven: Yale University Press. [WBW]
- CONKEY, MARGARET W., AND CHRISTINE A. HASTORF. Editors. 1990. *The use of style in archaeology*. Cambridge: Cambridge University Press.
- COOKE, ALAN, AND CLIVE HOLLAND. 1978. *The exploration of northern Canada, 500 to 1920: A chronology*. Toronto: Arctic History Press. [ESB]
- CSONKA, YVON. 1991. Les Ahiamut (1920–1950) dans la perspective de l'histoire des Inuit Caribous. Ph.D. diss., Laval University, Quebec, Canada. [ESB]
- . 1992. Expansion et famines chez les Inuit Caribous: Le scénario et ses interprétations. *Anthropologie et Sociétés* 16(2):15–35. [YC]
- . 1994. Intermédiaires au long cours: Les relations entre Inuit du Caribou et Inuit du Cuivre au début du XXe siècle. *Etudes Inuit/Inuit Studies* 18(1). In press. [YC]
- DAMAS, DAVID. 1963. *Igluligmiut kinship and local groupings: A structural approach*. National Museum of Canada Bulletin 196.
- . 1969. "The study of cultural ecology and the ecology conference," in *Contributions to anthropology: Ecological essays*. Edited by D. Damas, pp. 1–12. National Museums of Canada Bulletin 230. [YC]
- . 1984. "Copper Eskimo," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 397–414. Washington, D.C.: Smithsonian Institution.
- DE JONG, C. 1972. *Geschiedenis Van de Oude Nederlandse Walvisvaart: Deel Een. Grondslagen, Ontstaan en Opkomst, 1612–1642*. Pretoria: Universiteit van Suid-Afrika.
- DEKIN, ALBERT A., JR. 1972. Climatic change and cultural change: A correlative study from eastern Arctic prehistory. *Polar Notes* 12:11–31.
- DENEVEN, WILLIAM M. Editor. 1976. *The native population of the Americas in 1492*. Madison: University of Wisconsin Press.
- DOBYNS, HENRY F. 1983. *Their number become thinned: Native American population dynamics in eastern North America*. Knoxville: University of Tennessee Press.
- DUMOND, DON E. 1977. *The Eskimos and Aleuts*. London: Thames and Hudson.
- . 1986. *Demographic effects of European expansion: A nineteenth-century native population on the Alaska Peninsula*. University of Oregon Anthropological Papers 35. [DED, WBW]
- DYSON-HUDSON, RADA, AND ERIC ALDEN SMITH. 1978. Human territoriality: An ecological reassessment. *American Anthropologist* 80:21–41. [EAS]
- ECKERT, IRMA I. 1987. "The early fur trade at York and Churchill: Implications for the native people of the north central Subarctic," in *Le castor fait tout*. Edited by B. Trigger, T. Morantz, and L. Duchêne, pp. 223–35. Montreal: Société Historique du lac Saint-Louis. [YC]
- EGEDE, H. 1925. Relationer fra Grønland 1721–36 and Det gamle Grønlands ny Perustration. Edited by L. Bobé. *Meddelelser om Grønland* 54:1–442. [HCG]
- FITZHUGH, WILLIAM W. 1972. *Environmental archaeology and cultural systems in Hamilton Inlet, Labrador*. Smithsonian Contributions to Anthropology 16.
- FORD, SOLOMON. 1918. Census of southern Keewatin and cover letter sent to the district manager, Hudson's Bay Company, Nelson River district, York Factory. Letter no. 188, Chesterfield Post, 8th February, 1918. Public Archives of Canada, RG85, Records of the Northern Administration Branch, vol. 64. [ESB]
- FORTUINE, ROBERT. 1989. *Chills and fever: Health and disease in the early history of Alaska*. Fairbanks: University of Alaska Press.
- FRANKLIN, JOHN. 1823. *Narrative of a journey to the shores of the polar sea in the years 1819, 20, 21, and 22*. London: J. Murray. [ESB]
- FREDSKILD, BENT. 1973. *Studies in the vegetational history of Greenland*. Meddelelser om Grønland 198(4).
- GAD, F. 1967. *Grønlands Historie*. Vol. 1. *Indtil 1700*. Copenhagen: Arnold Busck.
- . 1971. *The history of Greenland*. Vol. 1. Montreal: McGill–Queen's University Press.
- . 1973. *The history of Greenland*. Vol. 2. Montreal: McGill–Queen's University Press.
- . 1984. "History of colonial Greenland," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 556–76. Washington, D.C.: Smithsonian Institution.
- GASQUET, A. F. 1893. *The Great Pestilence (A.D. 1348–49) now commonly known as the Black Death*. London: Simpkin Marshall, Hamilton, Kent. [PS]
- GILBERG, ROLF. 1975. Changes in the life of the Polar Eskimos resulting from a Canadian immigration into the Thule District, North Greenland, in the 1860's. *Folk* 16–17:159–70.
- GJERSET, KNUD. 1924. *History of Iceland*. New York: Macmillan.
- GRABURN, N. 1969. *Eskimos without igloos*. Boston: Little, Brown. [HCG]
- Grønlands Historiske Mindesmærker*, 1845. Vol. 3. Edited by Det Kongelige Nordiske Oldskriftsselskab. Copenhagen. [HCG]
- GULLØV, H. C. 1887. "Dutch whaling and its influence on Eskimo culture in Greenland," in *Between Greenland and America: Cross-cultural contacts and the environment in the Baffin Bay area*. Edited by L. Hacquebord and R. Vaughan, pp. 75–93. Groningen: Arctic Centre, University of Groningen. [HCG]
- GULLØV, H. C., AND H. KAPEL. 1979. *Haabets Colonie 1721–1728: A historical-archaeological investigation of the Danish-Norwegian colonization of Greenland*. (Ethnographical Series 16.) Copenhagen: National Museum of Denmark. [HCG]
- HAKLUYT, R. 1589. *The principall navigations voyages & discoveries of the English nation*. London. [HCG]
- HANSEN, KELD. 1970. The people of the far north. *Folk* 11–12:97–108.
- HARP, ELMER. 1961. *The archaeology of the lower and middle Thelon, Northwest Territories*. Arctic Institute of North America Technical Paper 8.
- HART HANSEN, J. P. 1989. "The mummies from Qilakitsoq: Palaeopathological aspects," in *The mummies from Qilakitsoq: Eskimos in the 15th century*. Edited by J. P. Hart Hansen and H. C. Gulløv, pp. 69–82. Meddelelser om Grønland: Man and Society 12. [HCG]
- HASTRUP, K. 1985. *Culture and history of medieval Iceland: An anthropological analysis of structure and change*. Oxford: Clarendon Press. [PS]
- HAWKES, E. W. 1916. *The Labrador Eskimo*. Geological Survey Memoir 91.
- HBCA (HUDSON'S BAY COMPANY ARCHIVES). 1844–47. Churchill Post journal, 1844–47. B.42/a/183. [ESB]
- . 1881. Churchill census 1881. B.42/z/2. [ESB]
- . 1885. Cumberland House district report for 1885, by H. Belanger. B.49/e/9. [ESB]
- . 1891. Churchill official letter book outward, August 24, 1867 to September 23, 1891. B.42/b/62. [ESB]
- HEADLAND, THOMAS N., AND LAWRENCE A. REID. 1989. Hunter-gatherers and their neighbors from prehistory to the present. *CURRENT ANTHROPOLOGY* 30:43–66. [GWW]
- HEARNE, SAMUEL. 1958. *A journey from Prince of Wales's Fort in Hudson's Bay to the Northern Ocean, 1769–1770–1771–1772*. Edited by Richard Glover. Toronto: Macmillan.
- HODDER, IAN. Editor. 1982. *Symbolic and structural archaeology*. Cambridge: Cambridge University Press.
- HOFFMAN, BERNARD G. 1961. *Cabot to Cartier: Sources for a historical ethnography of northeastern North America, 1497–1550*. Toronto: University of Toronto Press.



- HOLTVED, ERIK. 1944. *Archaeological investigations in the Thule District*. Meddelelser om Grønland 141 (1 and 2).
- HUDSON'S BAY COMPANY. 1917. List of Esquimaux residing at Churchill and northwards, June 14, 1917. Public Archives of Canada, RG85, Records of the Northern Administration Branch, vol. 64. [ESB]
- JENNESS, DIAMOND. 1922. *The life of the Copper Eskimos*. Report of the Canadian Arctic Expedition 1913-18, vol. 12. Ottawa.
- . 1924. *Myths and traditions from Northern Alaska, the Mackenzie Delta, and Coronation Gulf*. Report of the Canadian Arctic Expedition 1913-18, vol. 13. Ottawa.
- . 1946. *Material culture of the Copper Eskimos*. Report of the Canadian Arctic Expedition 1913-18, vol. 16. Ottawa.
- JONES, GWYN. 1984. 2d edition. *A history of the Vikings*. Oxford: Oxford University Press. [WBW]
- JONES, RENÉE FOSSETT. 1989. The Keewatin Inuit and interband trade and communications 1717-1900. M.A. thesis, University of Manitoba, Winnipeg, Canada. [ESB]
- KAPLAN, SUSAN A. 1983. Economic and social change in Labrador Neo-Eskimo culture. Ph.D. diss., Bryn Mawr College, Bryn Mawr, Pa.
- KEENLYSIDE, ANNE. 1990. Euro-American whaling in the Canadian Arctic: Its effects on Eskimo health. *Arctic Anthropology* 27(1):1-19.
- KEESING, ROGER M. 1989. Exotic readings of cultural texts. *CURRENT ANTHROPOLOGY* 30:459-79.
- KLEIVAN, INGE. 1984. "West Greenland before 1950," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 595-621. Washington, D.C.: Smithsonian Institution.
- KOERNER, R. M. 1977. Devon Island ice cap: Core stratigraphy and paleoclimate. *Science* 196(4285):15-18.
- KRECH, SHEPARD, III. 1978. On the aboriginal population of the Kutchin. *Arctic Anthropology* 15(1):89-104.
- . 1983. The influence of disease and the fur trade on Arctic Drainage lowland Dene, 1800-1850. *Journal of Anthropological Research* 39:123-46.
- KRUPNIK, IGOR I. 1990. Cultures in contact: The population nadir in Siberia and North America. *European Review of Native American Studies* 4(1):11-18.
- . 1993. Expanded English edition. *Arctic adaptations: Native whalers and reindeer herders of Northern Eurasia*. Translated and edited by Marcia Levensen. Hanover: University Press of New England.
- KUPP, JAN, AND SIMON HART. 1976. The Dutch in the Strait of Davis and Labrador during the 17th and 18th centuries. *Man in the Northeast* 11:3-20.
- LOW, A. P. 1906. *Report on the Dominion Government expedition to Hudson Bay and the Arctic Islands on board the D.G.S. "Neptune" 1903-1904*. Ottawa: Government Printing Bureau. [ESB]
- LUCAS, FRED W. 1898. *The annals of the voyages of the brothers Nicolo and Antonio Zeno*. London: Stevens Sons and Styles.
- MAAT, G. J. R. 1981. "Human remains at the Dutch whaling stations on Spitsbergen: A physical anthropological study," in *Early European exploitation of the northern Atlantic 800-1700 AD*. Edited by A. G. F. van Holk, H. K. s'Jacob, and A. A. H. J. Temmingh, pp. 153-201. Groningen: Arctic Centre, University of Groningen. [HCG]
- MCCARTNEY, ALLEN P. 1977. *Thule Eskimo prehistory along northwestern Hudson Bay*. Mercury Series, Archaeological Survey of Canada, Paper 70.
- . 1979. *Thule Eskimo culture: An anthropological retrospective*. Mercury Series, Archaeological Survey of Canada, Paper 88.
- . 1991. "Canadian Arctic metal trade: Reflections of prehistoric to historic social networks," in *Metals in society: Theory beyond analysis*. Edited by R. M. Ehrenreich, pp. 26-43. MASCA Research Papers in Science and Archaeology 8(2).
- MCGHEE, ROBERT. 1972. *Copper Eskimo prehistory*. National Museums of Canada Publications in Archaeology 2.
- . 1976. Differential artistic productivity in the Eskimo cultural tradition. *CURRENT ANTHROPOLOGY* 17:203-20.
- . 1977. Ivory for the Sea Woman: The symbolic attributes of a prehistoric technology. *Canadian Journal of Archaeology* 1:141-49.
- . 1978. *Canadian Arctic prehistory*. Toronto: Van Nostrand Reinhold.
- . 1980. Technological change in the prehistoric Eskimo cultural tradition. *Canadian Journal of Archaeology* 4:39-52.
- . 1982. The past ten years in Canadian Arctic prehistory. *Canadian Journal of Archaeology* 6:65-77. [DRS]
- . 1984. Contact between native North Americans and the mediaeval Norse: A review of the evidence. *American Antiquity* 49:4-26.
- MCGOVERN, T. H. 1991. Climate, correlation, and causation in Norse Greenland. *Arctic Anthropology* 28(2):77-100.
- MCKENNAN, ROBERT A. 1959. *The Upper Tanana Indians*. Yale University Publications in Anthropology 55. [WBW]
- MCNEILL, W. H. 1985. *Plagues and peoples*. Harmondsworth: Penguin Books. [HCG]
- MAGNUS, O. 1555. *Historia de gentibus septentrionalibus*. Roma: [HCG]
- MANNING, T. H. 1943. Notes on the coastal district of the eastern Barren Grounds and Melville Peninsula from Igloolik to Cape Fullerton. *Canadian Geographical Journal* 26:84-105.
- MATHIASSEN, THERKEL. 1927. *Archaeology of the Central Eskimos*. Report of the Fifth Thule Expedition, 1921-24, vol. 4. Copenhagen: Gyldendalske Boghandel, Nordisk Forlag.
- . 1928. *Material culture of the Iglulik Eskimos*. Report of the Fifth Thule Expedition, 1921-24, vol. 6, pt. 1. Copenhagen: Gyldendalske Boghandel, Nordisk Forlag.
- MAUSS, MARCEL. 1906. Essai sur les variations saisonnières des sociétés Eskimos. *L'Année Sociologique* 9:39-130.
- MAXWELL, MOREAU S. 1985. *Eastern Arctic prehistory*. Orlando: Academic Press.
- MELDGAARD, J. 1982. Tjodhildes Kirke: Den første fundberetning. *Grønland* 5-7:151-62.
- MORISON, SAMUEL ELIOT. 1971. *The European discovery of America: The northern voyages, A.D. 500-1600*. Oxford: Oxford University Press.
- MORRISON, DAVID. 1991. The Copper Inuit soapstone trade. *Arctic* 44:239-46.
- MURDOCH, JOHN. 1892. *Ethnological results of the Point Barrow Expedition*. Bureau of Ethnology, Smithsonian Institution, Ninth Annual Report.
- NEATBY, L. H. 1984. "Exploration and history of the Canadian Arctic," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 377-90. Washington, D.C.: Smithsonian Institution.
- NOOTER, C. 1988. Some recent developments in the Ammassalik District, East Greenland. *Folk* 30:215-29. [HCG]
- OSTERMANN, H. Editor. 1939. Niels Egede: Beskrivelse over Grønland. *Meddelelser om Grønland* 120:233-69. [HCG]
- OSWALT, WENDELL H. 1990. *Bashful no longer: An Alaskan Eskimo ethnohistory, 1778-1988*. Norman: University of Oklahoma Press. [YC]
- PARK, R. W. 1993. The Dorset-Thule succession in Arctic North America: Assessing claims for culture contact. *American Antiquity* 58:203-34. [DRS]
- PARRY, WILLIAM EDWARD. 1824. *Journal of a second voyage for the discovery of a north-west passage from the Atlantic to the Pacific, 1821, 1822, 1823*. London: John Murray.
- PEART, A. F. W. 1949. An outbreak of poliomyelitis in Canadian Eskimos in wintertime: Epidemiological features. *Canadian Journal of Public Health* 40:405-17. [ESB]
- PETERSEN, ROBERT. 1974. Some considerations concerning the Greenland longhouse. *Folk* 16-17:171-88.
- Populations by religions of the posts and local districts of the Northwest Territories which the Extension Bill of 1912 proposes to annex to Manitoba, Ontario, and Quebec, as shown by the census of 1911. Public Archives of Canada, RG85, Records of the Northern Administration Branch, vol. 64. [ESB]
- RAMENOFKY, ANN F. 1987. *Vectors of death: The archaeology*

- of European contact. Albuquerque: University of New Mexico Press.
- RAMSDEN, P. G. 1978. An hypothesis concerning the effects of early European trade among some Ontario Iroquois. *Canadian Journal of Archaeology* 2:101-6. [HCG]
- RASMUSSEN, KNUD. 1929. *Intellectual culture of the Iglulik Eskimos*. Report of the Fifth Thule Expedition, 1912-24, vol. 7, pt. 1. Copenhagen: Gyldendalske Boghandel, Nordisk Forlag.
- . 1930. *Observations on the intellectual culture of the Caribou Eskimos*. Report of the Fifth Thule Expedition 1921-24, vol. 7, pt. 3. Copenhagen: Gyldendalske Boghandel, Nordisk Forlag. [ESB]
- . 1931. *The Netsilik Eskimos: Social life and spiritual culture*. Report of the Fifth Thule Expedition, 1921-24, vol. 8, pts. 1 and 2. Copenhagen: Gyldendalske Boghandel, Nordisk Forlag.
- REEVES, RANDALL, EDWARD MITCHELL, ARTHUR MANSFIELD, AND MICHELLE MCLAUGHLIN. 1983. Distribution and migration of the bowhead whale, *Balaena mysticetus*, in the eastern North American Arctic. *Arctic* 36:5-64.
- RICHLING, BARNETT. 1993. Labrador's "communal house phase" reconsidered. *Arctic Anthropology* 30(1):67-78.
- ROBBE, P. 1994. *Les Inuit d'Ammassalik: Chasseurs de l'Arctique*. Mémoires de Muséum National d'Histoire Naturelle 159. [HCG]
- ROSS, SIR JOHN. 1835. *Narrative of a second voyage in search of a northwest passage, and of a residence in the Arctic regions during the years 1829, 1830, 1831, 1832, 1833*. London: A. W. Webster.
- ROSS, W. GILLIES. 1975. *Whaling and Eskimos: Hudson Bay, 1860-1915*. National Museums of Canada Publications in Ethnology 10.
- ROWLEY, SUSAN. 1985. Population movements in the Canadian Arctic. *Etudes Inuit/Inuit Studies* 9(1):3-21.
- SALADIN D'ANGLURE, BERNARD. 1984. "Inuit of Quebec," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 476-507. Washington, D.C.: Smithsonian Institution.
- SAVELLE, J. M. 1987. *Collectors and foragers: Subsistence-settlement system change in the central Canadian Arctic, AD 1000-1960*. British Archaeological Reports International Series 358.
- SAVELLE, J. M., AND A. P. MCCARTNEY. 1988. Geographical and temporal variation in Thule Eskimo subsistence economies: A model. *Research in Economic Anthropology* 10:21-72.
- SCHLEDERMANN, PETER. 1971. *The Thule Eskimo tradition in northern Labrador*. M.A. thesis, Memorial University of Newfoundland, St. John's, Newfoundland.
- . 1976. The effect of climatic/ecological changes on the style of Thule culture winter dwellings. *Arctic and Alpine Research* 8(1):37-47. [PS]
- . 1979. "The 'baleen period' of the Arctic whale hunting tradition," in *Thule Eskimo culture: An anthropological retrospective*. Edited by A. P. McCartney, pp. 134-148. Mercury Series, Archaeological Survey of Canada, Paper 88. [PS]
- SHORT, S. K., W. N. MODE, AND P. T. DAVIS. 1985. "The Holocene record from Baffin Island: Modern and fossil pollen studies," in *Quaternary environments: Eastern Canadian Arctic, Baffin Bay, and Western Greenland*. Edited by J. T. Andrews, pp. 608-42. Boston: Allen and Unwin.
- SILVERBERG, ROBERT. 1968. *Mound builders of ancient America: The archaeology of a myth*. Greenwich: New York Graphic Society.
- STAIRS, ARLENE, AND G. W. WENZEL. 1992. "I am I and the environment": Inuit hunting, community, and identity. *Journal of Indigenous Studies* 3(1):1-12. [GWW]
- STEFANSSON, VIHJALMUR. 1919. *The Stefansson-Anderson Arctic expedition: Preliminary ethnological report*. Anthropological Papers of the American Museum of Natural History 14.
- STEFANSSON, VIHJALMUR, AND ELOISE MCCASKILL. Editors. 1938. *The three voyages of Martin Frobisher in search of a passage to Cathay and India by the north-west, A.D. 1576-78*. London: Argonaut.
- STURTEVANT, WILLIAM C. 1980. The first Inuit depiction by Europeans. *Etudes Inuit/Inuit Studies* 4(1 and 2):47-49.
- TAYLOR, J. GARTH. 1974. *Labrador Eskimo settlements of the early contact period*. National Museums of Canada Publications in Ethnology 9.
- . 1984. "Historical ethnography of the Labrador coast," in *Handbook of North American Indians*, vol. 5, *Arctic*. Edited by David Damas, pp. 508-21. Washington, D.C.: Smithsonian Institution.
- TAÇON, PAUL S. C. 1983. An analysis of Dorset art in relation to prehistoric culture stress. *Etudes Inuit/Inuit Studies* 7(1):41-65. [YC]
- TAYLOR, WILLIAM E. JR. 1966. An archaeological perspective on Eskimo economy. *Antiquity* 40:114-20.
- TAYLOR, WILLIAM E. JR. 1979. "Preface," in *Thule Eskimo culture: An anthropological retrospective*. Edited by Allen P. McCartney, pp. iv-x. Mercury Series, Archaeological Survey of Canada, Paper 88.
- TESTER, FRANK J., AND PETER KULCHYSKI. 1994. *Tammar-niit (Mistakes): Inuit relocation in the Eastern Arctic, 1939-63*. Vancouver: University of British Columbia Press. [GWW]
- THORNTON, RUSSELL, TIM MILLER, AND JONATHAN WARREN. 1993. American Indian population recovery following smallpox epidemics. *American Anthropologist* 93:28-45.
- TUCK, JAMES A., AND ROBERT GRENIER. 1989. *Red Bay, Labrador: World whaling capital, A.D. 1550-1600*. St. John's: Atlantic Archaeology.
- TURQUETIL, ARSÈNE. 1907. Première tentative d'apostolat chez les Esquimaux. *Missions de la Congrégation des Missionnaires Oblats de Marie Immaculée* 45:330-53, 484-503. [ESB]
- . 1912. Les Esquimaux du Nord. *Société de Géographie du Québec Bulletin* 6:398-408. [ESB]
- VANSTONE, J. W. 1962. *An archaeological collection from Somerset Island and Boothia Peninsula, N.W.T.* Royal Ontario Museum Art and Archaeology Division Occasional Paper 4.
- . 1967. *Eskimos of the Nushagak River: An ethnographic history*. University of Washington Publications in Anthropology 15.
- VASARI, Y., H. HYVARINEN, AND S. HICKS. Editors. 1972. *Climatic changes in Arctic areas during the last ten thousand years*. Acta Universitatis Ouluensis, Series A, Geologica 1.
- VERANO, JOHN W., AND DOUGLAS H. UBELAKER. Editors. 1992. *Disease and demography in the Americas*. Washington, D.C.: Smithsonian Institution Press.
- WIESSNER, POLLY. 1989. "Style and changing relations between the individual and society," in *The meanings of things: Material culture and symbolic expression*. Edited by Ian Hodder, pp. 56-63. London: Unwin Hyman.
- WILLIAMS, GLYNDWR. Editor. 1969. *Andrew Graham's observations on Hudson's Bay 1767-91*. London: Hudson's Bay Record Society. [ESB]