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An Early Arctic Small Tool tradition structure from interior Northwestern Alaska

Dan Odess*

Résumé: Une structure de la Tradition microlithique de l'Arctique ancienne à l'intérieur du nord-ouest de l'Alaska

Il y a plus de quarante ans, William Irving proposa l'expression "Tradition microlithique de l'Arctique", pour désigner l'unité taxonomique et les liens historiques partagés par plusieurs cultures du milieu de l'Holocène récemment identifiées en Alaska (complexe Denbigh), au Canada (Prédorsétien), et au Groenland (Indépendancier I et Saqqauien). Depuis, les recherches menées au Canada et au Groenland ont affiné notre compréhension des relations culturelles entretenues par les membres orientaux de cette tradition, de leur économie, de leurs techniques et de leurs histoires démographiques. Par comparaison, la recherche sur le complexe Denbigh, membre alaskien de la tradition, est restée à la traîne. Peu de travaux de terrain ont été menés depuis le milieu des années 1970 et peu d'attention a été portée aux questions évoquées ci-dessus ou aux relations historiques existant entre les Denbighiens et leurs voisins orientaux. Cet article présente un site de la Tradition microlithique de l'Arctique ancienne localisé dans la chaîne des Brooks occidentale et discute de son importance dans le cadre du contexte de cette tradition à travers l'Arctique nord-américain. La structure mise au jour sur le site présente de grandes similitudes avec les habitations du Prédorsétien, de l'Indépendancier I et du Saqqauien trouvées dans l'Arctique canadien et au Groenland. Elle apporte une nouvelle dimension à notre compréhension des relations entre les divers complexes techniques qui composent la Tradition microlithique de l'Arctique ancienne.

Abstract: An Early Arctic Small Tool tradition structure from interior northwestern Alaska

Over forty years ago, William Irving proposed the Arctic Small Tool tradition (ASTt) to indicate taxonomic unity and historical relatedness among several recently identified mid-Holocene cultures in Alaska (Denbigh Flint complex), Canada (Pre-Dorset), and Greenland (Independence I and Saqqaq). Since then, research in Canada and Greenland has helped refine our understanding of cultural relationships between the eastern members of this tradition, their economies, technologies, and demographic histories. By comparison, research on the Denbigh Flint complex, the Alaskan member of the tradition, has lagged behind. Little fieldwork has been conducted since the mid-1970s, and little attention paid to Denbigh subsistence and settlement systems or to the historical relationship between Denbigh and its neighbors to the east. This paper reports on an Early ASTt site in the western Brooks Range, northwestern Alaska, and discusses its significance within the context of the Early ASTt across the North American Arctic. The structure from the site bears strong similarities to Pre-Dorset, Independence I, and Saqqaq houses from the Canadian Arctic and Greenland, and adds an additional dimension to our understanding of the relationships between the various techno-complexes that compose the Early Arctic Small Tool tradition.

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Introduction

The Arctic Small Tool tradition (ASTt) was first proposed (Irving 1957) and then defined (Irving 1962) by William Irving on the basis of perceived similarities in the technological and morphological attributes of the lithic tools from four regions: Alaska's Denbigh Flint complex (Giddings 1951), Pre-Dorset sites in Arctic Canada (Giddings 1956; Harp 1958), Independence I in northeast Greenland (Knuth 1954), and Saqqaq in west Greenland (Meldgaard 1952; Larsen and Meldgaard 1958). While Knuth (1954) appears to have been the first to point out similarities among the lithic toolkits of these archaeological cultures, it was Irving, following Harp (1958), who formalized the comparisons and suggested these conceptually distinct archaeological cultures were members of a common archaeological tradition. Irving's suggestion met with little disagreement and seems to have been rapidly accepted (*e.g.*, Taylor 1962: note 1) by what was at that time a very small community of archaeologists working in the *terra incognita* of the North American Arctic.

In the nearly half a century since Irving put forth his formulation, new information about all of these archaeological cultures has become available. In Canada and Greenland, geographic and temporal variations in house forms and other material culture, as well as subsistence, economy and settlement patterns, are beginning to be understood (*e.g.*, Appelt *et al.* 2000; Cox 1988; Grønnow and Pind, eds 1996; Nagy 2000; Schledermann 1990). The accumulated research has caused the lines which once distinguished these cultures to blur, and in some quarters has prompted reconsideration of the status of Independence I, Pre-Dorset, and Saqqaq as conceptually distinct cultural entities (Elling 1996; Helmer 1994). Following Helmer (1994), there appears to be a growing tendency to simply refer to them as Early Palaeoeskimo or Early ASTt, and to think in terms of spatio-temporal variation in the manifestation of a single culture rather than in terms of cultural or ethnic differences. Dorset culture, which appears to emerge in Canada from a Pre-Dorset base a few centuries after 1000 B.C. (Taylor 1968), possibly with stimulus from Alaska (Arnold 1980; Le Blanc 1994; Pilon 1994), continues to be seen as distinct and descendant (but see Ramsden and Tuck 2001), and is referred to as Late Palaeoeskimo or Late ASTt. In the pages that follow, I use the term Arctic Small Tool tradition in preference to Palaeoeskimo because the latter term connotes Eskimo (Inuit) ethnicity. Thus, the term carries considerable intellectual baggage and, I believe, unnecessarily constrains the way we think about these early Arctic pioneers by unconsciously tying them to an ethnographic record of people who lived thousands of years later.

In contrast to the situation in Canada and Greenland, where a small but steady flow of publications, contract reports, and theses confirms that ASTt research has continued, Alaska's Denbigh Flint complex remains understudied, underpublished, and poorly known. The most salient works on the topic (Anderson 1988; Dumond 1981; Giddings 1964; Giddings and Anderson 1986; Irving 1964) report on fieldwork conducted more than thirty years ago. Since then, work has focused on the taxonomic and historical relationship between Denbigh and subsequent Alaskan culture complexes (*e.g.*, Anderson 1980; Dumond 2000; Harritt 1994: 52) and on the question of ASTt origins in the Siberian Neolithic (*e.g.*, Powers and Jordan 1990). Little or no new research has

been devoted to such basic topics as the duration of Denbigh, subsistence practices and settlement patterns, or to the relationships between the Denbigh Flint complex and the eastern variants of the Arctic Small Tool tradition with which it was contemporaneous. This paper brings these questions back into focus using the data available from excavations conducted at the Hicks Site in Northwest Alaska.

Site locality

The Hicks Site (XHP-583) is located in the southern foothills of the Brooks Range at approximately 68° 21' N, 158° 54' W, at the southwestern base of a gravel-covered bedrock knob (Figure 1). It sits atop an outwash terrace overlooking Buccaneer Creek, a tributary of the Anisak River. Thirty-five kilometres to the south is the Noatak River, which drains the region as it flows generally west and then south before emptying into Kotzebue Sound. At least since late prehistoric times the river has been a major thoroughfare for people whose annual round included both coastal and interior regions of Northwest Alaska (Burch 1998). Four kilometres to the east, across a relatively flat expanse of tussock tundra and exposed gravel surfaces, lies Desperation Lake, site of a late prehistoric winter settlement (XHP-017) and associated *inuksuk* driveline system for hunting caribou.

The location of the Hicks Site offered a number of advantages to those whose primary economic orientation was hunting large mammals, particularly caribou. It commands an impressive view, so that caribou, grizzly bears, and even the occasional muskox, are readily spotted at a distance of several kilometres. Moose are also present in the vicinity, but are said to be recent arrivals in the Noatak drainage. Whether they were ever present during the prehistoric period is uncertain. With the exception of Kangiguksuk (Hall 1971), none are reported from the very small number of excavated prehistoric sites in the area with reported faunal remains. Willows providing fuel for cooking and heat are abundant along Buccaneer Creek and grow to sufficient size to provide poles for skin tents. The stream provides a good source of fresh water and, at least in limited numbers, grayling. Other faunal resources include ptarmigan and abundant ground squirrels. Lake trout are available in Desperation Lake, and in earlier times Dall sheep may have been available on the nearby peaks of the Brooks Range.

The site area is a few kilometres south of the foothills of the Brooks Range, a geographic arrangement that is advantageous for a number of reasons. First, topography tends to funnel large numbers of migrating caribou through the immediate site vicinity. At present, they appear in mid- to late July. The terrain surrounding the site is dotted with low hills and dissected by stream channels that provide ample cover for individuals stalking game. Finally, the site is more or less due south of Howard Pass, likely an important travel route for people if their annual round took them to the Arctic Coastal Plain for part of the year. This combination of resources, geography, and topography appears to have been attractive to prehistoric hunters for millennia. Sites representing a wide range of cultures from Early Holocene times to the early historic period have been located in the area.



Figure 1. Location of the Hicks site in Alaska

Site description

At the time of its discovery, the Hicks Site appeared as a set of two parallel rows of cobbles set ca. 50 cm apart which poked through a lightly vegetated portion of an otherwise largely unvegetated sub-glacial outwash delta. There were also a few perimeter rocks visible on the surface, sufficient to suggest the outline of the southern half of a tent-ring structure. Excavation revealed a well-defined axial feature (Figure 2), similar to those from Labrador (*e.g.*, Cox 1978: Figure 3b, 1988); the central eastern coast of Ellesmere Island (Schledermann 1990, 1996); Nunavik (Gendron and Pinard 2000); and other locations in the Eastern Arctic including Greenland (*e.g.*, Knuth 1967). Unlike some of the structures from those regions, however, this one did not contain a clearly defined hearth. Charcoal was not recovered during excavation or found in the soil samples taken back to the laboratory for flotation.

The structure is sub-rectangular in form; its southern and western walls are generally linear and well-defined, and its northern and eastern ones less clear but apparently somewhat curved. The structure was disturbed at some point after abandonment, and several rocks from its northern wall were removed, probably to construct a cairn of unknown cultural affiliation and age, located ca. 40 m to the east at the edge of the outwash delta. Cobbles that once formed part of the northern half of the axial feature have been piled in the centre of the structure, perhaps by the occupants at the time of abandonment as has been observed in mid-passage Dorset structures dated to around 800 years ago in the Canadian Arctic. Interior dimensions are ca. 3 m x 3.5 m. The structure does not appear to have been deliberately dug into the surface, but its floor is slightly lower than the terrain on the northern side, probably because small rocks were cleared from the floor and tossed in that direction during construction.

Comparative information on Denbigh house forms is sparse. Anderson (1988) reports six or possibly eight houses from the Denbigh and proto-Denbigh levels at Onion Portage. There, the remains of Denbigh houses are circular depressions three to four metres in diameter, and encircle a round hearth of river cobbles. In the Denbigh houses radiometrically dated to between 4000 and 3600 B.P., Anderson identified no patterning in artifact distribution and no architectural evidence for the segregation or differentiation of interior space. However, he did identify such segregation of space in the proto-Denbigh house from Band 5, level 1 at Onion Portage. That occupation is thought on stratigraphic grounds to date to around 4100 B.P., or within a few centuries of the initial ASTt colonization of the Eastern Arctic. Situated well within the boreal forest on the banks of the Kobuk River, the proto-Denbigh structure at Onion Portage is four metres wide and rectangular in shape with rounded corners. For our purposes, what is most significant is the use of two parallel wooden poles laid along either side of the hearth to divide the interior space of the structure. In Canadian and Greenlandic sites, such arrangements are termed "axial" or "midpassage" structures, and are a hallmark of the Early ASTt. There, well north of treeline, they are typically constructed of stone. Anderson (1988: 101) observed that this similarity, was "quite reminiscent of the Independence I house ruins of northern Greenland reported on by Knuth (1967)."

With the exception of those found at Onion Portage (Anderson 1988), there appears to be no mention of Denbigh Flint complex house forms from northern Alaska in the literature. None were reported at the sites that most inform our limited knowledge of Denbigh: Iyatayet (Giddings 1964); the Denbigh beaches at Cape Krusenstern (Giddings and Anderson 1986); Punyik Point (Irving 1964); and Mosquito Lake (Cook 1977). Elsewhere in the state, Dumond (1981: 121) reports on the excavation of 13 houses from the Alaska Peninsula assigned to his Brooks River Gravels phase, apparently a subarctic ASTt manifestation present for most of the second millennium B.C. All appear to be semi-subterranean to varying degrees, and Dumond (1981: 121-127) makes no mention of axial or mid-passage structures, or interior architectural differentiation of space.

Given the current state of knowledge, the question of whether the Brooks River Gravels phase is part of the Denbigh Flint complex hinges on whether one is a lumper or a splitter. In my view, Dumond's decision to distinguish it from the Denbigh Flint complex is a wise one. The impression one gets from the Brooks River Gravels phase is that it represents a group of ASTt people with comparatively high population density, whose annual movements within this very productive ecosystem may have been more circumscribed than those of their Denbigh cousins living north of Norton Sound. In other words, Brooks River Gravels may represent the beginning of a movement towards greater sedentariness within the Early ASTt, a significant cultural change that appears to occur in those parts of Alaska with high bioproductivity long before it appears to occur in the Eastern Arctic.

The precise age (in radiocarbon terms) of the Hicks Site cannot be determined because no organic remains or charcoal were found during excavation or in the soil samples we collected. This unfortunate fact forces us to rely on less dependable lines of evidence to infer its age. On the basis of the similarity between the Hicks Site structure and the proto-Denbigh house at Onion Portage, the Hicks Site is most likely closest in age to strata dated to about 4,100 years old at Onion Portage. If this inference is correct, the Hicks Site is more or less contemporaneous with similarly constructed Early ASTt structures in Canada and Greenland.

Hicks site artifact assemblage

Excavation of the structure and surface collecting in the immediate vicinity produced 347 flakes and five tools. Four of the five tools are shown in Figure 3.

Figure 3a is a face of a narrow wedge-shaped microblade core of speckled red chert. It has crushing at the distal end as well as a heavily battered platform. One blade scar appears to have been produced by driving a blade from the distal/ventral end. The core-face is 36.2 mm in length, and appears to have been deliberately removed to provide a fresh striking platform. Minor crushing along both lateral margins indicates this specimen may have been used as an expedient scraper or knife, although trampling damage cannot be ruled out.

Figure 3b is a bifacial lance or knife blade of gray chert. It is asymmetrically pentagonal in outline and lenticular in cross section. It has been resharpened extensively, and one distal lateral margin is broken. The overall quality of workmanship on this item is poor, at least when compared to other Denbigh Flint complex specimens. Its measurements are: 36.5 mm (length), 23.6 mm (width) and 6.6 mm (thickness).

Figure 3c is a broken crescentic sideblade or inset knife of gray chert. It is thin (2.9 mm) and comparatively wide (17.2 mm). The ventral surface shows parallel flaking, while the dorsal is flaked diagonally. Workmanship is good, and the lateral margins are delicate and quite sharp. This specimen is large enough to arm a lance rather than an arrow.

Figure 3d is the proximal portion of a large, thin flake of bluish green chert. Both lateral margins show crushing and chipping on dorsal and ventral surfaces, probably as a result of use. According to Bob Gal (pers. comm. 1998), this lithic raw material was not used by other archaeo-cultural complexes in the area. It is of unknown provenance, but may be found locally as small cobbles in outwash gravels.

Not pictured is a large flake of red jasper-like chert that retains some of the cortex of the cobble from which it was struck. It has been broken twice along the distal margin, but the remaining portion of the distal lateral margin shows delicate unifacial retouch from the ventral surface.

To summarize, the lithic toolkit from the Hicks Site is disappointingly sparse, but sufficient to confirm that the site is Denbigh. Typological assessment of the structure provides an additional line of evidence supporting attribution of the site to the Denbigh Flint complex. Typological assessment of the toolkit does not provide a more precise indication of the age of the assemblage, perhaps because diachronic variation in Denbigh Flint complex tool attributes has not been examined systematically. This situation contrasts sharply with that in the Eastern Arctic, where securely dated assemblages have permitted researchers to explore intra-cultural change in tool attributes over both time and space, and thus to provisionally date otherwise undated assemblages with confidence (*e.g.*, Cox 1988; Odess 1998).

Denbigh subsistence settlement systems

In his brief mention of the Denbigh subsistence and settlement pattern, Giddings (1964: 242) suggests that coastal occupation, presumably for seal hunting, occurred during the summer, and that winter was passed pursuing caribou in the forested interior. The data on which he based this reconstruction are unclear, but the apparent absence of dwelling and hearth remains at Iyatayet, the Denbigh Flint complex type site, appears to have been significant in informing this interpretation. Anderson (Giddings and Anderson 1986), apparently basing his interpretation on historically documented Inupiaq subsistence patterns, suggests late spring and early summer as the

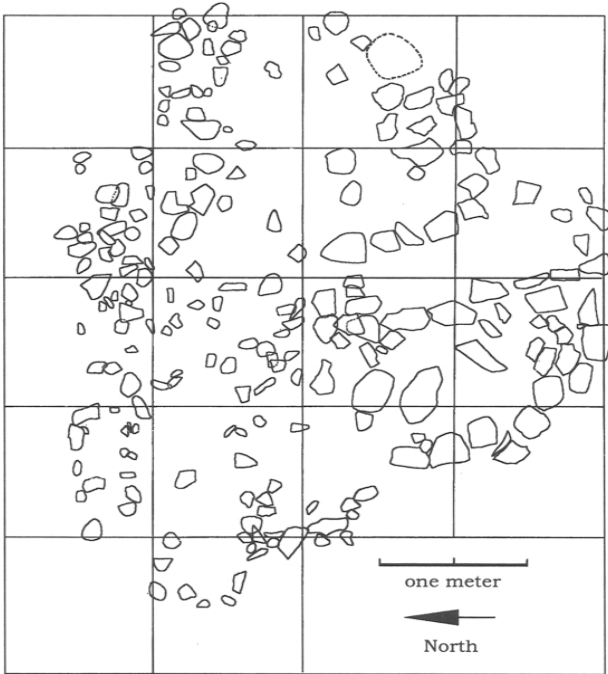


Figure 2. The Hicks site structure. Grid squares are 1 m x 1 m.

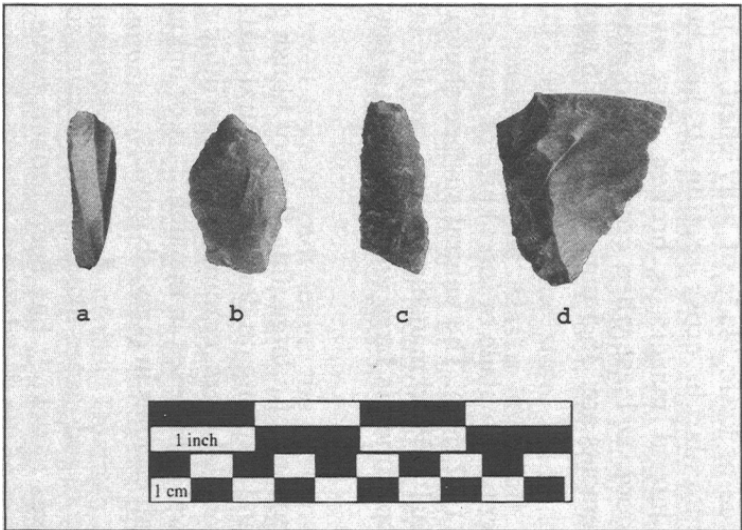


Figure 3. Artifacts from the Hicks Site (XHP-583): a) microblade core face fragment; b) heavily resharpended biface; c) sideblade fragment; d) retouched flake knife.

season of occupation for coastal Denbigh sites on the northwestern Seward Peninsula and in Kotzebue Sound. At Cape Krusenstern, where hearth remains were found, the inferred seasonality remains the same. Faunal remains, a more direct indicator of seasonality, have not been recovered from Denbigh Flint complex sites except for the Coffin Site, thought to be transitional between Denbigh and Choris, and these have not been published.

The lack of faunal remains in Denbigh sites limits our ability to determine site seasonality and, by extension, to reconstruct seasonal rounds and subsistence settlement patterns. In their absence, we are left to rely on the direct historic approach, as Anderson appears to have done, or we can look at organization of the site itself and its location with respect to the dynamics of regional ecology and local geography. Neither approach is entirely satisfactory. I am uncomfortable relying on the direct historic approach primarily because there are clear discontinuities in the archaeological record between Denbigh times some 4,000 or more years ago and the historically recorded Inupiat of the late 19th century. There are also major technological and economic differences between them. At the same time, while we know that environmental conditions in Alaska during Denbigh times were broadly similar to those which prevail at present, we also know that they were not identical. The effects of climatic and environmental differences on the abundance and timing of seasonally present prey species such as caribou and fish — and by extension on the people who depended on them — are uncertain.

Nonetheless, I have chosen to provide an interpretation of Hicks Site seasonality and function based on the site's location and the dynamics of regional ecology *as if* the environmental conditions at the time of occupation were similar to those that prevail today. Ironically, part of the rationale for taking this approach comes from the work of Burch (1980, 1998) who used a combination of ethnohistorical sources and interviews with Inupiaq elders to reconstruct "Inupiaq nations" at about the time of contact in Northwest Alaska. What is most useful in his work for the purpose at hand is the heterogeneity he documents in subsistence systems and the seasonal rounds of the various groups he discusses. Individual Inupiaq nations were able to exist because their members succeeded in identifying a combination of subsistence resources available at different times of the year that was sufficient to sustain them *within the territory they occupied*. For some this meant yearly reliance on snared ptarmigan or other small game to see them through a brief but critical period when food stores were exhausted and other species were not to be found within their territory. For others, it meant relying on fish when caribou were not taken in sufficient numbers to meet their dietary needs. The keys to these economies are flexibility and a very sophisticated knowledge of local ecology.

Recently there has been an upsurge in efforts to document such knowledge among the indigenous peoples of the Arctic, particularly as it pertains to climate change and global warming (*e.g.*, Krupnik and Jolly 2002). The details of what ecological knowledge Denbigh people accumulated and refined are beyond the recovery techniques of archaeology, but it seems safe to assume that people in Denbigh times had a reasonably detailed knowledge of local and regional ecology which informed the

decisions they made and the economic strategies they pursued. Recently Nagy (2000) has advanced the idea that it was the gradual accumulation of such knowledge over many centuries that permitted comparatively nomadic Pre-Dorset foragers to make the economic changes associated with the cultural transition to comparatively sedentary Dorset collectors. While this idea is difficult to reconcile with the recolonization of large parts of the Eastern Arctic after centuries of abandonment by Dorset people (see *e.g.*, Schledermann 1990; Odess 2002) and the loss of knowledge of local ecology that presumably would have accompanied abandonment, her idea is an intriguing one which may have some relevance for understanding Denbigh Flint complex economies and culture change. Viewed from this perspective, ASTt migrants were a colonizing population in Alaska as they are in Canada and Greenland, although the possibility of interacting with members of other Alaskan culture complexes (*e.g.*, Northern Archaic) would presumably have shortened the period of "environmental familiarization" that Denbigh peoples *as a culture* had to undergo.

The absence of faunal remains, paucity of formal tools recovered, and complete lack of understanding of functional/seasonal variation in Early ASTt architecture require that we employ less direct lines of evidence in interpreting the season of occupation and function of the site. In this regard, the organization of the site itself and its location with respect to the dynamics of local and regional ecology suggest a short-term summer occupation.

While there are a number of secondary species that could sustain people passing through the area, the leisurely migration of caribou heading south from the North Slope from mid-July to early August represents a substantial, if occasionally unreliable, concentration of biomass lasting a few weeks and affording hunters an opportunity to choose the best from among thousands of bulls, cows, and calves. Bulls observed around the site in 1998 were in prime condition; they were fat in anticipation of the rut and their winter coats had already replaced the previous year's pelage, but had not yet grown so thick as to be unsuitable for clothing. In contrast, cows were still shedding the previous winter's coat and appeared skinny from nursing.

Though Arctic ground squirrels (*Spermophilus parryii*) are not generally thought of as a major subsistence resource, the area also supports unusually high numbers of these rodents. Their burrows dot the well-drained benches and terraces that surround the site for several kilometres. These animals can be snared with a minimum amount of effort and provide protein and some fat as well as skins for clothing. While the pursuit of caribou was probably the principal motivation for people to occupy the foothills of the Brooks Range in the first place, this concentration of ground squirrels may have combined with the suitability of the surrounding terrain for caribou hunting to influence the decision to camp there because it provided additional economic security and opportunity while people waited for the caribou to arrive.

Northern terrestrial ecosystems are inherently less stable than their marine counterparts, and economies that rely on intercepting migratory animals such as caribou, which are prone to population crashes and changes in migration routes, are inherently risky. From this perspective, one might wonder whether the added economic

security provided by the density of the local ground squirrel population is a factor in accounting for the unusually high density of archaeological sites from several time periods and cultures in the area immediately surrounding the Hicks Site. If correct, such a contention only serves to reinforce the lessons taken from Burch (1980, 1998) about the importance of knowledge of local ecology.

The presence of external activity area(s) that produced debitage and formal tools also supports the contention that the site was occupied during the summer, as it would have been difficult to maintain the high degree of dexterity necessary for fine pressure flaking while sitting outside the structure in cold weather. Alternatively, the concentration of debitage a few metres to the west of the structure might be indicative of refuse disposed of by shaking out a skin atop which the production of stone tools occurred within the structure.

Conclusions

The architecture of the structure found at the Hicks Site provides another clear and independent line of evidence of historical relatedness between the Alaskan, Canadian, and Greenlandic variants of the Early ASTt. If the proto-Denbigh attribution is correct, the implication of that architectural similarity is that those ties were strongest between proto- rather than classic Denbigh and Early ASTt cultures to the east. The question of why the marked similarities between western and eastern variants of the Early ASTt do not persist is an intriguing one. In the east, and at the scale of difference being discussed here, Pre-Dorset appears to remain relatively unchanged for a millennium or so, then changes fairly smoothly into what we term Dorset culture (Taylor 1968). By contrast in the Western Arctic, proto- becomes classic Denbigh which appears to be replaced by, or evolve into, Choris after perhaps as little as 400 or so years. The mechanisms for this change remain unexplained and the contribution of ASTt people to the culture and biology of historically known Eskimo peoples remains unclear.

Ultimately, the contrast between these historical trajectories may have its roots in the nature of their respective physical environments, but also in the continuing influence of people to the south and across Bering Strait. Compared to Alaska, the Canadian Arctic east of the Mackenzie River is a relatively homogenous region characterized by low overall biproductivity and insulated from the influences of culture contact by a band of little-inhabited territory separating the coastal and near-coastal areas from the forests to the south¹. In contrast, the area west of the Mackenzie — the Yukon Territory and Alaska — consists of more heterogeneous and biologically productive environments and large rivers linking interior and coastal populations and cultures. Given these environmental constraints, the Eastern Arctic was probably a more dangerous place for experimentation and innovation than was the west because the number of alternative resources available, if a given economic strategy failed, was comparatively low.

¹ The Labrador coast is an obvious exception to this generalization, both in terms of biproductivity, diversity, and opportunities for culture contact. While a comparative study between Alaska and Labrador would be worthwhile, it is beyond the scope of this paper.

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