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Variability and change in Palaeo-Eskimo architecture: A view from the Canadian High Arctic

Patricia Sutherland*

Résumé: Variabilité et changements dans l'architecture paléoesquimaude: perspective du Haut Arctique canadien

Cet article explore la nature et les causes de la variation géographique et temporelle des vestiges architecturaux des occupations paléoesquimaudes dans le Haut Arctique canadien. Une grande partie de cette variabilité architecturale serait due à des facteurs locaux et situationnels plutôt qu'à une prescription culturelle. Trois traits structuraux — le foyer en forme de boîte, l'aménagement axial et la maison longue — sont ici sélectionnés comme représentant un complexe d'éléments largement distribué géographiquement et temporellement, ayant possiblement eu une signification symbolique liée à la société paléoesquimaude et à sa vision du monde. Les changements dans la forme et la distribution de ces traits sont résumés. Le degré de variation pouvant refléter des processus sociaux et des événements historiques est aussi examiné.

Abstract: Variability and change in Palaeo-Eskimo architecture: A view from the Canadian High Arctic

This paper explores the nature and causes of geographical and temporal variation in the architectural remains of Palaeo-Eskimo occupation in the High Arctic. It is suggested that much of the variability in the architectural record relates to local and situational factors rather than to cultural prescription. Three structural features — the box-hearth, midpassage and longhouse — are selected as representing a complex of elements with broad geographical and temporal distribution, and which may have had symbolic meaning related to Palaeo-Eskimo society and worldview. Changes in the form and distribution of these features are summarized, and the degree to which these variations may reflect social processes and historical events is examined.

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Introduction

High Arctic Canada, comprising the Queen Elizabeth Islands to the north of Parry Channel, was occupied by Palaeo-Eskimos for approximately 4,000 years. Archaeological research on the Palaeo-Eskimo occupation of the High Arctic began barely 50 years ago, and has been limited to a few regional surveys and excavations concentrated in isolated local areas (Figure 1). In attempting to synthesize the evidence currently available, one must be cognizant of these circumstances, and aware of the inadequacy of our knowledge in defining either the complete range of the phenomena investigated or major patterns within that range.

Given this situation, prudence suggests an approach that defines more limited objectives than the presentation of a synthesis of Palaeo-Eskimo architecture in the region. As a background to this discussion, the following paper summarizes current views on the temporal/cultural divisions of the Palaeo-Eskimo tradition in the High Arctic, and briefly argues the extent to which these divisions represent a cultural continuum. It then notes some important environmental considerations in relation to the construction of dwellings, as well as some of the salient features of Palaeo-Eskimo architecture in the High Arctic. The enormous range of variability in architectural features reported from the region is discussed in terms of the multiplicity of factors that impinge on decisions resulting in the creation of a unique structure. Three architectural features which may have underlying symbolic meaning are isolated as recurring forms within this variability. A comparison of the distribution of these features across space and time leads to some observations concerning cultural connections between regional and temporal divisions of the Palaeo-Eskimo sequence, and on the nature of the societies that are represented by these architectural remains.

Temporal and cultural divisions of the High Arctic Palaeo-Eskimo tradition

High Arctic Canada lies geographically between three regions that attracted earlier archaeological investigations: the Canadian Low Arctic, western Greenland, and High Arctic Greenland. By the mid-twentieth century, the Palaeo-Eskimo occupations of these regions had been partitioned into a series of named cultural units separated on a temporal basis. When archaeological investigations of High Arctic Canada began, Palaeo-Eskimo sites were assigned to the cultural units that had been already defined in adjacent regions. The Palaeo-Eskimo component discovered by Collins (1952) in association with Thule villages on Cornwallis Island was identified with Dorset culture. Lowther (1962) assigned an early Palaeo-Eskimo occupation on Devon Island to the Pre-Dorset culture defined in more southerly Arctic regions. Knuth (1965) considered the components that he discovered on northern Ellesmere Island to be related to the Independence I and II cultures previously defined in the Pearyland area of northern Greenland. McGhee (1976) related occupations of northwestern Devon Island to Independence, Pre-Dorset and Late Dorset variants of the Palaeo-Eskimo tradition. Finally, Schledermann (1990) added the Saqqaq complex, first defined in western Greenland, and an Early Dorset complex related to that of Low Arctic Canada,

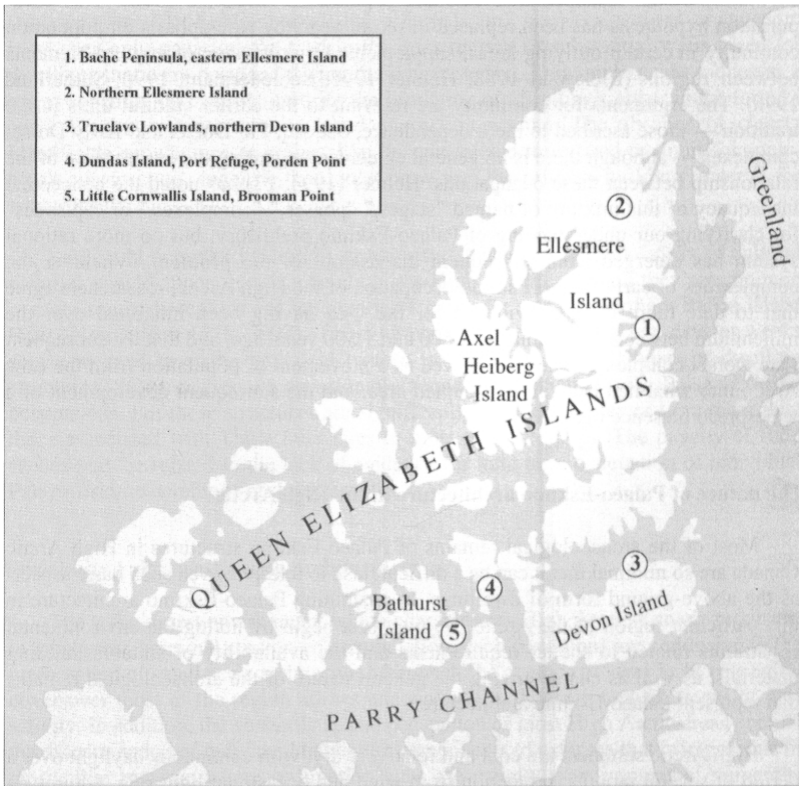


Figure 1. Map of High Arctic Canada, showing areas of concentrated archaeological research

to the inventory of temporal/cultural variants of the Palaeo-Eskimo tradition present in High Arctic Canada.

Earlier views were based on an assumption that most or all of these named cultural units reflected an occupation pulse emanating from more southerly regions, followed by local adaptation to the marginal conditions of the High Arctic and eventually by the disappearance of local populations (McGhee 1976). This core-pulsation hypothesis has been replaced in recent years by an emphasis on population continuity in certain outlying areas, supplemented by diffusion of cultural elements between regions (Bielawski 1988; Helmer 1991; Schledermann 1990; Sutherland 1996). The arguments for continuity are relevant to the earlier cultural units in the tradition — those ascribed to the Independence, Saqqaq, Pre-Dorset and Early Dorset complexes — although there is no general agreement regarding the exact nature of the relationship between these occupations. Helmer (1994: 23) has noted the conceptual inadequacy of this mixture of named "stages," "phases," "complexes," or "episodes" for clarifying our understanding of Palaeo-Eskimo prehistory, but no more rational system has emerged from subsequent discussions of the problem. Whatever the complexities of early Palaeo-Eskimo occupation of the High Arctic, researchers agree that to date there is little evidence for the area having been inhabited over the millennium between approximately 2,500 and 1,500 years ago, and that the subsequent Late Dorset complex can best be viewed as a movement of population from the Low Arctic into what had been an unoccupied area, and the subsequent development of a widespread presence in the region.

The nature of Palaeo-Eskimo architecture in the High Arctic

Most of the archaeological remains of Palaeo-Eskimo structures in High Arctic Canada are so minimal that it can be a difficult task to interpret even such basic aspects as the above-ground form of dwellings. In examining Palaeo-Eskimo architecture in this particular region of the Arctic, we may best begin by noting the environmental constraints related to shelter requirements and the availability of suitable building materials, as well as characterizing the general nature of the archaeological remains that represent Palaeo-Eskimo architecture.

High Arctic summers are cool and relatively dry, with continuous daylight over a period of several months; protection from wind and occasional light rain requires no more than minimal shelter, such as that afforded by a light skin-walled tent. In winter the High Arctic is the only area of Arctic Canada that experiences true polar night, when twilight is absent for a period ranging from a few weeks in the south to a few months in the northern portions of the region. Approximately eight months of the year are characterized by extreme cold, with frequent winds and blowing snow, requiring insulated shelters capable of retaining heat produced by the warmth of human bodies or small flames. There is little evidence for the use of oil lamps through at least the earlier portions of the sequence, and the scarcity of other fuel sources (driftwood, willow, heather, animal bones and fat, possibly herbivore dung) emphasizes the importance of insulated shelter.

The distance from forested lands, and the relative scarcity of driftwood in the High Arctic, placed major limitations on dwelling construction. It is assumed that the walls and roofs of most structures were supported by thin driftwood poles and rails split from driftwood logs. These materials are capable of supporting skin tent coverings, but not heavier roofs constructed of turf or stone. The remnants of whale bone roof supports, together with the remains of cut turf from a tumbled wall, have been reported from only a single Late Dorset dwelling on Little Cornwallis Island (Helmer 1996: 305; LeMoine *et al.*, this volume). Turf, boulders, and gravel appear to have been only occasionally used in the construction of substantial walls, even for dwellings that were occupied during the winter season. This implies that snow was a major construction material used for the insulation of dwellings, either in the form of snow blocks or loose snow banked against skin tents. The absence of clearly identifiable snowknives or probes, like the specialized tools used by Inuit for snow-block construction, suggests that loose snow was the primary building material for winter insulation.

Large and complex habitation structures associated with thick layers of cultural material would appear to occur rarely in the High Arctic, although they are common in more southerly regions and are reported from as far north as northern Baffin Island (Mary-Rousselière 1976, 2002). Short-term use on the scale of a few days or weeks seems to have been the prevalent pattern in this region for all types of dwelling structures. Stone caches are occasionally found in association with Palaeo-Eskimo occupations, but these structures are significantly smaller and fewer in number than those associated with Thule Inuit sites in most Arctic regions. The paucity of food caches may be related to the lack of evidence for long-term occupation of individual Palaeo-Eskimo dwellings or dwelling sites.

Variability in Palaeo-Eskimo architecture

The polar desert environment which characterizes High Arctic Canada produces, in most areas, minimal erosion or accumulation; such conditions are conducive to the preservation of small-scale architectural features. The absence of significant vegetation cover over most of the region allows unequaled visual access to such traces of past activity. In addition, the generally sparse occupation of most High Arctic areas permits the discrimination of individual habitation components to a degree that is impossible in most other regions, where occupation sites are usually a palimpsest of numerous temporally discrete occupations. These advantages should provide archaeologists with optimal conditions for defining and understanding the architectural aspects of the Palaeo-Eskimo cultural tradition.

Perhaps as a consequence of this situation, archaeologists quickly assigned cultural significance to the architectural features associated with various cultural complexes. Knuth (1966,1967) ascribed important normative value to the forms of axial features which he found on Independence I and II sites in northern Greenland. Following Knuth's lead, McGhee (1976) attached similar significance to the presence or absence of axial features in assigning the various Palaeo-Eskimo components at

Port Refuge to the Independence or Pre-Dorset complexes. More recent work, based on extensive survey information, has emphasized the high degree of architectural variability associated with such complexes, and consequently decreases the value of the normative ascriptions assigned by earlier researchers (Sutherland 1988, 1989, 1996).

It is apparent that numerous factors impinge on the construction decisions that resulted in the creation of dwellings. A list of such factors would include the function of the structure (dwelling, workshelter, cache, ceremonial site); the size of the social unit to be sheltered; the season of use and associated shelter requirements; the planned duration of occupation and consequently the degree of effort invested; the availability of stone slabs, boulders, turf and gravel in the local environment; the availability of construction-quality snow; the size and number of roof supports available; the size of tent cover available; and the local ground conditions. It may be argued that these factors, taken in combination, account for a great deal of the variability reported in the archaeological remains of Palaeo-Eskimo structures. Traits such as the size, outline shape, depth of excavation, presence or absence of elements marking the outline of the feature, may have been heavily influenced by local and transitory factors affecting the decisions of the builders. These attributes may therefore be of limited use in defining the architectural repertoire of the various temporal/cultural complexes of the Palaeo-Eskimo sequence, and of detecting the nature of relationships between these complexes.

In order to more adequately characterize the Palaeo-Eskimo architectural tradition, and to derive meaningful cultural information from the great range of variability apparent in this tradition, it may be worth eliminating consideration of much of the variability, and to constrain discussion to a few architectural forms that seem to relate principally to culturally prescribed ideas or ideals. Three features are identified and discussed in the following section.

Central features in Palaeo-Eskimo architecture

Certain features of Palaeo-Eskimo architecture — the box-hearth, the midpassage, and the longhouse with associated hearth-rows — recur through much of the temporal sequence of occupation, or are widely distributed on a geographical horizon. These features can be viewed from two perspectives, each of which may shed some light on the place of certain architectural elements in the culture of the Palaeo-Eskimos. From the first perspective, they can be seen as utilitarian structures fulfilling a functional purpose in providing shelter, heat, light, cooking facilities, and a tangible means of separating space within a dwelling or encompassing a social unit. Simultaneously, from a second perspective, they may be seen as metaphors which held symbolic meaning related to the worldview shared by Palaeo-Eskimo communities (Damkjar 2000; Park, this volume; Plumet 1989; Odgaard 2001). Studies of Dorset art have explored the degree to which the symbolic system of the Palaeo-Eskimos is reflected in their material culture (Taylor and Swinton 1967; LeMoine *et al.* 1995; Sutherland 2001), and we might expect this phenomenon to extend to architecture as well as

artistic production. If this assumption is correct, and these architectural features functioned as symbolic metaphors as well as utilitarian structures, the distribution and changes in the form of these features may be attributed with greater reliability to cultural decisions than can changes in most other characteristics of Palaeo-Eskimo structures. It follows that, as architectural elements which appear to have an enduring presence in Palaeo-Eskimo culture, the patterns of occurrence and variability demonstrated by these features may reflect the social processes and historical events that shaped the development of the Palaeo-Eskimo cultural tradition in the High Arctic and elsewhere.

Box-hearth: Square hearths built from stone slabs or cobbles are associated with the early Palaeo-Eskimo components that are usually ascribed to the Independence I complex, and dated to the centuries around 4500 to 3700 BP throughout the High Arctic (Figure 2). They occur as isolated features, as interior or central features of amorphous habitation structures, and as part of midpassage axial features (Helmer 1991; McGhee 1979; Schledermann 1990; Sutherland 1988, 1989). From eastern Ellesmere Island, Schledermann (1990: 51) reports box-hearths filled with fist-sized boiling stones, similar to those described by Knuth (1967) from Pearyland Independence I sites, suggesting that at least some hearths were used to heat stones used for cooking food in skin containers.

Both isolated box-hearths and hearths central to midpassage features are reported from subsequent Ellesmere Island components that Schledermann (1990: 84-5) identifies with the Saqqaq complex, and a box-hearth feature occurs on at least one site on northern Devon Island dated to the period of approximately 3700-3500 B.P. (Helmer 1991: 309). However, elsewhere across the High Arctic, this feature is not reported in association with Palaeo-Eskimo components ascribed to the later Pre-Dorset complex and dating to the period between approximately 3700 and 2800 B.P. At one site assigned to this period, Schledermann (1990: 119) reports a different type of hearth, formed by a horizontal slab flanked by upright stones which are notched at the top to support a soapstone vessel. Elsewhere the hearths associated with this period are evidenced by amorphous concentrations of boulders, or scatters of charcoal and charred fat. The absence of box-hearths may be related to the use of oil-lamps to provide heat and winter light, and a consequent change in cooking techniques.

Square box-hearths reappear throughout the High Arctic in association with the complex variously ascribed to Independence II (McGhee 1979; Sutherland 1988, 1989; Helmer 1991) or Transitional complexes (Schledermann 1990), and dated to the centuries around 2800 to 2500 B.P. Here they most commonly comprise the central element of midpassage axial features, and these are often larger and more carefully built from thin stone slabs than were the axial features of the period about a millennium before (Helmer 1991; McGhee 1979; Schledermann 1990; Sutherland 1988, 1989). Boxes constructed from stone slabs for purposes other than hearths also appear at this time. From eastern Ellesmere Island, Schledermann (1990: 166) reports an isolated box of slabs closed with slabs and cobbles, which was perhaps a cache or a structure having some sort of ceremonial use; a similar box-cache is reported from another site in the area, attributed to the slightly more recent Early Dorset complex

(Schledermann 1990: 186). At Porden Point on Devon Island, a square box of slabs which was probably used as a cache was constructed to the side of a midpassage in an Independence II dwelling (Figure 3) (McGhee 1981: 20).

After a period of apparent abandonment, the Late Dorset re-occupation of the High Arctic was associated with the use of hearths designed for cooking in soapstone vessels: these take the form of horizontal stone slabs flanked by vertically placed supports for pots (Figure 4). External box-hearths associated with Late Dorset dwellings have been reported on Little Cornwallis Island (Helmer 1996: 303). An external box-hearth found near a Late Dorset dwelling on Axel Heiberg Island (Sutherland 1993) was associated with a concentration of red ochre and a spatulate carving, suggesting a possible ritual function. Stone boxes which appear to have been used as small caches rather than hearths are reported from the Late Dorset component at Brooman Point on Bathurst Island (McGhee 1984, pers. comm. 2003). The most common occurrence of box-hearths is in external hearth-rows associated with longhouse structures, the individual hearths often built from cobbles rather than slabs and associated with slab pavements (Schledermann 1990: 224-30).

Midpassage: An axial feature dividing the dwelling into roughly two equal halves appears to have been a common element of Palaeo-Eskimo architecture. This floorplan has counterparts widely distributed across northern Eurasia and appears to have significant time depth in the cultures of that region (Knuth 1966). The symbolic associations of the axial feature among more recent peoples have been discussed by Plumet (1989) and Odgaard (2001), who propose that similar associations must have characterized the way in which Palaeo-Eskimos related to their dwellings.

For the purpose of this paper, a distinction is made between the "midpassage" axial element carefully constructed from two parallel lines of rocks; the "axial feature" evidenced by more amorphous arrangements of rocks and the remains of hearths; and dwellings which lack axial features.

The temporal distribution of midpassage features in the High Arctic roughly parallels that of box-hearths, and the two are commonly associated. A significant proportion of habitation structures on sites ascribed to the Independence I complex on Ellesmere, Axel Heiberg and Devon islands have midpassages created by lines of vertically-placed slabs or cobbles (Figure 5) (Helmer 1991; McGhee 1979; Schledermann 1990; Sutherland 1988, 1989). Midpassages continue in the Saqqaq-related components of eastern Ellesmere Island defined by Schledermann (1990: 84-85), but are rarely reported from other High Arctic components dating from the period between approximately 3700 and 2800 B.P. Some of these sites, which are seen as related to the Pre-Dorset complex of Low Arctic regions, have amorphous axial features composed of boulders (Helmer 1991: 308; Schledermann 1990: 119), but even this type of feature is absent from the dwellings reported from other areas (McGhee 1979: 90-2).

Midpassages reappear across the High Arctic in the centuries between 2800 to 2500 B.P., in association with components ascribed to Independence II or Transitional



Figure 2. Isolated hearth feature (Independence I), Lake Hazen, Northern Ellesmere Island (photo: P. Sutherland)

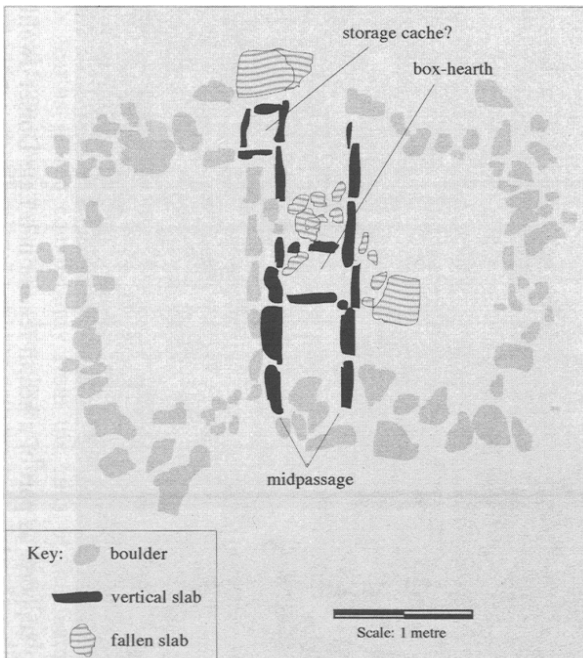


Figure 3. Plan view of an Independence II dwelling at Porden Point, Devon Island (after McGhee 1981)



Figure 4. Lamp supports as part of a hearth feature in a Late Dorset dwelling that is obscured by soil and vegetation, Eureka Sound, Ellesmere Island (photo: P. Sutherland)



Figure 5. Aerial view of an Independence I dwelling with midpassage and central box hearth, Lake Hazen, Northern Ellesmere Island (photo: P. Sutherland)

complexes (Figure 6). In most regions, at least a few of these features are built from large thin slabs, some of which appear to have been carefully selected and trimmed (Figure 7) (Helmer 1991; McGhee 1981; Schledermann 1990; Sutherland 1988, 1989), although the majority of structures associated with these complexes are less distinct. True midpassages are not reported from subsequent Early Dorset sites (Helmer 1980, Schledermann 1990). One such site on eastern Ellesmere Island comprised an ill-defined line of hearths with adjacent caches and paved areas, a feature reminiscent of the hearth-rows associated with later structures (Schledermann 1990: 189).

The Late Dorset re-occupation of the High Arctic brought a new form of midpassage to the region (Helmer 1991: 313, 1996; LeMoine *et al.*, this volume; McGhee 1981; Schledermann 1990: 331; Sutherland 1993). This form of structure is best preserved at the Snowdrift site on Dundas Island (McGhee 1981), but these features appear to be typical of examples reported from other areas. Late Dorset midpassages at the Snowdrift site are between two and four metres in length and generally wider than those of earlier periods, averaging approximately one metre in width; they are paved with flat slabs, and bordered by lines of elongate boulders rising a few centimetres above the passage floor. The passages contain either a central hearth or two hearths placed equidistantly from the ends of the feature; hearths are constructed from a horizontal slab, characteristically covered with charcoal and burnt oil, flanked by vertically placed boulders with the tops squared or slightly notched to support a cooking pot (Figure 8). On either side of these midpassages are living or sleeping areas approximately one metre wide, cleared of rocks and covered by a layer of moss and wood shavings, probably the preserved remnants of bedding material. The entire structures are subrectangular in outline, with no indications of wall structures or weights for a tent cover.

In contrast to the midpassage with little evidence of wall structure, another dwelling type that is characteristic of the period is the subrectangular house excavated a few centimetres beneath the surface, surrounded by a low berm of gravel and other material, and usually lacking any evidence of an axial feature or other internal structure (Figure 9). From eastern Ellesmere Island Schledermann (1990) reports two semisubterranean dwellings of this type, but with midpassages, and another example is reported from Axel Heiberg Island (Sutherland 1993) (Figure 10).

Several of the Late Dorset dwellings on Little Cornwallis Island described by LeMoine *et al.* (this volume) combine a midpassage with a semisubterranean structure, including a unique house referred to earlier that appears to have had turf walls and roof supported by whale bones. The distribution of structures such as this, with both a well-defined midpassage and relatively heavy wall construction, is not known. However it has been estimated, on the basis of extrapolation from extensive survey, that less than 1% of the dwelling sites related to the Late Dorset occupation of the High Arctic have been investigated in even a preliminary manner (Sutherland 2000: 164), so our current knowledge is anything but comprehensive.

Longhouse: The third architectural feature, one which appears to have been conditioned primarily by social requirements and culturally prescribed ideas, is the



Figure 6. Independence II dwelling at Porden Point, Devon Island (photo: R. McGhee)

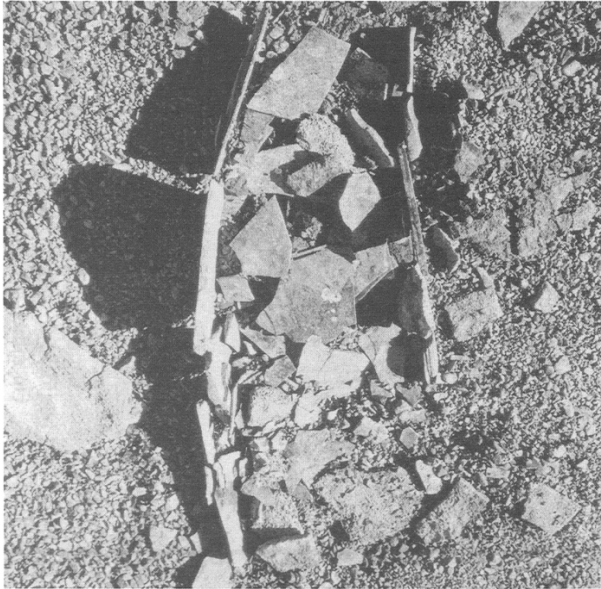


Figure 7. Independence II midpassage at Port Refuge, Devon Island (photo: P. Sutherland)

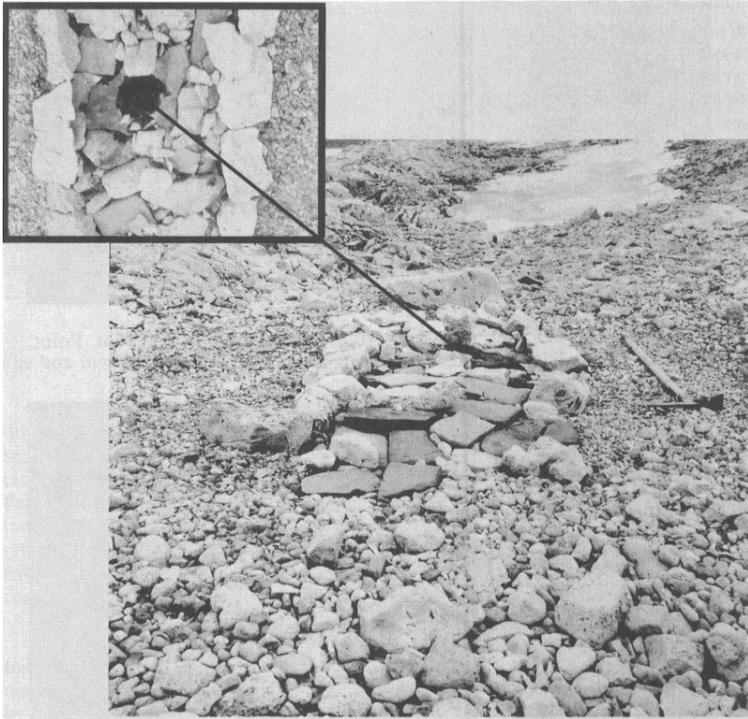


Figure 8. Late Dorset midpassage dwelling at the Snowdrift site, Dundas Island; insert: vertical view of hearth with pot rests, charcoal and charred fat (photo: R. McGhee)

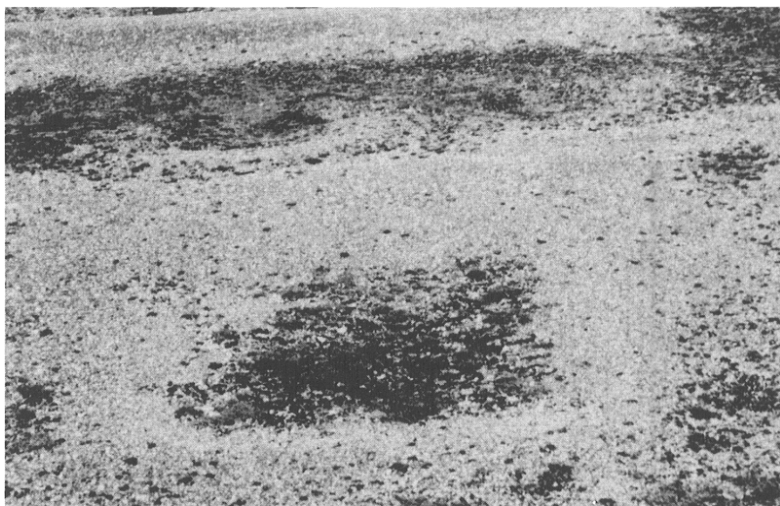


Figure 9. Late Dorset semi-subterranean dwelling at Fellfoot Point, southern Devon Island (photo: P. Sutherland)



Figure 10. Aerial view of a Late Dorset semi-subterranean dwelling with midpassage at the Tingmiark site, Gibbs Fiord, Axel Heiberg Island (photo: P. Sutherland)

large communal structure known from across the Arctic during Late Dorset times. Longhouses are only loosely associated with the dwellings that are characteristic of the period, and seem to have been constructed for short-term seasonal use by people who dwelt for most of the year in tents and small semisubterranean houses. Damkjar (2000) has provided an excellent summary of the distribution and attributes of longhouse structures, together with a review of discussions regarding their use and the relationships proposed to exist between structure and social function. Thirteen longhouses are known from the Canadian High Arctic (Helmer 1981, 1991, 1996; McGhee 1984; Schledermann 1990, 1996; Park, this volume), together with three in the adjacent region of northwestern Greenland (Appelt *et al.* 1998; Gulløv and Appelt 2001). This number is comparable with those from more southerly regions of Arctic Canada, and the size and concentration of structures in the Bache Peninsula region of Ellesmere Island (Schledermann 1990) is as impressive as that from any other Arctic locality. Longhouse structures are surprisingly difficult to detect in aerial surveys, or even in walking surveys in certain landscapes, and we should assume that the known features represent only a small sample of the number that may actually exist. The broad geographical distribution of longhouse structures, together with their uniformity and constrained temporal range, can be contrasted with the distributional characteristics and structural diversity of the other two central features of Palaeo-Eskimo architecture — the box-hearth and midpassage — described above.

The box-hearth/midpassage/longhouse complex

In the previous section of this paper, the distribution and range of forms relating to three architectural features typical of High Arctic Palaeo-Eskimo occupations: box-hearth, midpassage and longhouse, were noted. It is apparent that these features are closely associated in actual construction, and perhaps in the symbolic system of the Palaeo-Eskimo. Box-hearths are the central elements of midpassages, and comprise the individual elements of the hearth-rows that are associated with longhouses. Plumet (1989: 322), as well as Gulløv and Appelt (2001), suggest that longhouses developed from axial or hearth-row structures, linking all three features into an architectural complex that spans the entire Palaeo-Eskimo continuum.

On a higher level of comparison, Knuth (1966) first noted the similarity of Independence midpassage structures to the traditional dwellings of the Saami. The resemblance of axial structures to northern Eurasian dwellings has been considered by several researchers as evidence in support of a Siberian origin of the Palaeo-Eskimo tradition, and also as an indication that Palaeo-Eskimo structures were imbued with symbolic meanings similar to those with which northern Eurasian peoples invested their habitations. In a recent summary of knowledge relating to the traditional Saami dwelling, Yates (1989: 251) notes that "the divisions of the Saami *kåhte* articulated the system of values and authority upon which Saami society was based." Relationships of gender, age, and standing in the society, were formalized in the positions assigned to individuals in the various divisions of the structure, and in the rules and privileges relating to the activities permitted to them. At another level, the axial feature and central hearth symbolically represented a series of linked oppositions that structured

the traditional worldview: the hearth was identified with the sun, dividing the sacred world to the rear of the dwelling (associated with males, hunting and death) from the secular (female, life, domestic) area at the front of the dwelling (Yates 1989: 254-257).

Other systems of symbolic attributes have been suggested as possible interpretations of the axial configuration of Palaeo-Eskimo dwellings. Odgaard (2001: 30) interprets axial features in terms of the Siberian shamanistic concept of the clan-river, symbolically representing the three worlds that intersect at the hearth. Plumet (1989: 323-324) presents a more intriguing interpretation, relating the axial feature and the resulting bilateral symmetry of dwellings to the axial elements that are central to skeletal representations of bears and seals in the miniature sculptures of the Dorset culture. To Plumet, this feature symbolically represents the vertebral column, the structure that carries the central nervous system integrating the family in dwellings and, in longhouses, linking the entire community.

We cannot reconstruct with any confidence the symbolic associations of Palaeo-Eskimo architecture, but the specifics of such reconstructions are not relevant to the purpose of this paper. The box-hearth/midpassage/longhouse complex appears to be too elaborated to be explained on purely functional grounds. The fact that hearth and axial features were seen in symbolic terms by ethnographically-described peoples with whom the Palaeo-Eskimos possibly shared a distant historical relationship, further suggests that such symbolism characterized Palaeo-Eskimo structures. We might propose that these symbolic associations — whatever they actually were — account for the temporal persistence and wide distribution of this architectural complex. They also provide the rationale for selecting this complex, out of the wide range of other forms of Palaeo-Eskimo architecture, as a measure for discussing the nature of variability and cultural change in the Palaeo-Eskimo tradition.

Architectural and cultural change in the High Arctic

Although, as was noted earlier, axial features are typical of Palaeo-Eskimo dwellings in many regions, the midpassage constructed from parallel rows of vertically-placed slabs and containing a central box-hearth is a characteristic variant that seems to have appeared first in the High Arctic regions of Canada and Greenland. This specialized form has not been found to date in association with the earliest Palaeo-Eskimo occupations in more southerly regions. If this absence is not an artifact of archaeological chance, it suggests that the distinctive midpassage feature may have been an innovation developed by early occupants of the High Arctic. Knuth (1983: 12) refers to the hearth and midpassage of the Independence culture as "a kind of universal furniture unit serving as lamp, heating installation, cooking stove, kitchen cupboard, firewood box, and clothes chest."

Whatever the particulars of its use, most researchers would support Schledermann's (1990: 318) interpretation of the early Palaeo-Eskimo axial feature with its central hearth as an architectural element that was adapted to providing warmth and light during winter cold and darkness. Whether dwellings containing these

features were used primarily during the early winter, as suggested by Schledermann, or throughout the year as proposed by Knuth (1967), cannot be established on the basis of the evidence presently available. From the perspective of the postulated symbolic associations of Palaeo-Eskimo architecture, the connection of certain beliefs and practices only with specific seasons is common among northern peoples whose environment is characterized by extreme seasonal change.

As was noted above, the disappearance of the midpassage and box-hearth during the subsequent period of High Arctic occupation, ascribed to peoples of the Pre-Dorset complex, may be associated with the development of stone lamps for cooking, heating and light. This invention, combined with an economic pattern focusing on the acquisition of sufficient sea mammal oil to provide winter fuel, may have freed Palaeo-Eskimo groups from the necessity of building box-hearth/midpassage structures. Such an interpretation might indicate that architectural evidence cannot be used to support the suggestion that High Arctic occupations associated with the Pre-Dorset complex resulted from the arrival of new immigrants from the south. Rather, the change in architectural remains may simply reflect the adoption of stone lamp technology, and the subsequent abandonment of older architectural forms. The postulated symbolic significance of central hearths may have been an insufficient reason to preserve its use among peoples who had acquired a new and more convenient way of heating and cooking. On the other hand, it is entirely possible that Palaeo-Eskimo groups maintained the symbolic divisions of domestic space without the use of the architectural markers which are preserved as archaeological evidence of such a practice. This could have occurred both during the seasonal use of dwellings which lacked a tangible midpassage, and among groups which had abandoned the use of such structures.

The reappearance of the box-hearth/midpassage complex with Independence II/Early Dorset occupations during the centuries between approximately 2800 to 2500 B.P. cannot be clearly associated with a technological innovation. The reversion to older forms occurs among groups with economic patterns that are more diverse, and in some cases more focused on the hunting of sea mammals which would have provided oil for heating and lighting. Such a situation might be connected to the resurgence or geographical expansion of groups which had retained the earlier architectural forms, perhaps in regions that are not yet explored archaeologically. Lacking a functional explanation for the reappearance and wide distribution of much more ancient architectural features, one may propose that some isolated groups may have retained such forms for culturally determined reasons, together with the use of new and more convenient technology. The symbolic associations with such architectural features, as discussed above, may be related both to their retention among some groups, and to their subsequent wide dispersion not only across the High Arctic but into some of the Low Arctic regions occupied by Palaeo-Eskimos (*cf.* Damkjar, this volume).

By the time of the Late Dorset expansion into the High Arctic in the period after approximately 1500 B.P., a relatively uniform version of the midpassage had developed and spread through most Dorset groups. Very similar structures, characterized by a stone-paved passage flanked by rows of elongate cobbles and

containing hearth-slabs with lamp support stones, are known from southeastern Hudson Bay (Harp 1976: 132) to Dundas Island (McGhee 1981) to Ellesmere and Axel Heiberg islands (Sutherland 1989, 1993). Midpassage architecture, which seems to have originated in the High Arctic, appears to have been reintroduced at this time by immigrants from areas to the south.

Previously in this article, it was proposed that the survival and later geographical expansion of the box-hearth/midpassage complex might be related in part to the symbolic associations of this architectural form. In Late Dorset times, the reintroduction of these architectural elements to the High Arctic, and their association with the hearth-row/longhouse complex, may have a similar interpretation. On the basis of current evidence (setting aside the question of possible Middle Dorset communal houses reported from the Foxe Basin region), the longhouse complex appears to have originated or at least developed its characteristic form in the Nunavik region (Damkjar 2000: 178). The elaboration of this architectural feature and its spread across Arctic Canada as far as High Arctic Greenland, like the reintroduction and expansion of the box-hearth/midpassage complex at an earlier period, is difficult to understand on purely functional grounds. It may be that both events were connected to the elaboration and spread of concepts involving the symbolic associations of the architectural forms.

Conclusions

It has been suggested that much of variability seen in Palaeo-Eskimo architecture can be attributed to factors relating to local conditions and use, rather than to cultural prescription. In order to more clearly understand the cultural concomitants of architecture, this paper concentrated on three linked features characteristic of Palaeo-Eskimo construction in the High Arctic: the box-hearth, midpassage and longhouse. It was proposed that this complex is connected to and constrained by a system of symbolic meanings, and that it is this link which makes the complex of architectural features a useful tool in studying the nature of cultural change in the High Arctic.

The picture of architectural and cultural change that results from this exercise seems to be one of survival, development and elaboration in a local area, followed by extensive spread either into unoccupied regions or through groups already in possession of local territories. Such a picture is consistent with the view that Palaeo-Eskimo society may be most usefully conceived as "a mosaic of small named local groups of a few hundred people, each sharing most characteristics with adjacent groups, and each changing along its own trajectory over time" (Sutherland 1996: 287). Krupnik (1993) argues that Arctic hunting cultures are characterized by their capacity to increase local populations quickly, adapt rapidly to changing conditions, and expand into unoccupied environments, but also by the vulnerability of local populations to extinction in the face of local environmental events. The history of the appearance, expansion and disappearance of the Independence I box-hearth/midpassage complex; its subsequent re-emergence in the Independence II-Early Dorset period, and the

development and spread of the hearth-row/longhouse complex in Late Dorset times, may be architectural witnesses to events of this nature.

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