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INTRODUCTION TO THE NORTH BY NORTHWEST SPECIAL VOLUME

Matthew W. Betts, Katherine Reedy-Maschner, and Owen K. Mason

This special volume of the *Alaska Journal of Anthropology* is the result of a call for papers by arctic archaeologists and anthropologists (Betts, Mason, and Reedy-Maschner) who have for years recognized a need for increased communication and data sharing between researchers who work on the Canadian and American sides of the Western Arctic (here loosely defined as arctic regions west of the Coronation Gulf in the Northwest Territories, including the Yukon Territory and Alaska [west of the 141st meridian]).

For more than fifty years (e.g., MacNeish 1956; McGhee 1974), archaeologists have recognized a strong Western Thule affiliation for archaeological deposits in the Western Canadian Arctic, and cultural and genetic linkages between the Iñupiat and Inuvialuit have been recognized for far longer (e.g., Stefánsson 1913, 1919, 1923). Despite the clear understanding of the Western Arctic as distinct both geographically and culturally, it is ironic that the international boundary that bisects it continues to create an artificial divide between those who work in Canada and those who work in the United States (a similar situation, created by the same international boundary, pertains on the Pacific Northwest Coast, as noted by Ames and Maschner [1999]).

Arctic-based researchers have recognized this issue for some time, and this volume is not the first attempt to bring together scholars from both areas. In 1992, researchers from Canadian federal and territorial institutions were invited to give papers at the Alaska Anthropological Association (AAA) meetings in Fairbanks, Alaska, specifically to share data from the Northern Oil and Gas Action Plan (NOGAP) archaeological project in the Mackenzie Delta region. Since that time, Canadian archaeologists and anthropologists have regularly attended AAA (since 1972) and Arctic Conference meetings (since its inception by Dr. H. D. G. Maschner at Madison in 1993), and Alaska archaeologists are regular participants in arctic sessions in Canadian Archaeological Association conferences. Canadian archaeologists also serve on the editorial board of the *Alaska Journal of Anthropology*.

Despite this cross-pollination, there have, to our knowledge, been no venues (symposia or edited volumes) specifically devoted to researchers working in the Western Arctic. This special edition of the *Alaska Journal of Anthropology* brings together papers from eight researchers conducting anthropological and archaeological work in the Western Arctic; four working in Alaska and four working in the Mackenzie Delta region. The goals of this volume are simple: (1) to provide a (necessarily limited) "snapshot" of current research in the Western Arctic, and (2) to stimulate more "peeking over the fence" by researchers on both sides of border, in an attempt to provoke multi-regional approaches and collaborations.

The papers assembled here cover a broad range of topics, all of which should be familiar to those working in the Western Arctic. Friesen's paper explores the early interaction between Euro-Americans and Mackenzie Inuit/Inuvialuit who converged on the traditional whaling village at Pauline Cove, Herschel Island, in the late nineteenth century. This type of scenario was played out multiple times in multiple places in Alaska, and Friesen's paper provides an in-depth discussion of the archaeological evidence relating to these interactions, which are so well documented in historical and ethnohistorical accounts. Friesen proposes that direct evidence of such watershed "events" is likely to be rare in the archaeological record; instead many historical deposits are complex palimpsests of many events representing a "much broader process of reorganization . . . with all its complex and diverse interactions." He contends the historical deposits at Pauline Cove represent not an "event," but an historical "conjuncture" (Braudel 1980), which documents a broader series of Inuit

confrontations with the European world leading to their subsequent transformation into the modern Inuvialuit. In effect, Friesen's paper documents the archaeological evidence for the emergence of modern Inuvialuit identity.

Friesen's paper thus provides a bridge between the articles by Betts and Lyon, both of which also document the evolution of identities in the Mackenzie Delta region. While Betts documents the development of multiple Mackenzie Inuit (the ancestors of the Inuvialuit) identities prior to the historic whaling period, Lyons explores the continued evolution of Inuvialuit Identity in the modern era. Drawing on Burch's (1998) work on Iñupiaq nations in northwest Alaska, Betts contends that the prehistoric Mackenzie Inuit were similarly segregated into multiple socioterritories and that these differing identities developed through long-term connections with specific locations and the repeated sharing of experiences that occurred at these unique locals. Nevertheless, Betts demonstrates that the formation and mutation of Mackenzie Inuit identities was a result of creative responses to changing environmental, technological, and demographic factors.

Lyons' paper tracks the evolution of Inuvialuit identity in the twentieth and twenty-first centuries and details the complex processes involved. Her research is the result of extensive interviews with elders in Aklavik and Inuvik, bolstered by published oral histories, which she uses to trace the constant state of identity negotiation between Inuvialuit, Euroamerican groups, governments, and neighbouring Inuit populations. Similar to Betts, Lyons proposes that the modern Inuvialuit "have perpetually asserted their ability to survive, renew, and redefine themselves," a process of creative negotiation that has been continuous from the time Neoeskimos first settled the region, nearly eight hundred years ago.

Reedy-Maschner's paper reveals the commercial relationship that modern indigenous peoples across the Western Arctic have with their subsistence species. As she notes, "most anthropological depictions of Native peoples deliberately omit or downplay their participation in the modern economy, preferring instead to document more 'authentic' relationships." Her work outlines how wild resources such as salmon, crab, and berries are, for indigenous Alaskans, foundations of both a traditional way of life and a modern commercial economy. Yet, as she points out, despite anthropological criticism of the artificial subsistence/commercial division employed by state and federal managers, anthropologists continue to perpetuate this dichotomy by actively omitting the role of cash and other commercial aspects of the subsistence economy from their ethnographic and ethnoarchaeological work. Instead, Reedy-Maschner argues, it is time to explicitly expose the complex, entangled, and mutually supporting nature of subsistence and commercial hunting and fishing in the Western Arctic and recognize its central place in indigenous culture.

Griffin's paper also highlights an often ignored and underplayed aspect of indigenous resource use in the Western Arctic. His paper documents the use of plants by the Yup'ik of Central Alaska, revealing an intricate relationship between plant resources and traditional subsistence practices. On Nunivak Island alone, the use of sixty-nine separate species has been documented; Griffin proposes that people of the Western Arctic potentially had a much more complex relationship with plants than in areas of decreased floral diversity.

Dumond's paper addresses the issues of labret use, or labretifery, a traditional aspect of material culture absent from much of the Eastern Arctic. As Dumond notes, the presence of labrets has been used with various success by archaeologists to define the presence of people of "western heritage." His paper tracks the use of labrets across the Western Arctic, noting that they appear earliest in Kodiak assemblages (ca. 1500 BC) and then spread northward, reaching the Mackenzie Delta region in Canada by ca. AD 1400. Crucially, Dumond demonstrates that once labret use appears in the archaeological record of an area, it can wane in popularity and even disappear from the record at various points throughout sequence. The most notable of these absences occurs in north Alaska, where labrets disappear between AD 800 and AD 900, only to return sometime after the eastward Thule migration. Dumond proposes that this decline may be related to an Asian migration across the Bering Strait—as he states, labret use may be "a reasonable shorthand identifier of northeast Asian proto-Eskimo peoples."

Houlette re-examines a "legacy" archaeological collection excavated nearly a century ago. His paper outlines the importance of re-examining such collections, especially when these were critical to early interpretations of the complex culture history of western Alaska over the last two millennia. Houlette describes a reanalysis of the "Thule" meat cache at Kukulik on St. Lawrence Island from multiple perspectives, including a new typological classification, recently submitted radiocarbon dates, and a reanalysis of site spatial data. Houlette demonstrates that the purported Thule occupation at Kukulik is not fully consistent only with a Thule attribution; instead he states

"the initial settlement at Kukulik might date from the last centuries BC; the strongest evidence for occupation is from the fourteenth to nineteenth centuries AD."

Finally, the paper by Dawson et al. confronts a methodological issue common to all archaeologists who study sod and driftwood houses (one of the defining traits of Neoeskimo culture in the Western Arctic). Their paper outlines a new method, three-dimensional (3D) laser scanning, for documenting the complex architecture of a buried sod and log structure. As Dawson et al. demonstrate, this technique may provide a solution to the delicate, time consuming, and often frustrating process of recording and dismantling such preserved architecture. The 3D models produced by laser scanning provide a means to record the minute 3D relationships so critical to understanding the complex architectural arrangements (and subsequent deterioration) of these unique structures. While Dawson et al.'s work is still preliminary, the further development of this technique may greatly increase the speed and accuracy of recording these structures and provide a comprehensive virtual record that mitigates the (often) complete destruction of these features during excavation.

The articles presented in this volume reveal critical commonalities linking the research conducted by Alaska and Canadian scholars, such as the study of the complex archaeological record relating to the evolution and migration of specific ethnic groups (Betts, Dumond, Friesen, Houlette), and the ongoing negotiations endemic to the evolution of prehistoric and modern aboriginal identity (Betts, Friesen, Lyons). Still others focus on specific technologies (labrets and sod and log architecture) and resources that have for centuries defined a western way of life (Dawson, Dumond, Griffin), and how these resources are continuously being (re)appropriated as aboriginal groups fully integrate with the world system (Reedy-Maschner, Lyons). We hope that these papers expose just a few of the myriad commonalities that unite archaeological and anthropological work in the Western Arctic. Our wish is that the present volume will further contribute to a growing dialogue among scholars in the Western Arctic and motivate collaborations and connections that dispense with modern geopolitical boundaries.

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CHRONICLING SIGLIT IDENTITIES: ECONOMY, PRACTICE, AND ETHNICITY IN THE WESTERN CANADIAN ARCTIC

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ABSTRACT

The study of hunter-gather identity is mired by theoretical barriers and "untidy" datasets. A practice-centered approach offers a means to revive a meaningful archaeology of ethnicity for northern foraging societies. This paper utilizes faunal remains and settlement patterns to chronicle the development of hunter-gatherer ethnic groups who inhabited the western Canadian Arctic during the fifteenth to nineteenth centuries AD. These peoples, known collectively as the Mackenzie Inuit, or Siglit, were by the late nineteenth century segregated into as many as eight distinct territorial groups, each supported by a unique specialized economy. Engendering culture histories for these groups—understanding the development of this ethnic diversity—requires a detailed historical perspective that incorporates both instrumentalist and primordialist arguments.

KEYWORDS: ethnicity, identity, practice, economy, Thule Inuit, Inuvialuit, Mackenzie Delta, zooarchaeology

INTRODUCTION

The study of ethnicity is a fundamental aspect of archaeological inquiry, which can have direct relevance to modern social politics (Shennan 1989:5–6; Smith 2004:2). Not surprisingly, the identification of distinct cultural identities in the material record is often central to epistemological and heuristic debate among theoretically oriented archaeologists (for overviews of this vast literature, see Jones 1997; Smith 2004; also Lyman and O'Brien 2004; O'Brien and Lyman 2002 for related discussion). Of particular long-term interest is the relationship between the distribution of material remains and prehistoric social groups (e.g. Binford 1968; Binford and Binford 1966; Bordes 1961, 1973; Dobres 1999; Ford 1954a, 1954b; Hodder 1978; Spaulding 1949, 1953).

Despite the large amount of literature devoted to this topic, researchers "continue to experience difficulties in developing an archaeology of ethnicity" (Stark 1999:26), especially for prestate societies and hunting and gathering groups (e.g., Sassaman 1998; Stone 2003). Indeed, hunter-gatherer ethnicity has often been rejected as a course of study, primarily because it is viewed as tautological in strict ecofunctionalist/adaptationist frameworks (Chrisomalis and Trigger 2004:424–428; Dietler and Herbich 1998:233; Dobres 1999:11–17; Shennan 1989:10–13; Stark 1999:26). In this paper, I apply an alternative approach to hunter-gatherer ethnicity that integrates elements of practice theory and instrumentalist/primordialist discourse (e.g., Barth 1956, 1969; Bentley 1987; Jones 1997; Stone 2003). Moreover, this study evokes a "generative" relationship between economic activities—the very behaviors often believed to obscure the analysis of identity in foraging societies (e.g., Sassaman 1998)—and ethnicity. As I explore this relationship, I highlight the potential of analyzing faunal remains within an "historical processual" paradigm to build up culture histories of hunter-gatherer societies (e.g. Pauketat 2001).

Following Jones (1997:xiii), I define an ethnic group as "any group of people who set themselves apart and/or

are set apart by others with whom they interact or coexist." I apply the term to small-scale (band-level) societies that are both nominally and organizationally set apart from their contiguous neighbors (see discussion in Eriksen 1993:5–15, Stone 2003:38–41). The following study is organized around the concept, derived from practice theory, that "ethnic identity is . . . rooted in ongoing daily practices and historical experience, but also subject to transformation and discontinuity" (Jones 1997:13). This approach is valuable because it acknowledges the historically contingent aspect of identity, while at the same time recognizing its transient and situationally dependent nature. That the concepts explored here are traditionally applied to the study of affinities among more complex (and populous) societies (e.g., Bentley 1987; Jones 1997) is largely irrelevant. The shared behaviors that create group affinities can be perceived to operate at multiple scales, from the multifamily band to the state-level corporate group, and indeed are particularly prevalent among small groups of hunter-gatherers (see discussion below).

Using this theoretical vantage, I will catalogue the economic practices that reinforced affinities and created differences between contemporary groups of Mackenzie Inuit (or Siglit), a hunter-gatherer people who occupied the western Canadian Arctic from ca. AD 1400 to AD 1850. According to ethnohistoric sources, the Mackenzie Inuit were subdivided into at least seven, and perhaps as many as eight, named territorial groups or "socioterritories" (after Burch 1998). Each of these socioterritories practiced a unique subsistence economy focused on a specific area of ecological productivity (Betts 2005a). As used here, the terms "territorial group" and "socioterritory" are synonymous with the expression "ethnic group"; both refer to Mackenzie Inuit groups whose otherness and togetherness was signified by name.

This paper has two primary goals: (1) to chronicle the development of Mackenzie Inuit ethnic groups and (2) to explore the theoretical and methodological requirements necessary to produce such a narrative from the hunter-gatherer archaeological record. A chronicle is simply a description, often in chronological order, of attributes and events—it can be understood as a structured catalogue of specific phenomena in which few, or no, explanations are offered for the patterns being described (O'Hara 1988). Good archaeological chronicles incorporate inter- or intraregional variability within a detailed diachronic sequence. When explanations are posited for such chronicles, culture history is produced (Lyman et al. 1997; O'Brien and Lyman 2004:178). Essentially, I aim to generate culture histories for Mackenzie Inuit societies by tracking the development of spatially segregated economic and settlement routines and placing these developments within a context of cultural, subsistence, and settlement traditions.

PRACTICE AND HUNTER-GATHERER ETHNICITY

As Wobst (1978:307) described over twenty years ago, archaeologists typically define hunter-gatherer ethnic groups (based on ethnographic and ethnohistorical records) as:

> a unit bounded in space and personnel whose members carry out a number of tightly constrained, closely replicated behaviors concerned with boundary maintenance, group affiliation and group identity . . . to set themselves off from members of similar such units, in response to stimuli from their natural and social environment.

This definition is clearly applicable to Mackenzie Inuit socioterritories as they were described ethnohistorically and should also be applicable to their prehistoric ancestors. Yet as Wobst (1978, 1999) himself points out, adopting this model may be problematic because these traits are often difficult to tease out of the archaeological record.

I believe this problem is a conceptual one, rather than an issue with the resolution of the archaeological record. As mentioned above, there is a pervasive sentiment amongst archaeologists that the study of ethnicity in "simple" societies is ultimately tautological (Stark 1999:26). This stems from the belief that the "normative" study of ethnicity in foraging societies is obscured by the overwhelming relationship between environment and the material record (see discussions in Johnson 1999 and Lyman and O'Brian 2004). Within the ecofunctionalist framework, archaeologists interpret variability in the distribution and frequency of the hunter-gatherer archaeological record as extrasomatic adaptation (Binford 1965). Here differences in human behaviors represented by the archaeological materials are understood to be epiphenomenal, the byproducts of an overall adaptation to a particular set of environmental stimuli.

This is where the tautology arises, because in this framework any patterning in archaeological signatures that is covariant with environment is always most parsimoniously explained by function or adaptation (Sassaman 1998:93; Wobst 1999:127; see also Roe 1995:34–35). Thus, in situations where large proportions of the archae-

ological record represent a direct adaptation to the local environment (which applies to all hunter-gatherers), it is impossible to isolate the potential social meanings from the overarching functional adaptation (Betts 2008:203; Chrisomalis and Trigger 2004:424; Jones 1997:116–118; Shennan 1989; Stark 1999:26).

Recognizing this problem, archaeologists have suggested the normative study of nonfunctional, or "stylistic," traits to reveal past social identities (e.g., Binford 1965; see discussion in Jones 2008:326). This focus on stylistic attributes has dominated the study of archaeological ethnicity among prestate and state societies for many decades (Carr 1995; Carr and Neitzel 1995; Jones 1997; see also papers in Auger et al. 1987; Shennan 1989). While recent theoretically complex studies of material style have revealed important insights into the ethnicity of prestate societies (Sassaman 1998; Stone 2003), many analyses are stymied by the ubiquitous problem of shared material types among foraging groups (Hodder 1982; Wiessner 1983; see discussion in Wobst 1999). In many cases, while ethnographic and ethnohistoric evidence indicates the likely presence of unique group identities in the past, style-based approaches to material culture will not neatly parse these identities in the archaeological record (Croes 1997; DeCorse 1989; Hodder 1982). In fact, the "untidiness" of the material record is often considered to obscure the exploration of ethnic identities in the archaeological record (Lucy 2005:93; Shennan 1989:13; Stone 2003). For this reason, Jones (2008:327) suggests that "it cannot be assumed there is any fixed relationship between particular material types and particular identities."

By focusing on stylistic attributes, we relegate ethnicity studies to a tiny (and often fuzzy) fraction of the available hunter-gatherer archaeological record and dismiss those fundamental subsistence, artifactual, settlement, and architectural data that directly describe their everyday ways of life. The challenge of hunter-gatherer ethnicity studies lies in disentangling the functional attributes of the archaeological record from their social meanings. We must concede that the archaeological record of foraging peoples, who are intimately integrated within local ecosystems, must reflect functional and environmental realities. Yet human interactions with their environment (i.e., functional behaviors) are known to be crucial components of hunter-gatherer identities (Bird-David 1990, 1992; Condon et al. 1995; Kusimba 2005; Sassaman 1998). If we can develop a conceptual means to access the potential social meanings embedded in these "functional" datasets (i.e., to conduct normative research on nonstylistic data), we can overcome this debilitating issue.

A practice-centered approach to ethnicity provides a potential framework from which to begin this exploration. As proposed by Bentley (1987:36), group identities develop through the recognition, perhaps unconscious, of shared habitus. Defined by Bourdieu (1977), habitus represents the individually unique, and largely unconscious, collection of dispositions arising from recurring experience. These dispositions establish both how the world is conceptualized by individuals and how they act in it (Dornan 2002:305). Practices, or actions, express these dispositions and therefore directly reflect habitus (Pauketat 2001:80). Like dispositions, practices are structured by habitual experience within a social and material environment; however, practices are sometimes altered in the context of changing social and material conditions, directing new structure. Put simply, practices "are shaped by what came before and . . . give shape to what follows" (Pauketat 2001:74). The sharing of practices by individuals represents the foundation of shared identities, as Bentley (1987:32) states: "sensation[s] of ethnic affinity are founded on common life experiences that generate similar habitual dispositions." To Bourdieu (1977:164), the dispositions of habitus tend towards a correspondence with the "material conditions of existence." It follows then, that social identities develop through participating in the largely routine practices of everyday life that are exclusive to unique material and social environments (Bentley 1987:33; see also Bourdieu 1977:78).

Routines, or the habitual repetition of practices, are a key component here. Bourdieu (1977) clearly rejected the concept of intentionality, suggesting that much of everyday practice was habitual and cyclical, and therefore habitus and its dispositions were primarily the result of practices that were unconsciously routinized (Dornan 2002:307, although see Giddens 1979, 1984 for alternatives). The day-to-day, season-to-season, and year-to-year reproduction of economies, settlement patterns, technologies, and social relationships necessary to meet the demands of the local environment create a unique and cyclic "rhythm of living" (Bentley 1987:33). Since habitus is a primary structuring component of affinities, and habitus is the quintessence of shared practice, ethnic affinities can be understood to be provoked and reinforced by these shared and cyclical practices (Bentley 1987:32). This concept of ethnogenesis is sometimes called "primordialist" because it suggests that social identities are fundamental, "derived from the affective

potency of primordial attachments" (Bentley 1987:25) to people, places, class, and religion (Jones 1997:65).

In a recent article, Stone (2003:41) suggests that the primordialist (i.e., Bentley's) model "is hampered in [its] ability to explain variability in the nature of ethnic interaction," making it "the wrong way to conceptualize" the development of affinities and differences. Stone's critique largely centers on how the habitus concept minimizes the role of consciousness (intention) in the development of affinities. Along the lines of Barth (1956, 1969), she proposes that an "instrumental" examination of sociopolitical systems, sources of power, and competition for resources must be the focus in ethnic studies in prestate societies because identities are often creatively employed by agents to manipulate access to social and natural resources (Stone 2003:42). Contra Stone (2003:41), I see no reason to believe that "habitus is the wrong way to conceptualize this relationship," nor do I see it as mutually exclusive from the instrumentalist concept. In fact, Bourdieu (1977:164; see also Pauketat 2001:80) indicates that when confronted with change (as he puts it, a "mismapping" of habitus against changing material conditions), agents are forced into a difficult negotiation as they try to reproduce habitus in the new environment. This does not preclude that this negotiation could not be "improvised," or creatively structured to exploit new forms of economic and social capital. This allowance might expand the habitus approach beyond Bentley's original "primordialist" formulation, but it nevertheless provides a means to permit both primordial (unconscious) and instrumental (conscious) actions to engage in the formation and transformation of identities. If we can accept that human identities have a complex developmental history that may be evoked both primordially and instrumentally, and that both concepts are not excluded in a practice-centered approach, we come closer to a means of fully understanding ethnogenesis.

Hunter-gatherer lifeways are characterized by intimate groups of kin sharing in seasonally repeated economic and settlement behaviors on a thoroughly understood landscape. These "material" behaviors represent such a significant portion of daily shared routine in foraging societies that they must also represent a fundamental component of a shared habitus, and thus identity. From a practice perspective, differences in economic and settlement activities as they are manifested on landscapes and between groups must represent a fundamental means in which affinities (and boundaries) are constituted among hunter-gatherers (for a similar interpretation of this relationship see Kusimba 2005:347). As Sassaman (2008:93) states: "labor-action embodies histories of socially valued relations . . . that link particular people to land and to one another." Thus among foraging societies, affinities are expressed and embodied, perhaps largely unconsciously, through daily, seasonally, and yearly repeated economic and settlement practices.

Fortunately, these seasonal economic practices are abundantly reflected in the archaeological record through faunal assemblages and settlement remains. While these remains obviously reflect environmental variables, they are nevertheless linked to the social practices that created them. Consequently, "a functional or economic interpretation of a particular nonrandom distribution does not preclude an ethnic interpretation, because ethnicity may have been embedded in variation in subsistence and economy" (Jones 1997:125). Among groups of contiguous hunter-gatherers, the majority of differences in behavior and use of material culture often relate to economic and settlement (i.e., "functional") practices. The archaeological correlates of such discontinuity are relatively straightforward in the case of hunter-gatherers; contemporary, spatially segregated, and functionally unique differences in archaeofaunal and settlement remains may signify the presence of unique affinities in the archaeological record of foraging societies.

Thus, evidence for the origin of hunter-gatherer identities is to be sought in the early segregation of local and regional economic and settlement activities. Yet practices are historically contingent processes, and hence they are always limited to historical circumstance (Pauketat 2001). If habitus is continually expressed and transformed by practice, and if this alteration only occurs with reference to past practice and existing dispositions, it can only be explained through "reference to the genealogy of practices or the tradition of negotiation" (Pauketat 2001:80), in what has been termed an "historical processual" approach. In short, an historical processual approach presupposes that identities are defined by historical process; human actions at any point in this historical sequence cannot be understood fully without reference to the entire hereditary progression from the earliest archaeological traces to the historical or "modern" behavior of descendant populations. Such an historical analysis requires the integration of multiple datasets of varying complexity (see the exhaustive analyses in Pauketat 2001, 2004). The extensive and lengthy analysis that follows reflects this need for such detail and complexity; I incorporate faunal, artifactual, settlement, demographic, and architectural data to build up Mackenzie Inuit culture histories.

In summary, practice theory provides an opportunity to meaningfully interpret spatially discontinuous patterns in hunter-gatherer economies and settlement patterns along ethnic lines (Dietler and Herbich 1998). By recognizing both the "affective" and "creative" aspects of identity formation, it enables the assignment of cultural meaning to hunter-gatherer spatial (and temporal) chronicles. That is, it allows us to engage in the production of normative culture history (Pauketat 2001:74; for recent discussion see Cunningham 2003; Lyman and O'Brien 2004).

CHRONICLING MACKENZIE INUIT IDENTITIES

If we accept a dualistic primordial *and* instrumental vision of ethnicity, then the focus of identity studies must be to document both the resource and power structures that form the material and cultural environments as well as the daily routines that are reproduced in those environments. As described above, an historical processual approach to the Mackenzie Inuit archaeological record will provide a framework for such an analysis. This analysis begins by documenting a suite of beginning and ending reference events (a lineage of practices and negotiations), which describe the historical environment within which Mackenzie Inuit ethnogeneses occurred. This is followed by documenting the differences in daily economic routines that developed within that environment from a diachronic perspective. Constructing a sequence of historical reference events is relatively straightforward in this instance. The Mackenzie Inuit archaeological record is bracketed on one end by a rich ethnohistoric record produced during the late nineteenth and early twentieth centuries and on the other by a singular cultural event: the migration of ancestral Thule Inuit into an uninhabited western Canadian Arctic, ca. AD 1250 (Friesen 2000b; Friesen and Arnold 2008; McGhee 2000; Morrison 1997b; Yorga 1980).

THE ETHNOHISTORIC RECORD

If we adopt the theoretical position that ethnic groups develop because of exclusive historical contingencies (Jones 1997:13), the ethnographic record that describes contemporary ethnic groups can provide evidence of the unique history of human interactions with the natural and cultural landscape. Thus we begin our investigation of Mackenzie Inuit ethnicities where, in many respects, their chronicle comes to an end—the nineteenth century AD.

The Mackenzie Inuit occupied the Yukon coastal plain and outer Mackenzie Delta region between what is now Barter Island, in northern Alaska, and Cape Parry, east of the Bathurst Peninsula (Fig. 1). Located at the border of the boreal and arctic ecosystems, and influenced by one of the north's largest river deltas, the Mackenzie Delta region is an ecological crossroads where multiple terrestrial and marine habitats meet and interact. In southern latitudes, deltas typically support a diverse resident fauna, but in arctic areas they also attract vast numbers of migratory taxa (Martell et al. 1984:1). These migratory taxa are gregarious and congregate in large numbers at specific locations on an annual or semiannual basis. This leads to an immensely productive but spatially and temporally heterogeneous resource distribution (Betts 2005a).

During the eighteenth and nineteenth centuries, the Mackenzie Delta was first visited by Euro-American travelers, explorers, and missionaries who directly observed and carefully recorded "traditional" Mackenzie Inuit culture (Armstrong 1857; Franklin 1828; Macfarlane 1891; Mackenzie 1970; M'Clure 1969; Miertsching 1967; Pétitot 1876, 1887; Pullen 1979; Richardson 1851; see also Friesen 2004). This literature has been supplemented by voluminous ethnohistoric reconstructions produced during the early twentieth century (Stefansson 1913, 1919, 2001) and Inuvialuit autobiographies and oral histories (Alunik 1998; Hart 1997, 2001; Nagy 1994; Nuligak 1966; see also Alunik et al. 2003).

Before Euro-American contact, the Mackenzie Inuit were subdivided into eight socioterritorial (after Burch 1998) or ethnic groups. Based largely on the records of Stefansson (1913, 1919) and following Usher (1971), McGhee (1974) documented five Mackenzie Inuit groups (Fig. 2), including, from west to east, (1) the Qikiqtaryungmiut, who occupied the area between Shingle Point and Barter Island; (2) the Kuukpangmiut, who occupied all of Richards Island and the western delta proper; (3) the Kitigaaryungmiut, who inhabited the territory between the Mackenzie River East Channel and the Eskimo Lakes; (4) the Nuvugarmiut who occupied the majority of the Tuktoyaktuk Peninsula and northern Eskimo Lakes; and finally, (5) the Avvarmiut, who lived in the Cape Bathurst area, east of the Kugaluk River. Oral histories (Arnold 1990) and ethnohistoric accounts (Pétitot 1876; Stefansson 1913, 1919, 2001) also describe the presence of two additional Mackenzie Inuit societies: the Imaryungmiut (also known as the Inuktuyuut), who inhabited the central Eskimo Lakes area (Morrison and

Arnold 1994), and the Igluyuaryungmiut, the easternmost Mackenzie Inuit group, who inhabited much of the Franklin Bay coast west of Cape Parry, up to and including the Horton River on the Bathurst Peninsula (Morrison 1990). Brief and enigmatic references (Pétitot 1876; see also Savoie 1970:131, 215; Stefansson 2001:115) also describe Avvarmiut territory as being divided between two groups known as the Kragmaliveit (Avvarmiut whose main winter village was on Baillie Island) and the Kragmalit (a new group who lived near the Anderson River). The Kragmalit appear to have developed after the area had been substantially transformed by Euro-American contact in the 1900s, and were likely short-lived, a situation congruent with their unusual name (i.e., the lacking a traditional "-miut" suffix) and sparse references to them in oral history.

In the early contact period these territories functioned as the tenure of autonomous social and economic units that maintained a protected border while retaining crucial trading relationships with other territories in the region (McGhee 1974; Morrison 1990, 1997b). Each group derived its name from a centrally located winter village composed of up to thirty sod and driftwood houses (see Fig. 2), collectively sheltering as many as a thousand individuals (Morrison 1997b). These winter villages could be inhabited from October to March (McGhee 1974; Savoie 1970), when their residents survived largely on stored resources. Importantly, these locations were also occupied in the warm season, when migratory terrestrial, marine, and avian fauna were intensively exploited and stored for winter consumption (Betts 2005a). While Mackenzie Inuit groups did travel seasonally in search of game (McGhee 1974; Nagy 1990; and see descriptions below), and smaller, satellite winter villages within each territory are known (e.g. Stefansson 1919), it is clear that the majority of the year was spent in and around their main winter villages

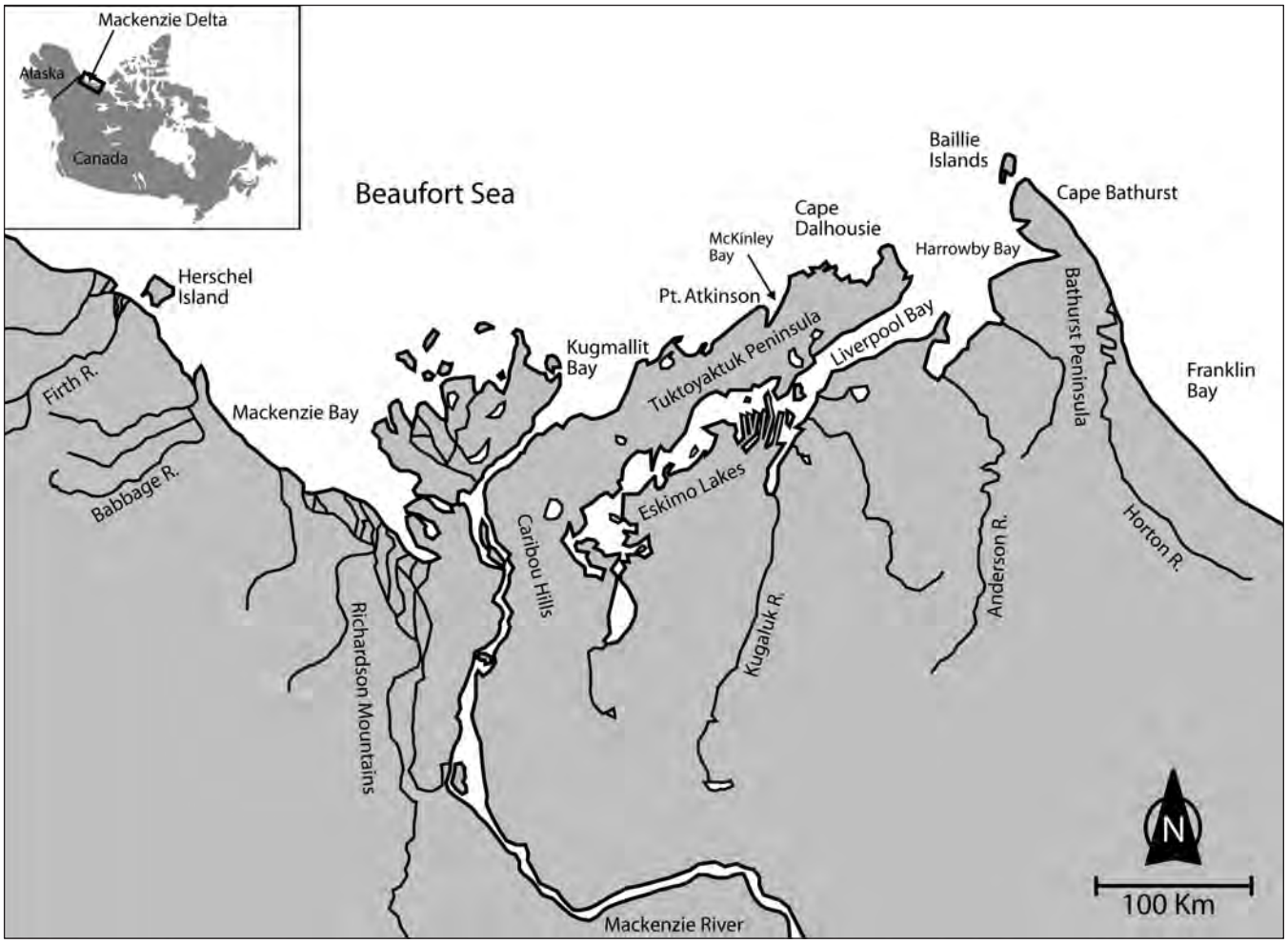

Figure 1: The Mackenzie Delta region (after Betts 2008).

(McGhee 1974:11; see also Richardson 1851:257). The use of the main winter village name as the root of each group name suggests that these villages were iconographically situated in sentiments of identity.

The Mackenzie Inuit were the most territorial foragers in the Canadian Arctic (Morrison 1988:92–93). Ethnohistoric accounts specifically describe hostile interactions between the Qikiqtaryungmiut, Nuvugarmiut, Kitigaaryungmiut, and other territorial groups, which included theft, raiding, dueling, murder, and even warfare (Alunik et al. 2003; Arnold 1990; Morrison and Arnold 1994; Stefansson 2001). Territorial boundaries were well understood, and crossing them without permission had serious consequences (McGhee 1974:10–11; Morrison 1994:318; Morrison and Arnold 1994:124; Richardson 1851:257; Stefansson 2001:109). Undoubtedly then, boundary configuration and maintenance was an important component of group affinities in the Mackenzie Delta region. In fact, the ethnohistorically described territories, their boundaries, and main winter villages embody a history of spatial negotiations between peoples and landscapes. Building up an understanding of changes in the distribution of prehistoric Mackenzie Inuit settlements through time may lead to insights about Mackenzie Inuit ethnogeneses.

Consistent with the generative relationship between hunter-gatherer economic practices and identity, the ethnohistoric record documents compelling economic differences between nineteenth-century Mackenzie Inuit societies. The Nuvugarmiut lived on the sea ice during the spring months, where they hunted seals. In the summer, they moved to the interior of the Tuktoyaktuk Peninsula to hunt caribou and waterfowl (Richardson 1851:257). During August and September, they congregated at Nuvurak (their main winter village) for a productive bowhead whale hunt (M'Clure 1969:87). The ethnohistoric record does not describe the Avvarmiut economic round in detail, although it was likely analogous to that of their bowhead whaling cousins at Nuvurak (McGhee 1974:18; see also Richardson 1851:267).

Kuukpangmiut and Kitigaaryungmiut groups also shared similar economies; both took part in a large, but

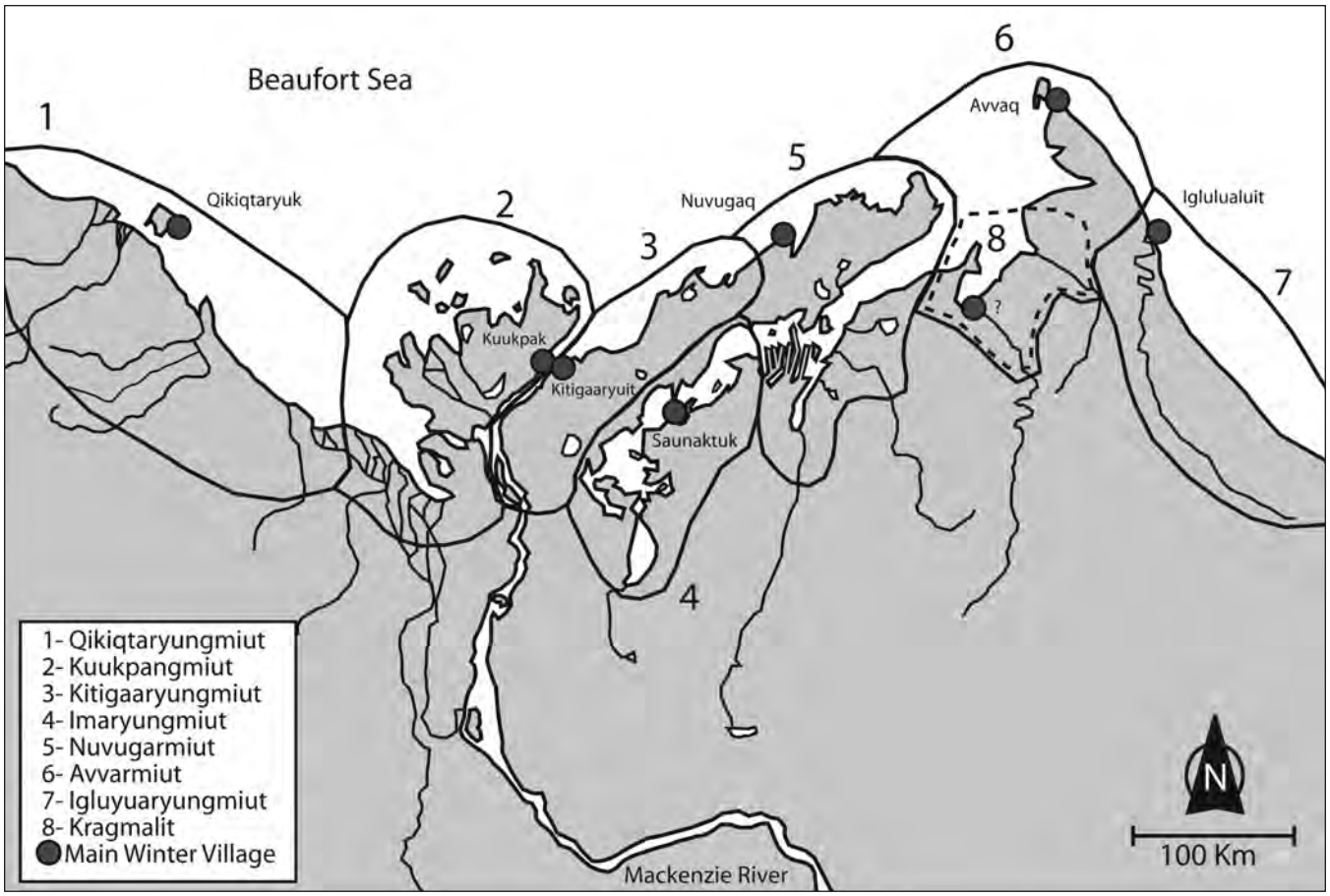

Figure 2: Mackenzie Inuit socioterritories and main winter villages (after Betts 2008).

from all accounts separate, beluga whale hunt in Kugmallit Bay, at the mouth of the Mackenzie River, from July to late August (Nuligak 1966). After this hunt, they both moved to separate fall caribou hunting and fishing stations in the interior. In October, they returned to their beluga whaling villages, Kitigaaryuit and Kuukpak, which they inhabited until January when they again dispersed to interior fishing locations (McGhee 1974).

Like other coastal groups, the Qikiqtaryungmiut also conducted a bowhead whale hunt, but this hunt was focused on the eastward bowhead migration, which occurred shortly after the land-fast ice fractured in July and early August (Franklin 1828:126). This contrasts with the Nuvugarmiut and Avvarmiut groups, who typically pursued bowheads during their westward return migration in the late summer and early fall. Franklin (1928:126) records that the Qikiqtaryungmiut fished and hunted caribou along the Beaufort coast in late spring or early summer, while they waited for the ice to break up. Stefansson documented that they set nets along the coast during the open water season, for both sealing and fishing (Stefansson 1919:186, 1923:74).

Similarly, it is known that the residents of Iglulualuit used nets to catch seals in the silty effluent of the Horton River during the warm season (Stefansson 1919:348), although little else is known about their economic pursuits. Unfortunately, even less is known about the Imaryungmiut economic round, although oral history indicates a focus on the rich fish and waterfowl aggregations of the Eskimo Lakes region (Arnold 1990; Morrison and Arnold 1994).

I have previously (Betts 2005a) documented the near-perfect integration of this socioterritorial economic system with the local environment. As discussed previously, the Mackenzie Delta region represents an extremely diverse and productive but spatially segregated ecosystem. Mackenzie Inuit socioterritories were spatially configured in response to this heterogeneity; most winter villages were located at ecological hotspots, or nodes, where resource aggregations occurred throughout the year. Each node provided access to large terrestrial or sea mammal aggregations as well as nesting or staging migratory waterfowl and spawning fish. Fishing was obviously important, as the boundary configuration of territories seems to have been carefully positioned to provide sufficient access to estuarine environments and spawning rivers (Betts 2005a:Fig. 6).

This economic diversity is among the most prominent societal differences recorded between Mackenzie Inuit groups. There is little evidence to indicate that any stylistic differences were present in material culture between the different groups. House forms were extremely variable in the region, but there is little evidence to suggest that there were major differences in architectural design between territories. While social and ideological differences may have been prominent, the only recorded instance of such variability was the observance of different taboos governing the cooking of caribou and bird remains between the Nuvugarmiut and Kitigaaryungmiut (Stefansson 2001). As limited as this evidence is, it nevertheless reinforces the link between historic Mackenzie Inuit foodways and group identity. Nevertheless, several crucial economic similarities exist between groups that must be explained.

THE THULE MIGRATION

All Mackenzie Inuit groups are descended from ancestral Thule who immigrated into an uninhabited western Canadian Arctic in the thirteenth century AD (Friesen and Arnold 2008; McGhee 2000). This event, and its underlying socioeconomic motivations, marks *how* the Mackenzie Inuit chronicle begins; any interpretation of Mackenzie Inuit history is impotent without referencing it.

The Thule Inuit are sometimes viewed as both econophiles and technophiles (Maxwell 1985; Taylor 1966), a kind of "superculture" that enjoyed a comprehensive adaptation to a diverse range of arctic environments and from which all subsequent historic Inuit adaptations were pared (Kankaanpää 1996). While viewing the Thule Inuit adaptation as a techno-economic panacea is an exaggeration, the varied economic profile of Early Thule settlements in Alaska and the Canadian Arctic indicate these people were clearly capable of multiple subsistence specializations (Arnold 1986; Friesen 2000a; McCullough 1989; McGhee 1984b; Stanford 1976; Yorga 1980). Such flexibility served them well when exploring and adapting to the unfamiliar environments of the east, and was likely an important prerequisite for the migration.

Also crucial to Early Thule economic lifeways is the complex social environment in which Thule, and its presumed progenitor Birnirk, developed. During the period ca. AD 500–900, other contemporaneous north Alaska cultures such as Ipiutak and Punuk exhibited increasing territoriality as they competed for control of ecological nodes and the potential wealth they provided (Mason 1998). This technological, economic, and social background characterizes the human environment in which Thule cul-

ture developed. The Thule migration, and the lifeways of its participants, must be viewed as a fundamental cultural legacy that permeates all subsequent Mackenzie Inuit history, including the development of Mackenzie Inuit ethnic groups. As Friesen (2000a:216) states: "Thule people arrived in the eastern Arctic with a social system tuned to inter-group competition and territorial defense, based on their origins in Northwest Alaska." The largely uninhabited east provided a prospect for wealth, prestige, and perhaps importantly, peace and security that was in short supply in the west (Friesen 2000b; Friesen and Arnold 2008; Gulløv and McGhee 2006; Mason 1998; McGhee 1969/1970, 1984a; Morrison 1999; Whitridge 1999).

If effective culture-histories are to be constructed for the Mackenzie Inuit, the analysis must ultimately be diachronic in focus. As part of this diachronic perspective, this paper adopts a broad chronological framework which divides the prehistory of the Mackenzie Delta region into three chronocultural periods: (1) Thule, from ca. AD 1250 to AD 1400; (2) Mackenzie Inuit, from ca. AD 1400 to AD 1850; and (3) Early Historic, from ca. AD 1850 to AD 1890 (1889 marked the establishment of a permanent Euro-American whaling settlement on Herschel Island). These entities designate specific archaeological "cultures" broadly recognized across the western Arctic, and are more or less consistent with less formal chronological schemes adopted elsewhere (Arnold 1994; Betts 2008; Betts and Friesen 2004, 2006; Friesen 1995; McGhee 1974; Morrison 1997b). The framework is based largely on diachronic shifts in material culture concurrent with well-documented changes in northwestern Alaska (Ford 1959; Giddings 1952; Stanford 1976; for discussion see Betts 2004, 2008).

DEFINING MACKENZIE INUIT ECONOMIES

If daily economic routines are fundamental to building affinities among hunter-gatherers, then differences in these routines embedded in the Mackenzie Inuit faunal record should signify the presence of unique groups in prehistory. The crucial patternings necessary to explore identity (and all archaeological explorations; see Binford 2001:48; Hodder 1991:143) are patterns of similarity and difference in spatially—and chronologically—ordered archaeological data. Bourdieu's (1984) analysis of contemporary French practice in *Distinction* proves a useful guide for carrying out such analyses. In his groundbreaking study, Bourdieu (1984) used multivariate statistical techniques, particularly correspondence analysis, to empirically track relationships between class conditions and styles of clothing, art, music, and food in late-twentieth-century French society. Archaeological materials (in this instance faunal remains) can be organized similarly to the trait lists compiled by Bourdieu, and an analogous graphical catalogue of dispositions can be created (Whitridge 2001, 2004).

Correspondence analysis (CA) reduces the variability in a data matrix to a low number of dimensions so as to permit a visual interpretation of relationships between variables. The output produces a two- or three-dimensional "plot" of similarities and differences between cases in such a way that those cases (in this case faunal assemblages) with similar variable attributes "cluster" spatially. CA maps can also indicate relationships between row and column variables when these are plotted simultaneously. As demonstrated by Bourdieu, the graphical output of CA can be used to define the shared aspects of practice within groups, while at the same time highlighting the different "rhythm[s] of living" between groups (Bentley 1987:33). Below, correspondence analysis is used to trace Mackenzie Inuit identity relationships embedded in faunal remains.

Here the analysis is conducted on the percent representation of the number of identified specimens, or NISPs. In archaeology, CA is usually conducted on untransformed count data, but there is no computational reason why this must be so; as Greenacre (1994:8) states, "since CA actually displays the relative frequencies in either the rows or columns (or both), it follows that the method can handle data which are already in percentage form." In fact, with very large datasets composed of multiple contexts, there is a compelling argument for using percentage data exclusively. When comparing contexts with very large and small sample sizes relative to each other (see description of the dataset below), the directionality of the CA can be improperly affected by variables with the highest individual cell counts (typically those with the largest sample size). Transforming the count data to percentages will tend to correct for any sample size effect that can potentially bias the CA output (Greenacre 1994:9–10; see also Baxter 1994:65 for a similar discussion involving principal components analysis).

FAUNAL DATABASE AND ANALYSIS

Table 1 (see also Fig. 3) describes the faunal database used in this report. This is a high-resolution dataset representing twenty-three distinct occupational contexts from nineteen sites. Chronologically, it spans the entire Neoeskimo period and geographically it represents all Mackenzie Inuit territories. All samples are from permafrost deposits that exhibited excellent preservation and that generally were subjected to similar depositional and taphonomic histories (Betts 2004, 2005a, 2008; Betts and Friesen 2004, 2006). The database is composed of assemblages from contexts associated with both winter semisubterranean dwellings and warm season open-air campsites. It should be noted that many of the winter house contexts actually derive from the same main winter villages described in the ethnographic record (compare Figs. 2 and 3); however, where they do not, appropriate analogues exist and will be discussed on a case-by-case basis. All contexts were excavated by trowel and screened, although mesh sizes sometimes varied (between 8 mm and 6 mm mesh). Differences in mesh sizes can affect comparability of zooarchaeological assemblages dominated by fish and bird taxa, but given the large average specimen (element) sizes of species in the region, all assemblages are considered to be comparable (see discussion in Betts 2008:95–96). Sample sizes are universally greater than 750 identified specimens, a size considered adequate for determining relative abundances in permafrost assemblages (see Betts 2004, 2005a, 2008; Whitridge 2001). Further details of the faunal frequencies, contexts, collection methods, and potential comparability issues are meticulously documented elsewhere (Betts 2004:126, 2005a:62–64, 2005b, 2008) and are not repeated here.

As noted previously, it is the replication of shared economic routines in particular places that creates affinities among hunter-gatherer groups. Our exploration of economic patterning therefore must proceed in tandem with an investigation of settlement patterns in the region. Furthermore, it should be noted that in the discussion that follows, the potential for storage to generate cold-season (winter house) assemblages dominated by warm-season resources (e.g., waterfowl, whales) is considered to be implicit. Because these warm-season economic activities are an important component of economic routines, the fact that winter houses represent a palimpsest of year-round activities is beneficial to the following analysis.

Fig. 4 displays the graphical output of a correspondence analysis of the percent NISP values for Neoeskimo faunal assemblages in the contexts in the Mackenzie Delta region (following analysis in Betts 2008). As described in the figure, more than 50% of the total inertia (variability) is accounted for by this solution, and the simultaneously broad dispersion and strong clustering in the graph indicates significant economic differences but persistent similarities among certain contexts. The first dimension of the plot is dominated by the opposition between small seals (*Phoca* and *Pusa* genera) on the right and beluga whales (*Delphinapterus leucas*) and caribou (*Rangifer tarandus*) on the left. The second dimension is dominated by beluga whales and burbot (*Lota lota*) at the top and caribou at the bottom. The central left portion of the graph indicates assemblages dominated by waterfowl and fish from the Coregoninae subfamily. The dispersion of the plot (where many cases are located near the margins) indicates that certain cell counts contain very high values, a pattern suggesting that many of the cases are characterized by very uneven faunal assemblages (i.e., those dominated by one or a few taxa). Such assemblages are typically associated with a specialized, or focal, economic adaptation (e.g. Lyman 1991; see Betts 2005a, 2008; Betts and Friesen 2004, 2006). In summary, five distinct procurement "options" are suggested, dominated respectively by (1) small seals, (2) beluga whales and burbot, (3) Salmonidae family fish and waterfowl, (4) caribou, and (5) a more generalized strategy of broad composition (see Fig. 4).

Comparing the plot to the spatial distribution of these contexts (Figs. 3 and 4, see also Table 1), and their association with ethnohistorically described Mackenzie Inuit groups (disregarding chronological change for the moment), it is clear that these economic routines are spatially patterned, and that they are generally consistent with the economic pattern described in the ethnographic record. The Iglulualuit contexts at the far left of the plot represent winter economies heavily dominated by small seals, clearly indicating a specialized winter sealing economy among the Igluyuaryungmiut. A similar faunal signature also characterizes Washout House 1 and 3, indicating the Qikiqtaryungmiut winter economies were dominated by small seals. The Kuukpangmiut faunal assemblages at the top left of the plot are dominated by beluga whales. Imaryungmiut economies, as evidenced by the warm-season Gutchiak and cold-season Saunaktuk sites, were focused on interior fish and bird resources, with a lesser contribution from caribou. Avvarmiut winter economies are not represented, but the warm-season sites of Bison Skull East and West indicate a heavy reliance on

Table 1: Overview of contexts used in correspondence analysis. See Betts (2005a, 2008) for complete faunal data.

Site	Cultural Area	Excavated Context	Context Type	Calibrated ^{14}C Range, AD (1 sigma, from ungulate)	Inferred Period/Date	Sample Size (NISP)	Sources
Washout	Qikiqtaryungmiut	House 1	Winter House	No data from terrestrial sample	Thule ca. AD 1000–AD 1400, based on artifact styles	1,243	Friesen and Hunston 1994; Salter 1978; Stuart-MacAdam 1978; Yorga 1980
		House 3	Winter House	1467–1649	Mackenzie Inuit, ca. AD 1450–1650	1,105	Friesen 1991, 1992, 1995
Pauline Cove	Qikiqtaryungmiut	House 1	Winter House	No data from terrestrial sample	Early Historic, likely dates to ca. AD 1870–1890, based on artifact styles	1,384	Friesen 1991, 1992, 1995
		House 5	Winter House	No data from terrestrial sample	Early Historic, likely dates to ca. AD 1890, based on artifact styles	840	Friesen 1991, 1992, 1995
		House 7	Winter House	Not reported	Mackenzie Inuit, ca. AD 1400–1850	1,750	Friesen 1991, 1992, 1995
Avadlek Spit	Qikiqtaryungmiut	House 1	Winter House	1685–1950	Mackenzie Inuit, ca. AD 1650–1850	1,782	Betts 2000; Friesen 1992
Trail River	Qikiqtaryungmiut	House 1	Summer Tent	1481–modern	Mackenzie Inuit, ca. AD 1500–1850	1,673	Nagy 1990
Kuukpak	Kuukpangmiut	House 1, Area 1	Winter House	1442–1642	Mackenzie Inuit, ca. AD 1450–1650	7,341	Arnold 1994; Friesen and Arnold 1995a, 1995b
		Midden, Area 2	Winter House	1302–1649	Mackenzie Inuit, ca. AD 1400–1650	28,615	Arnold 1992, 1994; Balkwill and Rick 1994; Saxberg 1989
Cache Point	Kuukpangmiut	House 8	Winter House	1287–1316	Thule, ca. AD 1300–1350	3,756	Friesen 2009; Betts and Friesen 2004, 2006
		House 6	Winter House	1161–1279	Thule, ca. AD 1150–1300	2,802	Friesen 2009; Betts and Friesen 2004, 2006
Pond	Kuukpangmiut	House 1	Winter House	1302–1406	Thule, ca. AD 1350–1400	4,969	Arnold 1994; Betts and Friesen 2004, 2006; Meadows pers. comm.
		House 2	Winter House	1323–1486	Thule, ca. AD 1350–1400	3,329	Arnold 1994; Betts and Friesen 2004, 2006; Lewis and Reeves 1993
Kitigaaryuit	Kitigaaryungmiut	M2, M3, M4a, M4, Old House	Winter House	No data from terrestrial sample	Mackenzie Inuit, ca. AD 1400–1880, based on artifact styles	Not included in faunal analysis	McGhee 1974

(continued on next page)

Table 1 (continued from previous page)

Site	Cultural Area	Excavated Context	Context Type	Calibrated ^{14}C Range, AD (1 sigma, from ungulate)	Inferred Period/Date	Sample Size (NISP)	Sources
Radio Creek	Kitigaaryungmiut	House	Winter House	No data from terrestrial sample	Thule ca. AD 1000–1400, based on artifact styles	Not included in faunal analysis	McGhee 1974
Cache	Kitigaaryungmiut	Midden	Warm Season Hut	Not dated	Mackenzie Inuit, based on artifact styles	1,475	Swayze 1994
Pokiak	Unknown	House 1	Winter House	Not dated	Early Historic, likely dates to ca. AD 1870, based on artifact styles	2,647	Morrison 2000; Morrison and Whitridge 1997
Saunaktuk	Imaryungmiut	House 1	Winter House	1325–1453	Mackenzie Inuit, likely dates to ca. AD 1400, based on artifact styles	5,803	Arnold 1990; Morrison and Arnold 1994
Gutchiak	Imaryungmiut	Context 1	Warm Season Procurement/ Processing Site	<100	Mackenzie Inuit, likely occupied from ca. AD 1400 and later, based on artifact styles	31,399	Morrison 1994, 2000
McKinley Bay	Nuvugarmiut	House 1	Winter House	1433–1659	Mackenzie Inuit, ca. AD 1450–1650	1,471	Arnold 1992; Betts 2005b
		House 2	Winter House	1521–1660	Mackenzie Inuit, ca. AD 1500–1650	2,029	Betts 2005b
Kugaluk	Nuvugarmiut	House 1	Winter House	No data from terrestrial sample	Early Historic, likely dates to ca. AD 1850–1875, based on artifact styles	27,544	Morrison 1988
Bison Skull	Avvarmiut	East	Warm Season Procurement Site	1522–1659	Mackenzie Inuit, ca. AD 1500–1650	826	Morrison 1997a
		West	Warm Season Procurement Site	modern	Early Historic, likely dates to AD 1850–1900, based on artifact styles	757	Morrison 1997a
Rita-Claire	Avvarmiut		Warm Season Procurement Site	1467–modern	Mackenzie Inuit/Early Historic transition	5,541	Morrison 1997a
Barry	Kragmalit	House 1	Winter House	Not reported	Early Historic, based on artifact styles	6,282	Morrison 2000; Morrison and Whitridge 1997
Iglulualuit	Igluyuaryungmiut	House 11	Winter House	1284–1811	Mackenzie Inuit, ca. AD 1400–1800, based on artifact styles	1,706	Morrison 1990
		House 20	Winter House	1291–1947	Mackenzie Inuit, ca. AD 1400–1850, based on artifact styles	1,867	Morrison 1990

caribou hunting, similar to the ethnohistoric description of Nuvugarmiut summer activities (see above).

Finally, the cluster composed of the Nuvugarmiut site McKinley Bay and the Qikiqtaryungmiut sites Avadlek Spit and Pauline Cove represent a generalized winter procurement adaptation, unique among the very specialized economies displayed by the plot. I have speculated, considering the ethnographic evidence for bowhead whaling by the Nuvugarmiut and Qikiqtaryungmiut, that this generalized economy is actually one underwritten by specialized bowhead whale procurement (Betts 2005a, 2008). In this situation, extreme size-sorting and other taphonomic processes associated with the processing of whale carcasses resulted in a dearth of bowhead bone, skewing the faunal signature in these assemblages. In effect, the removal of this focal taxon from the archaeological record resulted in a more "even" and generalized faunal signature.

In sum, Fig. 4 indicates that many of the specialized economies described in the ethnohistoric record existed, in the same locations (compare Fig. 2 with Fig. 3), in the prehistoric period. However, the plot adds considerable resolution to the relatively shallow descriptions of local economies in the ethnohistoric record. For example, the analysis displays a dual orientation towards both sealing and bowhead whaling for the Qikiqtaryungmiut contexts of Washout, Pauline Cove, and Avadlek Spit (see discussion below). Also, despite the importance given to fish in the ethnohistoric record, fish are almost completely absent from well-screened Iglulualuit faunal assemblages. In contrast, the East Channel sites of Cache Point House 6 and House 8 reflect cold-season contexts heavily dominated by burbot. Other contexts, such as Saunaktuk and Gutchiak, are characterized by their heavy reliance on coregonids (whitefish and ciscoe) and Salmoninae subfamily fish (trout and char).

Further refinements to the ethnographic model are also suggested. The Avvarmiut Bison Skull East and Rita-Claire sites and the Qikiqtaryungmiut Trail River site,

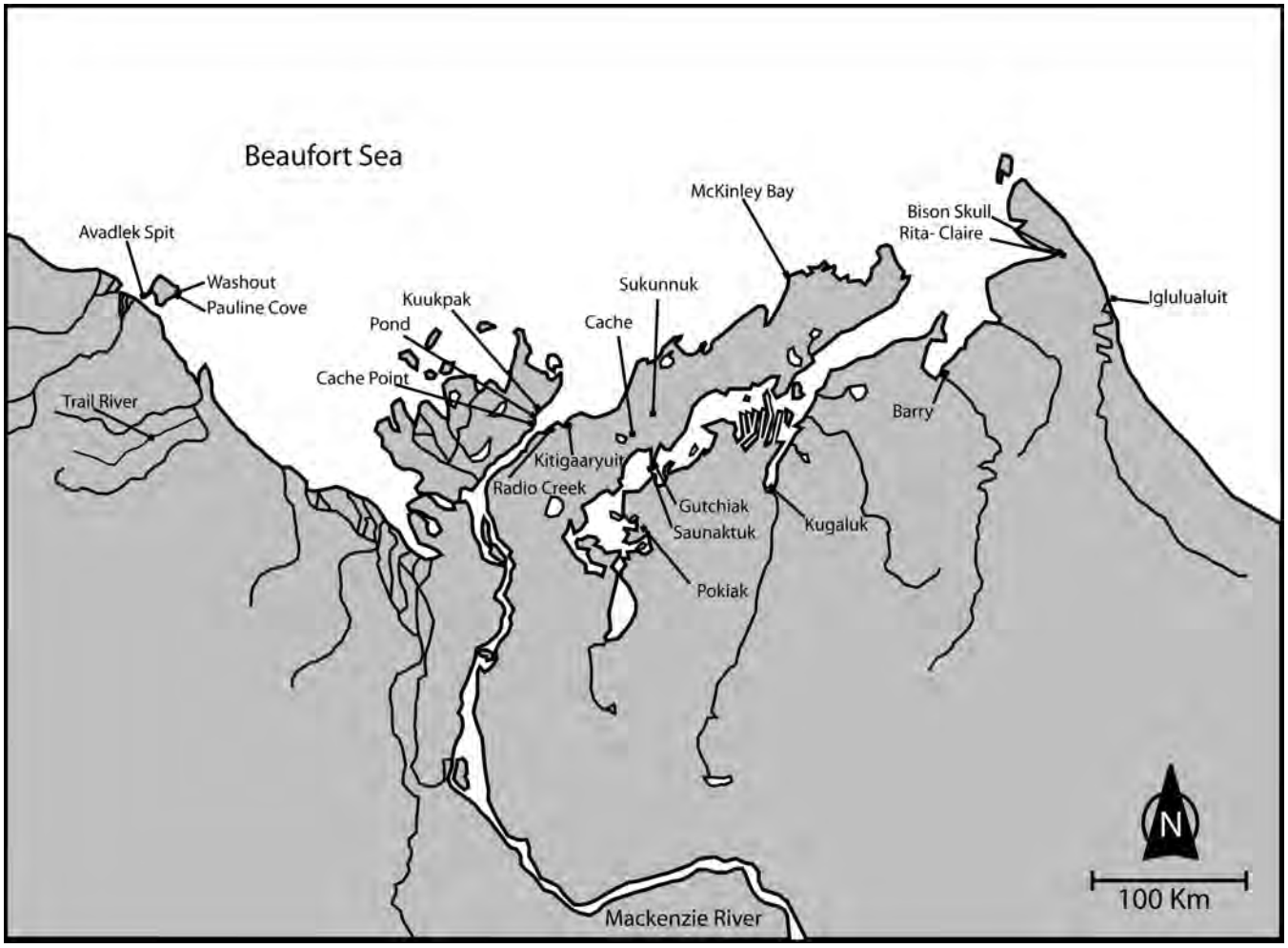

Figure 3: Location of sites mentioned in text (after Betts 2008).

all warm-season campsites, represent economies heavily dominated by caribou and migratory waterfowl, suggesting an adaptation similar to the coastal Nuvugarmiut in the warm season. Yet in contrast to the ethnohistoric record, the Qikiqtaryungmiut winter-house faunal assemblages indicate both a bowhead whaling (Avadlek Spit, Pauline Cove House 1) and sealing (Washout, Pauline Cove House 5) specialization. One possible explanation for this dual pattern is that, season to season, the Qikiqtaryungmiut may have vacillated between a focus on bowhead whales and seals, depending on resource availability, creating two unique faunal signatures (Betts 2005a). Interestingly, abundant baleen and whale bone in the Washout House 1 contexts suggest the exploitation of bowhead whales, despite the seal-dominated faunal profile (Yorga 1980). However, the success of this hunt may have been unpredictable, a result of uncertainty associated with a bowhead hunt, which relied on highly variable spring ice leads (see discussion above). In contrast, the Nuvugarmiut and Avvarmiut instead focused on a late summer/fall open water hunt, which may have provided somewhat less uncertainty. Given the available archaeological and ethnographic evidence, the Avvarmiut and Nuvugarmiut economies appear very similar, both grounded in a productive open-water bowhead hunt, supplemented by warm-season caribou hunting. In good years with a stable lead system, Qikiqtaryungmiut subsistence was likely very similar, although the unreliability of spring leads may have forced a reliance on sealing to fill in the shortfall (likely manifested as intensive sealing during the following winter).

Moving further into the interior, the cluster composed of the cold-season Saunaktuk context and the

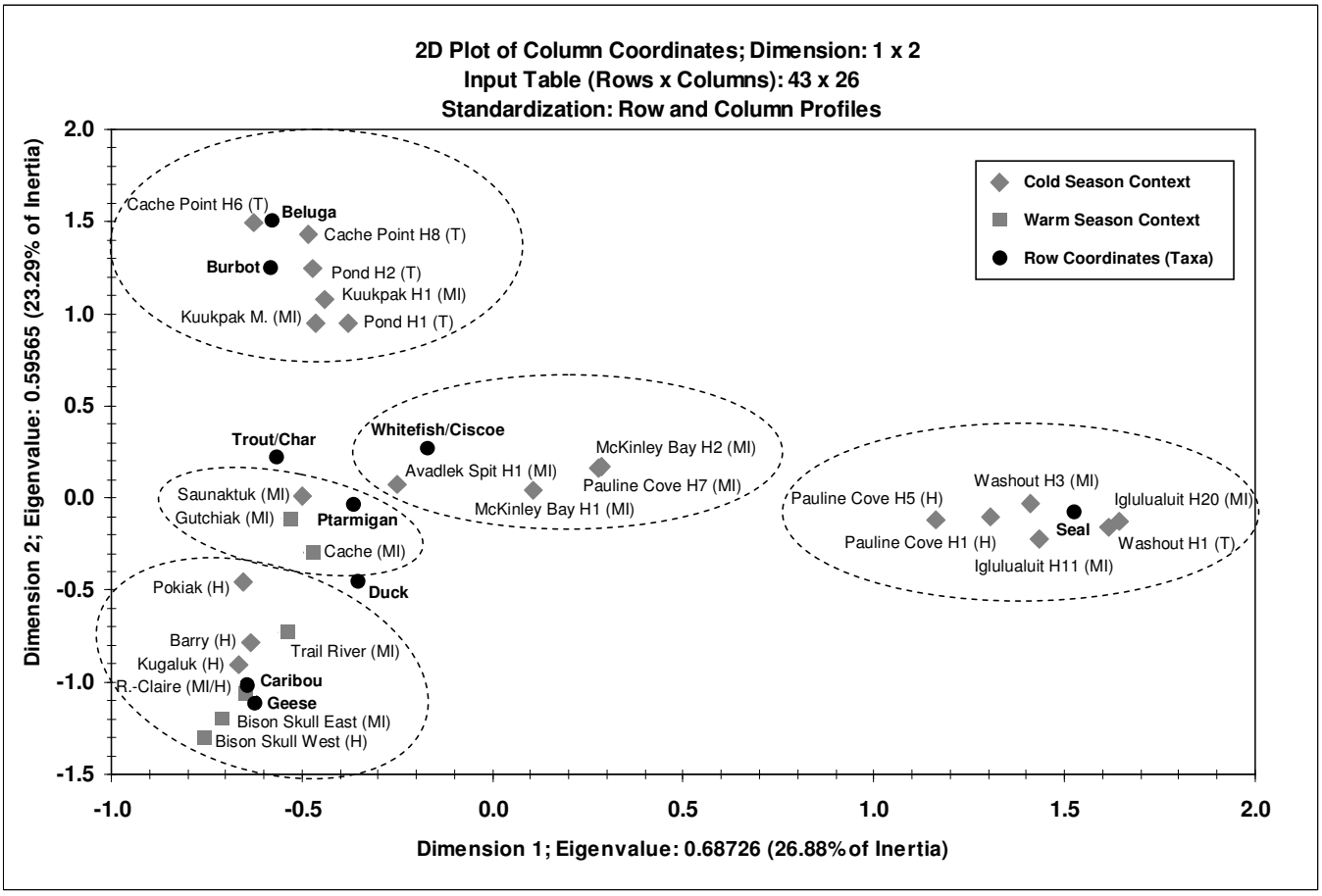

Figure 4: Correspondence analysis (% NISP) on faunal assemblages from the Mackenzie Delta region. Archaeological contexts have been coded with an associated time period (T = Thule, MI = Mackenzie Inuit, H = Historic). Dashed lines enclose contexts with similar faunal assemblages, representing five different procurement "options." All archaeological contexts (columns) have been plotted; however, only row variables (taxa) with relative inertias greater than 0.05 (5%) have been displayed. Relative inertia can be thought of as the proportion (out of 1) of the variability in the plot accounted for by a particular taxon.

warm-season Gutchiak and Cache contexts is intriguing because it indicates distinct similarities between warm- and cold-season procurement; Salmoninae subfamily fish (char and trout), coregonids, ptarmigan, and waterfowl heavily dominate all three faunal assemblages. This suggests: (1) that Imaryungmiut (Gutchiak and Saunaktuk) specialized birding and fishing economy changed very little on a seasonal basis, (2) that it shared aspects with Kitigaaryungmiut (Cache) warm-season activities, and (3) that Imaryungmiut (birding- and fishing-focused) warm-season activities contrasted significantly with those of the Qikiqtaryungmiut and Avvarmiut (which were caribou-focused).

The latter contrast obviously also applies to the Kitigaaryungmiut Cache site, whose fish- and bird-dominated assemblages are strikingly different from the caribou-dominated warm-season assemblages recovered from the Avvarmiut (Bison Skull and Rita-Claire) and Qikiqtaryungmiut (Trail River) sites. It is probable that Kuukpangmiut warm-season activities were generally similar to those noted at Cache (McGhee 1974:12), and therefore, as might be expected given their proximity, Kuukpangmiut and Kitigaaryungmiut economies were likely nearly identical, if still spatially segregated.

Finally, in contrast to the other coastal settlements, the faunal remains from Iglulualuit indicate only a heavy reliance on seals. While it is possible that the Igluyuaryungmiut also hunted bowhead whales, given the presence of bowhead bone in Iglulualuit houses (Morrison 1990:16), the dominance of seals may indicate that whaling occurred at a very low, perhaps only opportunistic, level at Iglulualuit. Regardless, the site's economic signature stands in stark contrast to those of the more advantageous hunting promontories further west.

Looking at the totality of ethnographic and archaeological evidence, the picture is one of extreme economic and settlement heterogeneity for nearly all territories. While some groups were relatively mobile during the warm season, traveling from interior fishing, birding, and caribou hunting grounds back to coastal whaling and sealing locations, others, such as the Imaryungmiut, may have been relatively sedentary with only a few short movements over the entire year (Morrison 2000; Morrison and Arnold 1994). Even among groups who shared many aspects of their economic round, such as the coastal bowhead whaling groups, there were significant differences in the scheduling and success rate of procurement, which is well-reflected in the available faunal assemblages. In total, therefore, it is likely that the seasonal economic routine was substantially different between most Mackenzie Inuit groups, a pattern that was ripe for the ethnogeneses of different Mackenzie Inuit societies.

Yet, several puzzling economic similarities remain to be explained, which do not fit neatly within a primordialist explanation. For example, the Kuukpangmiut and Kitigaaryungmiut, through their sharing of the same ecological niche on the East Channel of the Mackenzie River, practiced a virtually identical economic and settlement system, centered on a large summer beluga hunt (Betts and Friesen 2006; McGhee 1974). While no Kitigaaryungmiut winter houses were included in the above analysis, field analyzed materials from Kitigaaryuit (McGhee 1974:34–35) are beluga dominated, suggesting an economy that was similar to Kuukpak House 1. However, despite shared economic and settlement routines, ethnohistoric records clearly document that these groups considered themselves to be distinct and even engaged in ritualistic warfare (Stefansson 2001:109–110). Other similarities between economic and settlement strategies, such as occurred between the Nuvugarmiut and Avvarmiut, are also potentially significant. Given the similarities of shared practice at these locations, which should have engendered affinities, how did these separate identities develop? As I will explain later, these are cases where Mackenzie Inuit identities developed from purely instrumental negotiations between peoples (see discussion below).

DIACHRONIC VARIABILITY IN THE MACKENZIE INUIT ARCHAEOFAUNAL RECORD

The above comparison of the archaeological record to the ethnohistoric record indicates a significant time-depth for a heterogeneous spatial distribution of subsistence practices in the Mackenzie Delta region. This analysis in itself clearly displays evidence for the types of long-term, segregated, and recurring economic practices that are responsible for engendering hunter-gatherer identities. However, a more detailed diachronic analysis is possible.

Fig. 4 shows that two economic options are represented by Thule-period contexts, a beluga hunting and fishing economy on the East Channel of the Mackenzie River and a sealing economy on the Beaufort coast of Herschel Island (refer to Fig. 3 for site locations). Both of these contexts (Cache Point House 6 and Washout House 1) date to the earliest Thule occupations in the Mackenzie Delta region (Friesen and Arnold 2008), suggesting a long history

of segregated and specialized economies at these two resource-rich locations. More importantly, both of these locations are associated with the known main winter villages of the Kuukpangmiut and Qikiqtaryungmiut. Fig. 4 clearly indicates that the specialized economies (focused on fish and beluga) instituted by the earliest Thule occupants of these locations remained essentially unchanged for more than six hundred years.

By the Mackenzie Inuit period (ca. AD 1400–1850), we see a diversification of these strategies. In particular, correspondence analysis indicates that the Thule-period pattern was augmented by the addition of winter economies dominated by bowhead whaling (inferred) on the coast and fishing and birding in the interior. Furthermore, we see the first evidence of warm-season economies, which are focused on fish and birds, or caribou, respectively. From a settlement perspective (Fig. 3) this represents a diversification of procurement systems towards interior warm-season and cold-season sites. In fact, the Mackenzie Inuit period in general seems to represent a settlement diversification, with the first evidence of semipermanent winter villages in Imaryungmiut, Igluyuaryungmiut, and Nuvugarmiut territories (Betts 2005a). It is noteworthy that these ruins are all located at, or nearby, the main winter villages described in the ethnohistoric documents and that the faunal assemblages recovered from these locations are fundamentally different from each other in terms of seasonality and/or taxonomic focus.

This record documents at least 400 to 450 years of unique and virtually uninterrupted economic routine at the main winter villages of at least five territories (note Avvarmiut winter sites have been destroyed by erosion, and Kitigaaryungmiut samples are not included because of sampling issues). While there is archaeological evidence to suggest that some of these specialized procurement activities did change over time, such as among the Kuukpangmiut (Betts and Friesen 2004) and Qikiqtaryungmiut (e.g. Betts 2004; Friesen 1995), these changes largely appear as a reorganization of the procurement of low-ranked resources, such as furbearers and birds, and not the high-ranked resources on which each group specialized.

The Early Thule contexts and their segregated beluga and sealing/bowhead whaling-dominated economies on the East Channel and the Beaufort Coast respectively indicate a very early genesis for the primary economic and settlement activities of the Kuukpangmiut and Qikiqtaryungmiut, coeval with the earliest settlement in the region. While the impact of coastal and riverbank erosion has limited our understanding of the antiquity of these adaptations, a near-complete lack of warm and cold-season sites in the interior suggests the ethnographically described interior-focused economies and (by default) ethnic groups are a post-AD 1400 phenomenon (Betts 2005a).

Moving to the historic period, several other settlement and economic changes are evident. Most apparent is the increased reliance on the interior, with the addition of winter house sites at riverine locations east of the delta proper (Fig. 3). All of these sites (Kugaluk, Barry, and Pokiak) are located close to caribou river crossings, a situation congruent with their uniquely caribou-focused faunal profiles. Crucially, the Barry site, the only winter house site thus far located in the Kragmalit home territory, may have been that group's main winter village.

CONSTRUCTING MACKENZIE INUIT CULTURE HISTORIES

The preceding analysis has revealed much about changes in the nature and distribution of prehistoric and early historic economies and settlement patterns in the Mackenzie Delta region. An historical perspective suggests that the institution of distinct specialized economies throughout the Mackenzie Inuit sequence created an environment ripe for ethnogenesis to occur, and from the available evidence it is possible to suggest a chronology of its development. Qikiqtaryungmiut and Kuukpangmiut affinities may have developed over some six hundred years, coincident with early Thule settlements on Herschel Island and the Mackenzie River. Others, like the Nuvugarmiut, Igluyuaryungmiut, Avvarmiut, and Imaryungmiut, probably had a shorter gestation period—perhaps three hundred to four hundred years. Still other economies and their associated routines, such as among the Kragmalit, were barely established by the time Euro-American influences caused the collapse of the system in the early twentieth century. For most territories, then, the archaeological record suggests at least four, and in some cases as many as six, centuries of what amounted to long-term, segregated routinization of economic activities. Given the relationship between routinized practice and shared habitus, procurement activities within each territory, but especially at the main winter villages, were likely fundamentally linked to aspects of identity.

While the above analysis has provided a chronicle of the possible relationship between economies and identity

and its sequential development in the Mackenzie Delta region, it makes for poor culture history. If the development of identity relationships is an historical process, any understanding of its evolution can only be revealed through an "historical perspective" (Bentley 1987:49). This requires that we place the Mackenzie Inuit record within a context of a shifting social and natural environment.

Changes in the cultural and natural environment of the Mackenzie Delta are best understood by reference to a complex of sites located on the west bank of the East Channel of the Mackenzie River (Table 1), which span the early Thule period through the Mackenzie Inuit period. The earliest occupation in the sequence occurs at Cache Point, House 6 and House 8, two Thule semisubterranean winter houses that both date to the latter part of the thirteenth century. Just downstream from the Cache Point site is the Pond site, also containing two semisubterranean Thule-era houses occupied slightly later than the Cache Point contexts (see Table 1). Interestingly, the earlier house at this site (House 2) has a faunal assemblage very similar to the Cache Point contexts, dominated by beluga and burbot. However, the later context (House 1), though heavily beluga-dominated, exhibits increased frequencies of net-captured fish in the Salmonidae family (burbot was primarily captured in this region using a species-specific jigging technology), furbearers, and migratory waterfowl. The last context in the sequence—House 1, Area 1, at the Kuukpak site, dated to the early Mackenzie Inuit period—continues these trends, with a primarily beluga-dominated faunal assemblage containing higher frequencies of net-captured fish, waterfowl, and furbearers than House 1 at the Pond site. Betts and Friesen (2004) have interpreted this economic shift as part of a process of economic intensification that took place on the East Channel (and likely throughout the region, see Betts 2005a), over a period of approximately two hundred years.

As presaged by the above shifts in fish exploitation, during the end of the Thule period the archaeological record indicates that fishing technology changed significantly. Again, this is best demonstrated by the East Channel sequence of sites. The Thule period contexts from the Pond site exhibit between 0% (House 2) and 3% (House 1) of net-fishing gear as a proportion of all hunting implements. In contrast, Kuukpak House 1, dating to the Mackenzie Inuit period, exhibited a significant (more than two-fold), increase to 8% of net-fishing gear (Betts 2004). Other technological changes between Thule and Mackenzie Inuit houses have not been explored in detail, primarily due to a lack of published artifact catalogues, although a similar sequence on the east bank on the Mackenzie River suggests that relatively little technological change, aside from the introduction of fish nets, occurred over the entire Neoeskimo sequence (e.g., McGhee 1974:79, Table 1).

Along with economic and technological change, populations were increasing rapidly during the Thule period. Again, this is most clearly demonstrated by the East Channel complex of sites, but also generally seems to be corroborated by evidence throughout the Mackenzie Delta region. The earliest houses on the East Channel, Cache Point House 6 and House 8, are characterized by single-alcove semisubterranean dwellings. At the Pond site, which was occupied a few generations after Cache Point, two-alcove dwellings (for multiple families) appear in the archaeological record. Finally, around AD 1400, with the occupation of Kuukpak, very large three-alcove, or cruciform, houses appear in the record. This increase in dwelling size is associated with an increase in village size and increasing midden depths over the sequence (Betts and Friesen 2004, 2006). Taken cumulatively, this evidence strongly implies a major population increase over the two hundred to four hundred years that the Thule occupied the western Canadian Arctic.

Finally, it should be noted that significant climate change occurred during the Neoeskimo period in the Mackenzie Delta region. Two wide-ranging climatic episodes dominated temperature trends in the western Canadian Arctic over the last thousand years: the Medieval Warm Period, ca. AD 900–1300/1400, and the Little Ice Age, ca. AD 1400–1850. The former is associated with generally warmer temperatures than exist today (Hughes and Diaz 1994; Overpeck et al. 1997:1253), while the latter corresponds with drastically cooler temperatures than at present (Graumlich 1992:565; Larsen and McDonald 1998:116).

If identity relationships are an historical process, then all of these fundamental shifts contributed to the development of the distinct ethnicities of the Mackenzie Inuit period (Betts 2005a). To Bourdieu (1977:164), change is stimulated through a mismapping of habitus and the current environment, when existing dispositions are confronted by alternate social or material settings (Pauketat 2001:80). In this situation of conflict, agents attempt to reproduce habitus along established routines, but these practices are subverted by the requirements of the new environment. This forces a difficult "negotiation" between existing and historically embedded dispositions and the conflicting structure of the new surroundings.

The florescence of new Mackenzie Inuit groups and their new identities, ca. AD 1400, occurred as part of a complex negotiative process, as Thule era populations reproduced their styles of living while being bombarded by significant cultural and natural shifts. The mismapping of existing habitus with the effects of climatic degradation, the development of intensive net-fishing, and increasing populations that occurred during this period resulted in a creative renegotiation of existing economic and settlement dispositions in response to these stimuli. This eventually led to the development of multiple new economies and settlement patterns, which fundamentally altered regional, political, and social dynamics. In short, the development of these groups ca. AD 1400 was an instrumental response, a creative negotiation born from the mismapping of existing habitus with changing material and social conditions.

How might these processes have occurred? An appropriate analogue may exist with the development of the Imaryungmiut and their unique economic and settlement practices. Their economy was dominated by fish and birds, and was entirely interior in focus, with both warm-season (Gutchiak) and cold-season (Saunaktuk) settlement occurring in the Eskimo Lakes. Interior warm- and cold-season contexts appear in the archaeological record for the first time during the early Mackenzie Inuit period, ca. AD 1400. Despite intensive interior survey over the last three decades, no Thule-era interior sites have been discovered in the Mackenzie Delta region. Thus, one part of the response to intense natural and cultural forces ca. AD 1400 was a reorganization of earlier Thule warm-season procurement options, which appear to have been primarily tied to the coast, to include intensive interior components.

This economic and settlement shift may ultimately be responsible for the development of Mackenzie Inuit socioterritories and ethnic groups, and the archaeological evidence from the Kitigaaryungmiut Cache site and the Imaryungmiut Gutchiak and Saunaktuk sites suggests one way this might have occurred. The Cache site, a warm-season Kitigaaryungmiut procurement location, is, like the Imaryungmiut cold-season Saunaktuk and warm-season Gutchiak sites, dominated by birds and fish (Fig. 4). That the long-standing East Channel beluga hunting strategy was augmented by interior fishing and birding at sites like Cache in the Mackenzie Inuit period is significant. Given the proximity of Saunaktuk and Gutchiak (Fig. 3), it appears that establishing the Imaryungmiut socioterritory was possible because of a reorganization of this newly developed interior birding and fishing procurement option at an ecologically rich location that could support year-round occupation.

The Imaryungmiut appropriated jig and net fishing gear to this year-round life, and artifact assemblages from Saunaktuk and Gutchiak sites are heavily skewed towards both jig and net fishing (Arnold 1990; Morrison 2000). Thus, the Imaryungmiut socioterritory was made possible by reorienting and intensifying existing economic and technological dispositions along an altered seasonal schedule, in effect creating a new rhythm of living. For other groups, it appears that the well-established sealing and beluga/bowhead whaling lifeways were largely maintained, although the development of net-fishing techniques nevertheless profoundly altered the economic activities of most groups, particularly during the warm-season spawn and running periods (Morrison 2000).

In fact, the addition of net fishing at locations that already supported intensive procurement and storage of sea mammals was a significant boon. The recurring potential for plenty at these locales provided a powerful incentive to consolidate rising populations in the large winter villages (from which local groups eventually drew their names), and possibly may have even intensified the process of demographic increase (Betts and Friesen 2004:379). From a primordialist view, the institution of these new economic and seasonal rhythms, and the subsequent establishment of large villages at these focal places, would have been essential in the development of different group affinities.

How these demographic and technological processes are linked to the massive climate change that occurred during this period (ca. AD 1400) is uncertain. If persistent cold conditions affected the distribution and duration of sea ice during the warm season, it may have had a catastrophic impact on the bowhead and beluga hunts and the increasingly populous groups that relied upon them. Indeed, severe ice events still affect beluga harvest rates in the region by reducing the length of the hunting season, as they did on the East Channel in the summer of 1985 (Norton and Harwood 1986). Such persistent ice conditions were almost certainly a common occurrence during the Little Ice Age and must have severely affected groups that relied upon open-water beluga and bowhead whaling. Given this evidence, it is tempting to speculate that some of the diversification and settlement expansion that occurred in the Mackenzie Inuit period may have been part of a process whereby the relatively stable socioeconomic groups of the Mackenzie River and Yukon coast fissioned in response to resource stress.

However, all three components (demographic, climatic, and technological shifts) acted in unison to fuel these socioeconomic changes. Increasing populations undoubtedly would have exacerbated any shortfalls in the traditional whale hunt caused by severe ice conditions. At the same time, fissioning is a common response of hunter-gatherers to the stress caused by rapid demographic increases (Friesen 1999). Finally, technological change may have provided the means to quite literally feed this population and territorial expansion, particularly towards interior regions where new net-fishing techniques could be intensively applied. In short, the years surrounding AD 1400 represented a point of "critical mass" of population, climate, and technology; the Thule responded by fundamentally altering the composition, distribution, and economic focus of local corporate groups.

While the mechanisms described are largely responses to natural and cultural stimuli, other processes may have been at work. Elsewhere, and following Barth's (1956) instrumental approach, I have posited that the development of Mackenzie Inuit socioterritories was a creative solution to the heterogeneously distributed resources of the Mackenzie Delta region (Betts 2005a; see also Andrews 1994; Yesner 1985). In this instance Mackenzie Inuit groups benefited through exclusive access to resources that were then traded throughout the region, as they were in the ethnohistoric period (for an archaeological example of this trade see Betts 2007). The benefits of exclusive access and trade were undoubtedly a key component of the development of these new groups, part of the creative negotiations between peoples as they navigated the turbulent period around AD 1400.

For emerging Mackenzie Inuit groups, recognizing the benefits of exclusive access to resources was possible because of the already well-developed identity politics in the region, which had been in place since the earliest Thule times. There were at least three socioterritorial groups by the end of the Thule period. For example, there is evidence to suggest that both Kitigaaryungmiut and Kuukpangmiut groups on the East Channel had been developing simultaneously since Early Thule times (Betts and Friesen 2004, 2006). Qikiqtaryuk, on Herschel Island, was likely also occupied at this time, as evidenced by Washout House 1 (see Table 1). Since the bowhead and beluga hunting seasons overlapped, independent groups must have exploited these different locations simultaneously, each caching and living off the proceeds in separate winter villages. Given the economic analysis above, the economies of these different groups represent some six hundred years of uniquely routinized and specialized procurement. Consequently, the florescence of an ethnic pattern consistent with the ethnohistoric sources around ca. AD 1400 occurred within a constellation of developing affinities already several centuries old and therefore simply represented a single, albeit crucial, stage in the complex development of Mackenzie Inuit ethnicities.

Yet the emergence of the Mackenzie Inuit and their diverse identities must be viewed as part of a lineage with much deeper roots. The Thule pioneers who arrived in the region brought with them deeply engrained social, economic, and technological traditions (Friesen 2009:73). As noted above, Thule developed in a complex social environment in northwestern Alaska, conservatively characterized by competition, prestige, segregation, exclusion, and violence (Mason 1998, 2000). When the Early Thule arrived in the Mackenzie Delta region, they set up a segregated economic system focused on the intensive exploitation of large sea mammals at different advantageous locations on Herschel Island and the East Channel of the Mackenzie River, respectively. This pattern is broadly consistent with what Early Thule groups did in other areas of the eastern Arctic (Arnold 1994; Friesen 2000a; Friesen and Arnold 2008; Holtved 1944, 1954; Le Mouël and Le Mouël 2002; McCullough 1989; McGhee 1984b; Mary-Rousselière 1979; Morrison 1999). A consensus is generally building that these activities are consistent with prospecting, perhaps entrepreneurial, immigrants exploring opportunities for wealth and prestige in new lands (Friesen 2000b, 2009; Friesen and Arnold 2008; Gulløv and McGhee 2006; McGhee 1969/70; Morrison 1999). Thus, in the Mackenzie Delta region, Thule peoples attempted to reproduce a familiar territorial socioeconomic system that they knew was capable of generating the security, and hopefully wealth and prestige, they desired. The establishment of two (and possibly three) segregated socioeconomies at two different locations, by two (or three) contemporaneous groups, set up a system more or less consistent with established Alaska convention (Friesen 2000b, 2009; Friesen and Arnold 2008; McGhee 1984a; Morrison 1999).

In sum, the entire history of Mackenzie Inuit ethnic groups still involved a series of novel and creative negotiations between pre-existing cultural traditions and shifting natural and cultural surroundings. According to the evidence presented, the pattern throughout the prehistoric period is one in which people settled at new ecological

hotspots and by reorganizing existing technological, economic, and settlement traditions slightly, instituted fundamentally changed economic and settlement rhythms, in effect creating new group affinities. These affinities were a result of recurring and unique behaviors experienced between individuals over seasons, years, and generations, giving each socioterritory its own history. However, the settlement of groups at these new locations was a conscious, innovative response by people to cultural and natural change.

There is ethnohistoric evidence to support this complex mechanism of primordial and instrumental ethnogenesis. In fact, the historic record of the region indicates this Mackenzie Inuit ethnogenesis continued right up to the moment of Mackenzie Inuit cultural collapse and perhaps even beyond. In a situation similar to the fifteenth century AD, the development of the unusually termed Kragmalit territory in the late nineteenth century AD appears to have also occurred within a complex constellation of demographic, climatic, technological, and social shifts. During this period, temperatures rose rapidly as the area emerged from the Little Ice Age, which potentially negatively affected seal denning habitat and decreased seal natality (Betts 2004, 2005a). Furthermore, bowhead yearlings, the preferred prey of Neoeskimo hunters, were becoming increasingly scarce due to Euro-American overhunting in Alaska (Friesen 1995). Technology was also radically changing, as firearms and metal traps were introduced and the Mackenzie Inuit began to participate in the world system through the fur trade (Friesen 1995). Finally, the ethnohistoric records from this period, and shortly after, indicate that epidemics were ravaging the local population, resulting in a significant demographic decrease (Morrison 1997b).

It was during this period that the Igluyuaryungmiut abandoned their traditional village, Iglulualuit, as their sealing and intermittent whaling economy completely collapsed (Betts 2005a; Morrison 1990). Around the same time, dating to the mid-to-late nineteenth century AD, winter villages with caribou- and furbearer-dominated faunal assemblages were established on the Anderson River (Morrison and Whitridge 1997). Despite relatively intensive survey, earlier village sites have not been discovered in the area, suggesting these villages were a nineteenth-century phenomenon. Given this evidence, it appears the response of the struggling coastal groups to these powerful forces was historically consistent, seen in the founding of a new settlement on the Anderson River, likely consisting of members from many coastal groups (Betts 2005a). This new socioterritorial group, who called themselves the Kragmalit, or Anderson River people, were positioned to access the abundant caribou and smaller furbearing animals in the near-interior. The large caribou herds would have provided security in the face of a foundering coastal economy and the density of furbearing mammals provided inventory to participate in the developing Euro-American fur trade. Other coastal groups, such as the Nuvugarmiut, participated in a similar process, and at least some members of their population set up a winter village on the Kugaluk River, supported by intensive caribou hunting (Morrison 1988). In a situation similar to the founding of Mackenzie Inuit socioterritories four centuries earlier, this process also appears to have been aided by the adoption of new technology, specifically firearms and metal traps, which were becoming increasingly available through trade.

Even the rich and populous Kuukpangmiut and Kitigaaryungmiut were not immune to these processes. Although the traditional beluga hunt seemed to have been as productive as ever (Betts and Friesen 2006; Friesen 2004:230), there is evidence that the Kuukpangmiut socioterritory collapsed sometime before the mid-nineteenth century, likely due to introduced Euro-American disease. In a testament to the powerful affinities created by nearly six centuries of shared routine, the remaining Kuukpangmiut set up a small settlement, named Tchenerark, on the outskirts of Kitigaaryuit, as described by the missionary Stringer in 1893 (Friesen 2004). However, there is evidence that these affinities were at last breaking down, and the Kuukpangmiut were by this time calling themselves the Tchenegagmioot, a name referring to this new village. Tragically, by the time of Stringer's visit only ten Tchenegagmioot remained (Friesen 2004:232), the last of an arguably wealthy and powerful Mackenzie Inuit group.

These reorientations of the socioterritorial system, including the establishment of new ethnic groups known as the Tchenegagmioot and Kragmalit on the East Channel and Anderson River, respectively, can now be viewed as the last and undeniably desperate attempt to reproduce deeply entrenched traditions in the face of overwhelming change. However, the mismapping was too great, and the traditional socioterritorial system soon disintegrated under the pressure of Euro-American technological and economic influence, disease, and Alaska Iñupiat emigration. Yet it is important to point out, as a postscript, that these cultural traditions may still be prominently visible in

modern times. One of the more recent local responses to the massive change of the nineteenth and twentieth centuries has been the formulation of yet another distinct Inuit group, the Inuvialuit (translated as "true human beings").

The Inuvialuit are descendants of Mackenzie Inuit who survived the epidemics and immigrant Nunataarmiut (Iñupiat) who settled in the region during the late nineteenth and early twentieth centuries. Like their Mackenzie Inuit and Iñupiaq forebears (Burch 1998), the Inuvialuit continued a process of renegotiating existing social groups, economies, and associated land tenures, leading in 1984 to the establishment of a new territory under a land claim settlement with the Canadian federal government (Morrison 1997b:49). Through this settlement, the Inuvialuit Final Agreement, the Inuvialuit created a new homeland, and in effect redefined their cultural and economic rights as a distinct aboriginal society (Alunik et al. 2003:182). Placed within historical context, this might be viewed as the most recent expression of a tradition of ethnogenesis that shaped the cultural landscape of the Mackenzie Delta region over the last eight centuries.

CONCLUSIONS

As suggested by Bentley (1987:48), "rooted in preconscious patterns of practice . . . , ethnic identities implicate, in a phenomenological sense, who people are." A practice approach views the development of hunter-gatherer identities as coeval with the development of unique economic and settlement traditions (Dietler and Herbich 1998:246). However, it is through sharing in the continual maintenance and transformation of these traditions that affinities are created. As outlined in this paper, it is possible to chronicle these shared experiences through detailed regional analysis of the archaeological and ethnohistoric records.

When such chronicles are placed in detailed and contextualized historical contexts, meaningful culture histories can be produced. What is perhaps most striking from the reconstruction of these multiple culture histories is the strong relationship between location (and the unique daily routines and interactions necessary to exist at these locations) and Mackenzie Inuit identities. In fact, the "traditional" Mackenzie Inuit response to changing ecological, technological, demographic, and social environments was to engender new socioterritorial groups with reorganized land tenures, effectively creating new identities. In essence, Mackenzie Inuit reoriented existing economic and technological traditions along altered settlement, demographic, and perhaps even social lines, during times of "critical mass," when faced with major natural and culture changes. Like all cultural processes, Mackenzie Inuit ethnogenesis (or more accurately ethnogeneses) was/were always creatively constructed to participate in specific evolving cultural and ecological environmental milieus.

Yet, this primarily instrumentalist explanation belies the primordial attachments of tradition, people, and place, which must also have been associated with the process. In historical perspective, the configuration of these groups, and perhaps even their repeated spawning and mutation, has a hereditary analogue and therefore must be viewed as a re-creation of traditions that evolved in Alaska and that were transferred to the western Canadian Arctic. After several centuries of occupation in the region, new traditions developed, and the affinities of Mackenzie Inuit groups clearly became primordially intertwined with key places, as is suggested by the use of village names as roots for the names of each ethnic group. The archaeological record indicates such bonds had ancient roots, expressed in the durable remains of economic routines continually re-created at these unique places over hundreds of years.

Such social attachments to place can also be seen in the development of two distinct ethnic groups on the East Channel, the Kuukpangmiut and the Kitigaaryungmiut, and their unique "sharing" of a particularly important ecological niche despite rising populations and overt hostilities. In fact, so important was this location that it still figures prominently in Inuvialuit identity today (see Alunik et al. 2003). Moreover, the bonds created between people when they share repeated experiences is exposed by the reticence of the remnant Kuukpangmiut to merge with other Mackenzie Inuit groups despite their decimation by disease in the nineteenth century. In retrospect, Mackenzie Inuit ethnogenesis was always an instrumental and yet still deeply primordial response to the changing material and social conditions of life in the western Canadian Arctic.

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DOCUMENTING MACKENZIE INUIT ARCHITECTURE USING 3D LASER SCANNING

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ABSTRACT

Laser scanning is currently being used in various areas of the world to document, preserve, and analyze ancient architecture. Laser scanners record the proveniences of numerous points on an object's surface. The resulting three-dimensional images can be used to test various building scenarios, analyze activity areas in a three-dimensional context, and digitally archive heritage resources threatened with destruction via erosion and industrial activities. Laser scanning may have applicability in the western Canadian Arctic, where archaeological research has become increasingly focused on the interpretation of Mackenzie Inuit architecture and the preservation of houses threatened by erosion. The use of laser scanning technology in an environment as remote and challenging as the Arctic provides an excellent case study for assessing the benefits of using this approach in a region associated with both complex architecture and excellent preservation. We conclude that laser scanning is feasible at isolated arctic field sites, but suggest that short-range, high-resolution scanners, similar to the one used in the study, are best suited to recording specific architectural details, rather than complete dwellings.

KEYWORDS: laser scanning; Mackenzie Inuit; architecture

INTRODUCTION

Variability in architecture and its relationship to cultural processes has been an important subject in anthropology since the very beginnings of the discipline (Mauss 1906; Morgan 1881). This is especially true in the circumpolar world, where the preservation of dwellings and other feature types is often excellent. The search for cultural processes in circumpolar architecture continues to spark interest in arctic archaeology and ethnography, and many recent publications on this topic attest to this interest (Dawson and Levy 2006; Dawson et al. 2007; Friesen 2004; Lee

and Reinhardt 2003; Levy and Dawson 2009; Patton and Savelle 2006; Whitridge 2008). In the Mackenzie Delta region of the Canadian Arctic, for example, researchers have attempted to link variation in semisubterranean houses to changes in Mackenzie Inuit social organization (e.g., Arnold 1994a; Friesen 1999, 2006). Unfortunately, resolving these important research questions has been hindered by the erosion of archaeological sites, as well as inconsistencies in the methods employed to document and record Mackenzie Inuit architecture, both historically and in the present day.

The destruction of Mackenzie Inuit sites due to erosion caused by rising sea levels and storm surges highlights the fact that culture heritage sites throughout the world are currently threatened by time, natural processes, and human interaction. An organization dedicated to preserving and sharing the world's cultural heritage called Cyark has constructed an interactive hazard map with over eight hundred heritage sites, many of which are undocumented. The map illustrates each site's proximity to environmental threats such as rising sea levels due to climate change and earthquakes. Examining Cyark's interactive hazard map reveals that laser scanning has been used extensively in Europe and other areas of the world to rapidly and accurately document archaeological sites and heritage buildings under threat (see Giuffrida et al. 2005; Guidi et al. 2005 for examples). However, laser scanning has rarely been used for such purposes in North America. Instead, it has been confined primarily to recording small objects, such as paintings and sculptures (Blais et al. 2008).

The use of laser scanning in an environment as remote and challenging as the North American Arctic provides us with a unique case study for evaluating its suitability for recording archaeological features in more accessible areas. The Canadian Arctic presents some formidable obstacles because many sites can only be accessed by helicopters or fixed-wing aircraft. Laser scanning equipment is highly sensitive to dirt, moisture, temperature, and impacts. Maintaining a steady, reliable source of power is also critical, as are adequate light levels to obtain clear scans. Finally, the instrument needs to operate from a stable platform that is impervious to wind, and many arctic regions have few calm days.

In this paper, we describe how laser scanning was used to document precontact architecture at an archaeological site in the East Channel of the Mackenzie Delta during the summer of 2007. Even though extremely challenging, environmental obstacles unique to arctic environments can be effectively managed when laser scanning. We also demonstrate how recording architecture in three dimensions, and at high resolutions, allows researchers to visualize architectural features in ways that are simply not possible using two-dimensional line drawings. Once back from the field, for example, the entire site can be re-examined at levels of up to .3 mm accuracy. The resulting images can form the basis of three-dimensional computer reconstructions of scanned features, which can then be used to test various construction scenarios, interpret the domestic use of space, and excite public interest in archaeology. Laser scanning, for example, has played a major role in a recent exhibit completed for the Virtual Museum of Canada.[1] Scanned 3D images of various artifacts were placed inside a computer model of a Thule whalebone house as a means of recreating the domestic setting of a Thule household.

THE USE OF LASER SCANNING IN ARCHAEOLOGY

Many disciplines have benefited from the infusion of laser scanning technology. Since its inception, scanning technology has used representations of archaeological and architectural monuments as showpieces in its marketing materials. However, because of the inherent expense, it is not surprising that the majority of laser scanning applications have been in engineering, surveying, and manufacturing. The expense of purchasing and maintaining the instrument has prevented the use of this equipment from becoming commonplace in both historic preservation and archaeological fieldwork. Though the cost represents a barrier in many fields, over the last decade many notable archaeological projects concerned with significant heritage sites have relied on laser scanning.

A great deal of early laser scanning work in archaeology and conservation focused on capturing the images of smaller objects. In 1999, two research projects embarked on the scanning of Michelangelo's statues, including the Renaissance sculptor's famous depiction of David. One of the research groups, led by Marc Levoy of Stanford University, used a custom-designed triangulation laser built by Cyberware to scan Michelangelo's statues in Florence, Italy, including the David, the Prigioni, and the four statues in the Medici Chapel (Levoy et al. 2000). The

1. http://www.museevirtuel-virtualmuseum.ca/Search.do?ex=on&R=VE_1914

scans were of a high enough resolution to reveal the artist's chisel marks on the stone (Koller et al. 2004). Other examples include the laser scanning of ancient cuneiform tablets by Kumar et al. (2003) and of Da Vinci's Mona Lisa by the National Research Council of Canada (Blais et al. 2008). While small objects allow for high levels of resolution, it is often impractical to scan buildings and other larger scale objects in this way. High-resolution scanners, for example, have narrower scanning ranges, requiring multiple setups in order to capture an entire structure. As a result, issues of resolution and rate of capture, as well as accuracy and color depth, must be evaluated when determining the type of scanner needed for a project.

TYPES OF SCANNERS

Deciding what type of laser scanner to use is often determined by the size and scale of the object to be documented. There are three major categories of laser scanners: pulse (time of flight), phase (triangulation), and modulating light (Boehler et al. 2003). Time of flight scanners can have a range up to 800 m, but most work well in the 100–200 m range. These types of laser scanners are excellent for acquiring 3D images of buildings and large sites; they have a moderate degree of accuracy for a single point (1 cm to .5 mm depending on the distance to the object) and have a scan rate of approximately 2000 to 50,000 points per second. These pulse scanners operate by measuring the time of flight required for a laser pulse to reach the surface of an object and be received by the scanner. An important advantage in this technology is its ability to operate under any lighting conditions. With the introduction of self-rotating laser-emitting heads, the speed of data acquisition has been greatly increased. With fewer setup steps and less post-processing, this technology is ideal for reconnaissance and for establishing baselines of historic sites and archaeological excavations (Finat et al. 2005; Johansson 2002; Sternberg et al. 2004).

Triangulating laser scanners are a second type of instrument and come in single and double camera versions. Triangulating scanners generally offer high spatial resolutions (less than .3 mm) with low distance ranges (an order of magnitude less than time of flight scanners). Capable of acquiring data at speeds greater than 100,000 points per second, these scanners offer the archaeologist the ability to acquire highly accurate 3D images of artifacts and architectural details. Unlike time of flight scanners, however, light levels usually must be in a specific range. If light levels exceed the manufacturer's parameters, the camera will not function properly. In addition, surfaces that are very reflective under bright light will result in holes in the data set. This can be especially problematic in arctic environments, where the reflective surfaces of permafrost and ice encountered during excavation might cause problems. Single camera versions work on the principle used by range finders: a known baseline distance between the mirror and camera lens allows triangulation on a point. Triangulating scanners that employ a double camera are similar to the single camera but feature a light projector that produces a moving strip or static pattern. These patterns, when viewed by the camera at a fixed distance from the light source, can provide data used to determine the shape of the object. Although not capable of capturing data over a large area, they do provide accuracy in a range of .1 mm to .6 mm, depending on the distance to the object and the design of the unit. Bench-mounted versions of this scanner make it possible to automate data acquisition and facilitate transport and setup (Barnett et al. 2005; Cain and Martinez 2004; Díaz-Andreu et al. 2006).

Finally, there are scanners that use a modulated light source. By varying the amplitude of the light source, the camera can determine the distance from the target or object. Some of these phase scanners will split the laser beam into several components, each with a different wave length (Boehler et al. 2003). For example, the Faro laser scanner splits light into 76, 9.6, and 1.2 m wavelengths. The distance to the object is determined by registration of the shorter wavelengths against the longer cycles. The range of these scanners can exceed 70 m and provide resolution of .6 to 1.2 mm, depending on the distance to the object. One advantage of this type of scanner is that it is extremely fast. With point acquisition of over 120,000 per second and a 360-degree field of view, these scanners can provide a good alternative for general survey work. When faced with the problem of scanning objects that are both large and contain small details, the solution can be to use multiple scanners with different resolutions. A modulated light scanner, for example, can be used in combination with a triangulation scanner to capture large objects at different levels of detail (El-Hakim et al. 2005; Malinverni et al. 2003).

COLOR ACQUISITION

The color of an artifact or building surface is important in archaeology. However, acquiring accurate color information presents a unique set of challenges in 3D imaging. Although it is possible to capture color data with all types of scanners, very controlled lighting conditions of the target or site are required to capture consistent and accurate color data. This is often difficult when working outdoors under natural lighting conditions. With laser scanners, color values (RGB) are recorded for each point acquired from the surface of the object. This data can be converted into texture maps that are used to wrap the surface of a mesh, a process known as texture mapping. In creating 3D photo-realistic models, digital imagery can also be combined with laser scanning data. High-resolution digital cameras can be mounted directly onto a laser scanner. Using a software solution based on photogrammetric principles, it is then possible to select color values from the digital image for every point in the 3D image or point cloud. In general, a digital camera can also operate under a greater range of lighting conditions.

ENVIRONMENTAL CONDITIONS

Environmental controls are much easier to manage under lab conditions than in the field. Clean power, lack of dust and vibration, and excessive heat and cold do not concern the researcher in a lab compared to one in the field. Consequently, when selecting a laser scanner for fieldwork, issues of transport, reliability, and outside operating conditions must be considered. All scanners have operating limits. Ordinarily, scanners will not work in dusty, wet, excessively hot, or extremely cold environments. Although some scanners have been designed to minimize the impact of dust entering the unit through the use of heat sinks rather than fans, most units are sensitive to heat above 40°C and below 0°C. In the Canadian Arctic, summer temperatures are influenced by such factors as proximity to sea ice, snow or rock cover, and prevailing winds. Temperatures can dip to –12°C in some areas, posing potential problems for scanner operation. Operating in the rain is not advised or recommended for any scanner, which is again problematic for laser scanning in arctic regions, where rain, snow, and persistent fog are common during summertime. Though future scanners may not require a stable, fixed platform, today most scanners do (Blais et al. 2004; Neubauer et al. 2005). Given that scanners must have a clear line of sight to the target, placing a scanner on scaffolding that shakes under the use of the operator will result in unusable data.

For anyone who operates a scanner, transportation of the equipment to the site becomes a serious issue. There are only a few scanners whose size and weight allow them to fit on board in the overhead compartment or under the seat of an airplane. This is even more problematic in the Canadian Arctic, where smaller fixed-wing aircraft serve smaller communities. The use of G-force cases, though reliable, will likely not guarantee that the unit will avoid damage while being handled by cargo and airport baggage personnel. In addition, ancillary equipment such as targets, digital camera, laptop computer, connecting cables, uninterrupted power supplies (UPS), generators, tripods, tarps and tents must be transported to the site (Sternberg et al. 2004). Consequently, being self-sufficient in the field may require the transport of several hundred pounds of equipment, easily exceeding the normal luggage allowance for northern commercial airlines.

BUDGETARY CONSIDERATIONS

Although price may be a limiting factor in the purchase of a scanner, the type of data needed for the project should guide the final selection. In reality, one scanner may not be sufficient to achieve the research objectives of a specific project. Two scanners may be required: one for the general survey of the site and another for capturing detail including relief, architectural ornamentation, and artifacts. Ultimately, the expense of laser scanner acquisition may be so great that purchase is prohibitive. A better solution may be to contract with a firm that will charge several thousand dollars a day for data collection. While costly, contracting out may ultimately be more cost effective, particularly when working under time constraints or when the need to capture data is infrequent. As many first-generation scanners are now approaching ten years in age, a used market may soon emerge that will make acquiring equipment for research and teaching more affordable. Much of the older equipment captures data at the same resolution as newer ones, but at a lower speed, which in a teaching or research environment is not as critical as in industry.

USING LASER SCANNING IN REMOTE SETTINGS: THE MACKENZIE INUIT SOD HOUSE

The western Canadian Arctic presents us with an excellent case study to examine how laser scanning might be applied in documenting indigenous house forms in remote areas of northern North America. Over the past several thousand years, Inuit and their Thule-culture ancestors devised a series of remarkable house designs involving the innovative use of such materials as whalebone, sod, stone, ice, snow, hide, and driftwood. The robustness of these materials means that many archaeological sites contain dwellings in excellent states of preservation. This is especially the case for semisubterranean houses framed with driftwood and whalebone. Some of the largest and most complex dwellings were built by the Mackenzie Inuit of the outer Mackenzie Delta region, one of the most populous groups of Inuit in the circumpolar world of the nineteenth century. The Mackenzie Inuit built large semisubterranean, cruciform-shaped winter houses framed with local driftwood and covered with sod. These dwellings have been summarized extensively in the ethnographic literature by Franklin (1828), Nuligak (1966), Petitot (1876), Richardson (1828), Stefansson (1914), Stringer (Friesen 2004), and Whittaker (1937). Out of these observations emerges a dwelling "type" with a fairly standardized set of architectural features (Fig. 1). They are described as having three alcoves or sleeping platforms opening off of a central room designated as a main chamber. A fourth alcove, or extension, forms part of the entrance passage. Ethnographic accounts describe the main chamber as constructed with four corner posts outlining a square, with dimensions ranging from 2.4 m to 3.6 m on a side. The corner posts consisted of inverted tree trunks set into the ground with their roots serving as crotches for four stout logs, which formed the main ridgepoles of the structure. The inside height of these dwellings was recorded as 1.8 m, with the roof being constructed from split logs with the flat sides facing inward. The ceilings and walls of the alcoves consisted of split logs resting obliquely against the ridge poles, forming the four sides of the main chamber. According to Whittaker (1937), the lower ends of the logs were set on the earth about 60 cm (2 feet) beyond the square and leaned against the upper logs, until the spaces were filled. The structure would have then been covered with sod blocks for the purpose of insulation.

The alcoves served as sitting and sleeping places for family members as well as work spaces and storage areas. They were elevated from 15 to 60 cm (6 inches to 2 feet) above the floor of the main chamber. Although dimensions vary between authors, the alcoves are typically depicted as trapezoidal extensions from the two corner posts of the main chamber (Richardson 1828:216). The floors of the alcoves, which sometimes had a gentle inclination forward, were constructed of split logs with the flat surfaces facing up. Stefansson (1914) observed that these boards were of irregular lengths and rarely met up with the walls of the dwelling.

A long, narrow, slightly curved entrance passage, partially excavated into the earth and partly covered with blocks of ice, provided access to the winter house. This entrance passage, which was 4.5 m to 6 m long by .76 m wide led to a trap door in the slanted floor that was covered by a piece of fur (Stefansson 1914:159–160). Whittaker (1937) observed that "the best of such houses, built on a hillside,

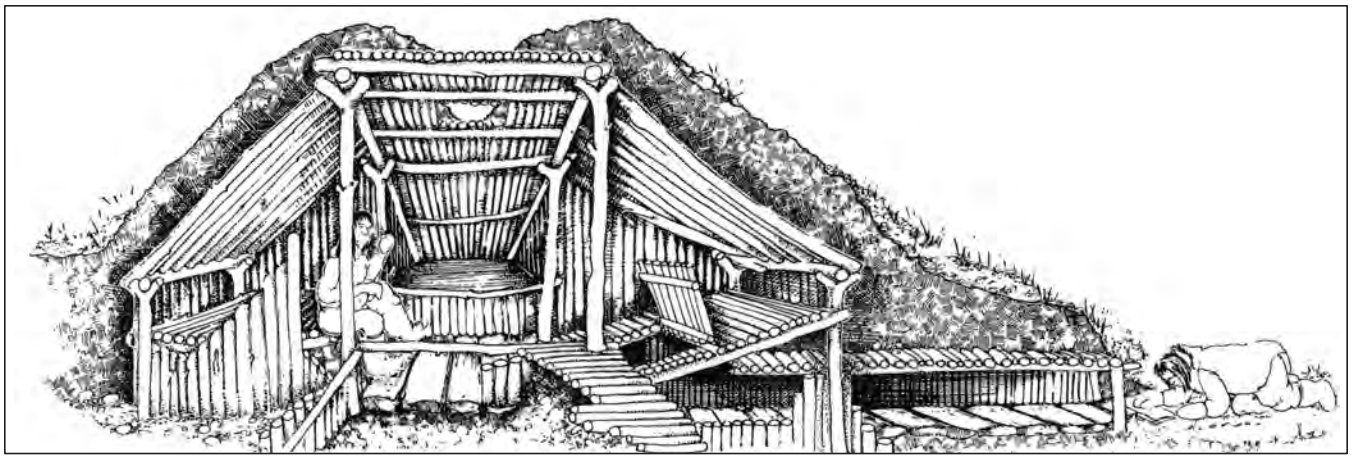

Figure 1. Artist's reconstruction of a Mackenzie Inuit house (by Terrence Pamplin, Prince of Wales Northern Heritage Centre).

would have the entry through a long passage, leading to a trap door in the floor" (Charles Whittaker, cited by Friesen 2004:229).

As mentioned previously, ethnographic descriptions portray Inuvialuit architecture as relatively homogeneous, emphasizing the cruciform house over all other variations. However, Petitot (1876), Whittaker (1937), Stringer (n.d), and Richardson (1828) all to acknowledge that while three-alcove houses were the norm, single- and double-platform dwellings were also constructed. Interestingly, it is in the archaeological record that significant variability begins to emerge, particularly in the number of alcoves observed, but also in other aspects of design and construction (Arnold 1994b; Friesen 1991, 1994; Friesen and Hunston 1994; McGhee 1988; Yorga 1980). In terms of house size, Arnold (1994a) has identified a developmental sequence for the East Channel with single-platform dwellings at Cache Point gradually being replaced by two-alcove structures at Pond and triple-platform dwellings at Gupuk. The number of platforms also seems to vary spatially, with cruciform-shaped houses dominating the major East Channel sites of Kuukpak and Kitigaaryuit, while this form becomes popular only during the nineteenth century at Nuvugak and the Anderson River sites. To the west on the Yukon North Slope and Herschel Island, only single- and double-alcove structures have been identified to date (Friesen 2006).

Arnold (1989:50) suggests that the cruciform design may have been adopted to improve structure efficiency, particularly in terms of sharing heat, light, and food. Friesen (1999), on the other hand, envisions the adoption of the three-alcove dwelling in the densely populated East Channel as a social strategy designed to reduce scalar stress generated by the structure of the resource, namely the spatial and temporal availability of beluga whales. He sees the efficient exploitation of beluga whales and subsequent participation in lucrative trade with the Hudson Bay Company post at Fort McPherson as contributing to the rise of large households in this area (Friesen 2006:183–184). In the nineteenth century, some powerful and ambitious lineage heads or *umialiit* of groups located east of the Mackenzie Delta adopted the cruciform-style dwelling to emulate their powerful neighbors in the East Channel. Alternatively, individuals with direct contacts to families in the East Channel may simply have decided to build cruciform houses at Nuvugak and in the Anderson River area using a familiar design (Friesen 2006:184).

The developmental sequence defined by Arnold (1994a) was based on samples of four excavated structures from Cache Point, five from Gupuk, but only two from Pond. Not only was the sample from the Pond site small, but chronological controls were somewhat limited. During the summer of 2003, one unexcavated structure at the Pond site was subjected to ground-penetrating radar in an attempt to identify the suitability of this remote-sensing technique in arctic environments and to explore the subsurface configuration of these semisubterranean features. During the summer of 2007, funding provided by the European Science Foundation and the Social Sciences and Humanities Research Council of Canada allowed us to return to the Pond site to conduct further excavations. The feature selected for investigation was the structure (House 3) previously examined by ground-penetrating radar, but we were also able to sample a second semisubterranean structure (House 4) nearby. Although our primary objective was to establish the number of alcoves present on individual structures and the date of site occupation at the Pond site, we were also interested in the architectural variability because the ethnographic and archaeological descriptions were difficult to reconcile in our virtual reconstructions of these winter houses. In particular, the floor plans and photographs compiled during excavations in the Mackenzie Delta were difficult to incorporate in the virtual representations of these structures. As a result, an additional goal of the project was to explore the suitability of laser scanning as a tool to document and analyze Mackenzie Inuit architecture as well as to explore the organization of interior domestic space. Documenting the architecture of an excavated dwelling digitally in high definition would allow us to construct an "as built" model of the house using 3D computer modeling software. This model would then serve as a virtual laboratory for testing different construction scenarios and analyzing activity areas in a three-dimensional context.

THE POND SITE (NITS-2)

Although high-resolution data could benefit the investigation of architectural variability and its relationship to social processes, the feasibility of using this technology to scan large semisubterranean features in the Canadian Arctic was untested, especially given the logistical and environmental challenges of transporting and operating scanners in a remote field setting. In order to assess the

potential of this technology, we decided to laser scan a single Mackenzie Inuit dwelling at the Pond site (NiTs-2). The site is located on the west shore of Richards Island at 69˚20.6'N and 134˚03.3'W, approximately 3 km south of Kuukpak, which is remembered in oral histories as the main village of a regional group known as the Kuukpangmiut. The Pond site is adjacent to, and takes its name from, a creek-fed pond that flows into Kugmallit Bay near the mouth of the east channel of the Mackenzie River (Fig. 2). Several clusters of shallow depressions are visible on the surface, and bone can be seen eroding from the banks of the pond. Evidence from archaeology and Inuvialuit oral histories indicates that the shores of Kugmallit Bay were occupied since about AD 1300 by several regional groups of ancestral Inuvialuit.

The Prince of Wales Northern Heritage Centre carried out excavations at Kuukpak over the course of several field seasons in the 1980s. The remains of several semisubterranean driftwood and sod houses (*igluyuaruit* in Inuvialuktun) were excavated, ranging in age from approximately 500 to 300 years BP. With one exception, these houses had alcoves with raised sleeping platforms along three sides and a long tunnel entering into the dwelling at the fourth side. The Prince of Wales Northern Heritage Centre conducted excavations at two of the house depressions at the Pond site in 1989. The excavations revealed that both were the remains of fairly substantial driftwood and sod houses, but unlike the Kuupuk cruciform houses, the Pond structures appeared to have only two sleeping alcoves. Radiocarbon dates showed that the structures excavated in 1989 were approximately 600 years old, and therefore built about a century before the dated houses at Kuukpak. An interpretation advanced at the time postulated that the Pond site was abandoned sometime after 600 years ago, when a build-up of the foreshore flats that today separate the site from Kugmallit Bay interfered with hunting beluga whales in this area. As a result, the people are assumed to have abandoned this area and moved downstream to establish their winter houses at Kuukpak.

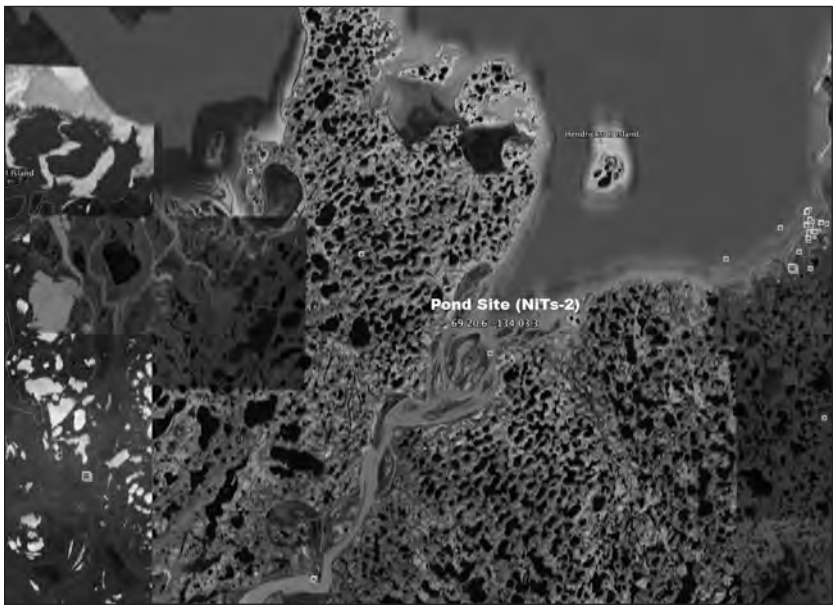

Figure 2. Map showing location of the Pond site (NiTs-2).

METHODOLOGY

1. LASER SCANNER SELECTION: IMPACT ON OPERATION

A single high-resolution, triangulating scanner (Minolta VIVID 710) was used to record the architectural remains of the two house features at the Pond site. Ideally, two scanners would have been chosen: one to quickly scan the area multiple times and the other to only scan detail as it emerged during the excavation. If two scanners had been selected, decisions would have had to be made on site concerning what was significant enough to dictate the use of the higher resolution scanner. One advantage of the VIVID 710 is that it guaranteed that the data captured of the entire excavation would be at a high resolution (0.3 mm). The advantage of having high-level detail of the entire site is that the significance of a particular area does not have to be determined on site, thus avoiding the problem of later discovering that data is missing for an area of interest.

The Minolta VIVID 710 is good for close-range work and scans fairly quickly. It is possible to scan an area approximately 30 cm by 30 cm at a distance of 2.4 m from the unit in a few seconds. However, given that the field of view for the Minolta is between 1.2 and 2.4 m, depending on the choice of lens, additional time should be reserved for scanning. Because significant overlap is needed for the registration of images, a meter square can require up to twenty-five scans. Furthermore, issues of occlusion may require considerably more scans in order to acquire faces of objects not visible from a single vantage point. Each scan can constitute several

hundred thousand points and can be stored as a three to six megabyte text file. An area of a meter square can take several hours for data capture. This includes moving and setting up the equipment, refocusing, and moving any tarps needed to shield the area from direct sunlight.

Capturing color always presents significant issues during data acquisition. Under direct sunlight detail can be lost, especially when the materials are highly reflective. One solution is to use controlled artificial lighting. In a lab environment this can be accomplished fairly easily. In the field, shielding the site from direct light requires the use of tarps, tents, or temporary structures. One alternative is to set up a camera on a bipod that can be used to photograph a high-resolution digital image from overhead. Registration of the digital image with the 3D data can occur during post-processing. To assist in this registration, 3D targets should be used on the site. Small spheres placed on a grid can greatly assist in the registration of each scan using software designed to align and optimize 3D data sets.

2. LOGISTICS OF LASER SCANNING

As part of the logistical planning for this project, all equipment was moved by commercial airlines and helicopter to the site. The equipment included a laptop computer, the Minolta VIVID 710 laser scanner (weight 11.3 kg) in its protected Pelican box (model no. 1550, weight 6.1 kg), a Manfreto model tripod (weight approx. 11.3 kg), a daylight fluorescent light, tarps, targets, generator, and two uninterrupted power supplies (UPS). The advantage of the UPS units is that they provide clean, reliable power for the scanner. While one UPS is powering the scanner, the generator can recharge the other, thereby offering continuous scanning throughout the day. In addition to providing power to the scanner and laptop, a UPS can be used to power the portable daylight fluorescent fixtures. It is recommended that larger units (rated above 1200 va) be used for this type of work, providing power for several hours without any recharging.

3. SCANNING IN THE FIELD

In the field, a grid was first set up over each of the two features (House 3 and House 4) excavated in 2007. Using a Leica TCR301 total station, critical points were measured from an established datum within the site and this grid was used to locate the 2 m x 2 m excavation units and the targets. A Nikon digital camera with wide-angle lens mounted on a bipod was used to photograph the excavation units and to create a photographic montage of the structure. The laser scanning of excavated units in houses 3 and 4 required a total of eight hours to complete. For each house, laser-scanned data were acquired from three locations around each 2 m x 2 m excavation unit (Fig. 3). Even with good coverage achieved by scanning from multiple positions, some holes in the data were inevitable. To minimize potential data loss, several pie-shaped scan spaces were created from each scanner position. Rotating the scanner about 20 to 25 degrees created a new set of scans that later needed to be assembled into a single scan space.

Before the actual data are captured, the unit must be focused. Small adjustments in the focal range have a significant impact on data capture. A change as small as 10 mm can result in a scan with holes. Operators should be prepared to spend a significant portion of time on this basic operation. Scanning bright reflective objects can also be problematic. Hot spots can result in a complete loss of data or a "hole." Soil, especially dry soil, can be extremely reflective. Even soils that are kept damp by spraying water may be too reflective to achieve good results. During the course of this project, the sky was only dark for a few hours. Translucent plastic tarps were used to help shield the site from excessive glare from direct sunlight. A doubled-over blue plastic tarp reduced the light to within the operating levels needed by the Minolta.

Temperature and rain could have presented considerable problems. The Minolta VIVID 710 has an operating temperature of 10° to 40°C and should not be used when the relative humidity is greater than 65%.[2] Fortunately during the course of the scanning, the weather did not create any serious problems. The temperature range was not below freezing nor was there significant rain. However, during periods of strong winds two crew members were required to handle the tarps, taking them away from excavation duties.

The digital data obtained from scanning houses 3 and 4 were stored on 512 MB compact flash cards. Each card can store approximately 150 scans, which can later be downloaded to a card reader or to a PCMCIA card on a PC for backup and analysis. During the course of the project, approximately six hundred scans were saved on

2. http://www.konicaminolta.com/instruments/products/3d/non-contact/vivid710/specifications.html

Figure 3. Using the Minolta laser scanner to capture an image of House 3.

these compact flash cards. These scans were then checked in the field on a PC loaded with Polyworks10,[3] an application designed for assembling and processing the 3D images. It is always advisable to check data for integrity in the field as soon as possible. If holes in the data are found due to issues of occlusion or lighting, additional scans can be completed.

4. PROCESSING 3D IMAGES

Acquiring data in the field is the first step in creating a 3D virtual image of a site. With PC technology it is now possible to assemble large 3D data sets into a single registered image. However, with large data sets, there are still some limitations on the ultimate size of the point cloud that practically can be assembled on today's PC. Working with the Minolta VIVID 710 scanner over the course of several days produced over one hundred million points for both house features. The process for assembly of the data requires that each scan be registered or positioned to within the tolerance of the point accuracy of the scanner. The process is relatively simple in principle, if ultimately time-consuming. In our research, Polyworks Version 10 was used on a Dell Precision 650 Pentium with dual Pentium IV 3.05 Ghz CPUs and a NVIDIA Quadro FX 3000 G card. After the first scan is brought into the workspace, each subsequent scan is opened and registered to the base scan using known targets in both scans as control points. It is helpful if overlap is sufficient to virtually see the same three targets in both scans. When this is not possible, applications like Polyworks can register a set of images by identifying the same points in each scan. For example, the end of a stick or small rock was used to more tightly match the two images. Usually, a minimum of three points will be needed in both images to begin the matching process. Polyworks can merge each image within one standard deviation of point accuracy. Once this step is completed, subsequent images can be registered by repeating this process. Polyworks eliminates points in the overlap region, creating a more efficient 3D representation of the site.

3. http://www.innovmetric.com/Manufacturing/what_overview.asp

With large data sets it is possible to exceed the computational capability of a PC. Rather than assemble scans of the entire site, one strategy is to assemble separate sections. Once each section is complete and optimized they can then brought together as a single model. Ultimately, the question of purpose must be considered in processing a 3D image. Researchers may need as accurate a model as possible for taking measurements, as is required in comparative architectural analysis, or in testing possible construction scenarios. Most imaging processing applications will intelligently remove points where they are not needed and still maintain the integrity of the object. However, for archaeological data requiring a high level of detail throughout the site, this strategy may result in the loss of important features. One solution is to use applications that allow point clouds to be resampled on the fly. This gives access to high-resolution point clouds within the resolution of the screen display without forfeiting detail. High-performance video cards designed for computer-aided design (CAD) will permit the greatest access to these larger data sets.

Once the point cloud is registered, a mesh can be created for all or part of the feature. This surface can consist of a triangulated irregular network (TIN) of connected points. In Polyworks, as in most image-processing applications, this mesh is optimized and reduced in complexity for viewing the data set in 3D. One limiting factor we found in creating optimized mesh files for houses 3 and 4 was the number of individual objects located within individual excavation units. These features include small pebbles, rocks, and the texture of the wood, with its open grain and cracks. Preserving all the objects sets a lower boundary on how many polyfaces can be removed during the process of optimization. Another factor in optimization is the number of small holes that exist in the assembled data set, due to the occlusion of objects by other objects. This can result in noncontinuous mesh files, increasing the complexity of the form. In this work it was possible to produce a file for House 4 that consisted of approximately 200,000 polyfaces that could serve as an armature for texture mapping. Texture mapping can add a realistic impression to the site, making building materials such as rock and wood appear true to form. Using digital images from a Nikon SLR taken in normal daylight offered a more realistic model when compared with the color data from the laser scanner. Because a blue tarp was used to shield light from the site, color data capture with the Minolta had a bluish-purple hue.

RESULTS

Fig. 4 is a photo composite of all units excavated in House 3 during the 2007 field season. Areas shaded within the excavated area highlight some of the architectural details scanned using the Minolta VIVID scanner. The laser scans of units D and E are presented as examples of the processed images. It is worth mentioning that the architecture of House 3 was somewhat anomalous, as compared with other features previously excavated at the Pond site. Much of the roof frame, for example, appeared to be absent. While a few logs were found adjacent to the edges of alcoves and on the central floor space, the intact floor was missing from the dwelling. We surmised that House 3 contained two alcoves or sleeping platforms and a possible cooking area, identified as a hearth, in the central room. The absence of substantial driftwood architecture, usually common in Mackenzie house depressions, is difficult to explain. It may have been removed at some point following the abandonment of the house. Alternatively, House 3 may have been some sort of hybrid structure, more lightly constructed than a typical semisubterranean house, perhaps for use during warmer months. Ongoing analysis of faunal remains recovered from House 3 may provide seasonality indicators that will allow us to confirm this possibility.

Even though many of the excavation units scanned contained only minimal amounts of architectural information, the resulting images clearly demonstrate the potential of laser scanning to capture details that might be overlooked when relying on simple two-dimensional line drawings. By way of illustration, Unit D (Fig. 5) captures a large cluster of broken pottery with associated faunal material. One can see the orientation and superpositioning of the different sherds as well as the horizontal and vertical relationship of the vertebra to the central cluster of ceramic sherds. Further, the scanned images of individual units can, unlike 2D line drawings, be rotated 360 degrees along the x, y, or z axis, allowing the researcher to reorient and zoom in and out of areas of interest (Fig. 6). Similarly, the highly detailed 3D image of Unit E captures the spatial relationships of the driftwood, faunal remains, and rock relative to the edge of the entrance tunnel (Fig. 7). Unlike House 3, our test excavation of adjacent House 4 did reveal a classic Mackenzie Inuit log floor in an excellent state of preservation. Fig. 8, the scanned 3D image of this unit,

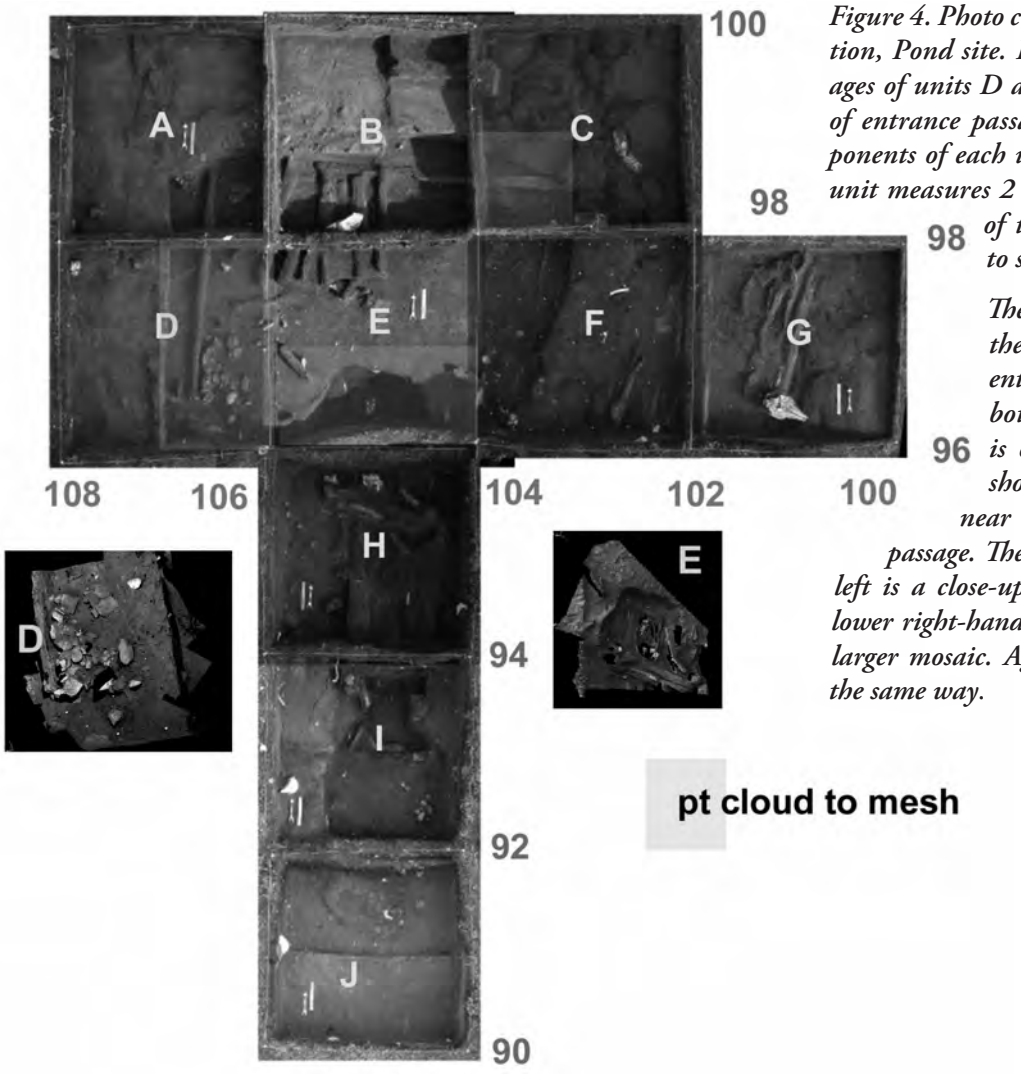

Figure 4. Photo composite of House 3 excavation, Pond site. Processed laser-scanned images of units D and E, shown on either side of entrance passage, illustrate specific components of each unit in greater detail. Each unit measures 2 m x 2 m and the long axis of the image is oriented north to south.

The laser scanned image on the right shows details of the entrance tunnel located in the bottom center of unit E. It is oriented the same way but shows materials uncovered near the bottom of the entrance passage. The laser-scanned image on the left is a close-up of potsherds found in the lower right-hand quadrant of unit D in the larger mosaic. Again, the image is oriented the same way.

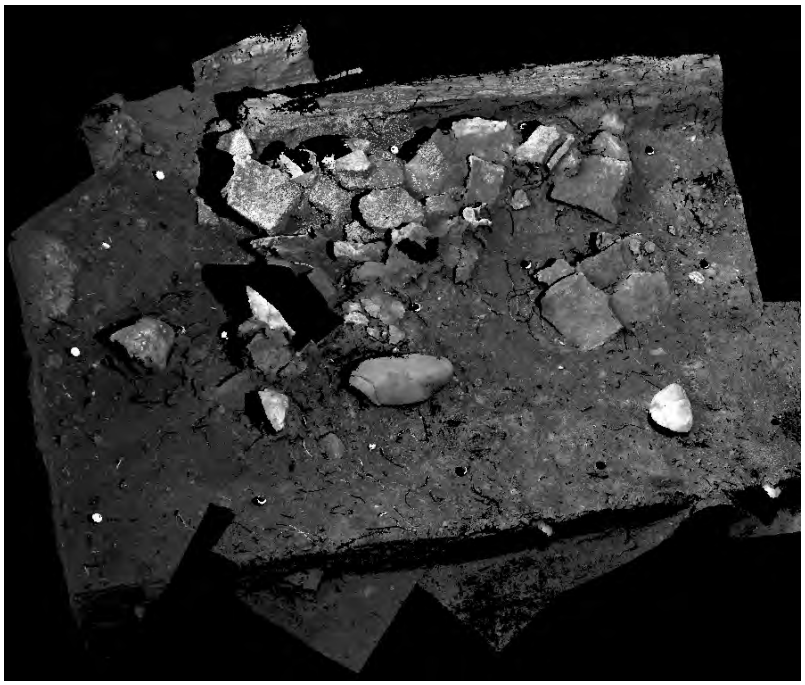

Figure 5. Scanned image of pottery cluster in unit D (see Fig. 6). Long axis is approximately 1 m.

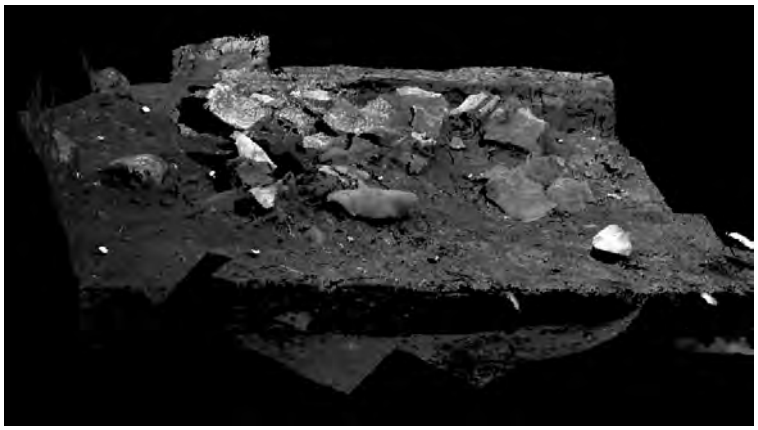

Figure 6. Rotation of 3D image in Fig. 5.

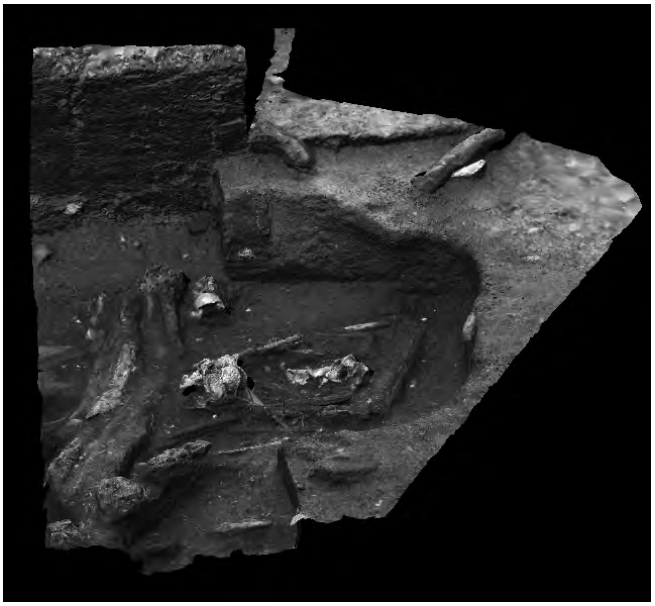

Figure 7. Scanned image of unit E, showing architectural details.

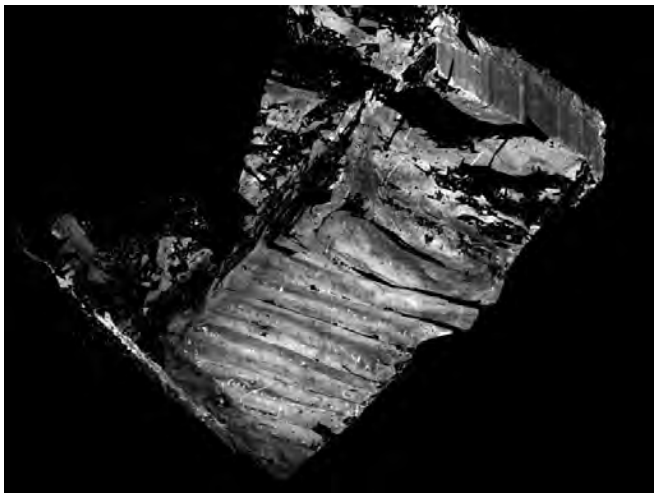

Figure 8. Scan of test unit in House 4, capturing the log floor.

nicely illustrates the ability of the scanner to capture significant architectural details when more substantial wooden pieces are present.

Given the unusual nature of House 3, the greater amount of architectural information obtained by the laser scanner may provide us with more insights into how this dwelling was constructed and used. These data will eventually form the basis for a 3D computer reconstruction. Reverse engineering once-standing structures from archaeological data is often challenging, and we have found such models useful in testing various construction and design scenarios. Furthermore, 3D models constructed from laser-scanned data can be used to examine the organization of domestic space (Levy et al. 2009). The recent construction of computer models of an Inuvialuit sod house and a Thule whale bone house has proven extremely valuable in analyzing design and building processes, visualizing interior space, and forming hypotheses about the organization of domestic space (see Dawson and Levy 2006; Levy et al. 2004 for some examples). Such models can also be used to develop products, such as interactive web pages and games, which both educate and excite public interest in archaeology.

CONCLUSIONS

In the past, arctic archaeologists have relied primarily on two-dimensional line drawings and photographs to document the preserved remnants of Mackenzie Inuit architecture. The floor plans of each successive layer are often drawn and photographed, thus compiling a record of the architectural components exposed during the course of an excavation. Unfortunately, the quality and accuracy of the drawings are highly variable, ranging from simple sketch maps to detailed plan views in which architectural features, such as floor boards and posts, are recorded using a system of Cartesian coordinates (x, y, z). We have found that laser scanning constitutes a more efficient and more accurate approach to the collection, interpretation and presentation of preserved architectural data in the Mackenzie Delta region.

Because we are still assembling the scans made of houses 3 and 4, processed images of several scanned 2 m x 2 m excavation units have been presented here as "proof of concept." As mentioned previously, one of the advantages of using the laser-scanned image rather than the more commonly used line drawings is that the architecture can be examined in three dimensions, and at a .3 mm level of accuracy. Once back in the lab, the researcher can rotate these images and zoom in and out of areas of interest, using applications such as Quicktime VR. The flexibility of this approach may eventually provide us with greater insights into the unusual architectural attributes of House 3 at the Pond site. After the processing of the House 3 scan images has been completed, for example, we will be able to explore the feature exactly as it appeared in the field. Analyzing architecture in this way might reveal architectural detail that was overlooked in the field, and therefore not recorded in more traditional line drawings of the feature.

Another purpose of this paper has been to outline our experiences using a laser scanner to record Mackenzie Inuit architecture at the Pond site. Our results illustrate that laser scanning can be used to successfully capture architectural data from remote sites at high levels of resolution. Though issues of logistics will always present challenges, laser scanners are able to withstand the jolts and shaking of travel when placed in G-force cases. Once on site, it is possible with UPS and generators to operate in the Arctic during the summer months. Having two scanners, one for general site description and one for scanning artifacts and details, would have made data collection and processing quicker. However, it was possible with a single higher resolution scanner to capture a detailed 3D image of an archaeological excavation. In conducting this research, however, several lessons were learned.

We had only recently acquired the Minolta VIVID 710 prior to its use in the field. Greater experimentation with the use of targets would have simplified the assembly of the final data set. In our work we used small glass spheres placed on a grid of approximately 20 cm. Unfortunately, the spheres were too reflective, leaving a hot hole in the data. In the future, these small spheres will be coated with a nonreflective paint. Also, if the spheres had been painted several different colors, their identification during data processing would have been easier. Furthermore, given the need to reduce the direct light over the entire feature, a portable shelter could easily be transported to the site. These portable structures are commercially available and come in sizes from 3.6 to 4.8 m wide and lengths of 6.10 m. Assembled from small sections, they are ideal for transport by helicopter. Made of metal or plastic tubing covered with a plastic-coated fabric, they can be staked to the ground. Commercial versions of this type of shelter can survive extreme conditions and create an enclosed space where equipment

is safe from dust, rain, and snow. Having such a shelter at the Pond site would have made it possible to create the necessary controlled lighting conditions, thereby optimizing data capture. Using an array of daylight fluorescent lights would result in better color and fewer shadows and hot spots. Although it would add at least four to six hours in setup, use of these portable shelters would save time in the long run and would guarantee better data capture.

In conclusion, having demonstrated that laser scanning is feasible and of benefit in recording archaeological sites in remote areas, the time is ripe to explore how this technology can be used to document cultural heritage sites in areas of the North American Arctic currently threatened by erosion and human interaction through development. Outside of northern Canada, laser scanners could be used to record petroglyths, geoglyphs, medicine wheels, as well as the remains of a variety of precontact and historic structures. The expense of laser scanning, coupled with the technical expertise required to process the images once captured, mean that this approach is likely not suited for every project. However, as the technology advances, costs will likely come down and image processing will become more automated.

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EVENT OR CONJUNCTURE? SEARCHING FOR THE MATERIAL RECORD OF INUVIALUIT–EURO-AMERICAN WHALER INTERACTION ON HERSCHEL ISLAND, NORTHERN YUKON

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ABSTRACT

During the 1890s, northern Yukon saw sustained and intensive interaction between local Mackenzie Inuit, foreign commercial whaling crews, and between whaling crews and Alaska Iñupiat at Pauline Cove on Herschel Island. The historical record for this period is rich, leading to an expectation that Inuit activities dating to this period should be well represented in the archaeological record. However, three field seasons of archaeological survey and excavation did not reveal the expected density of Inuit occupations dating to the 1890s. Instead, only two atypical and in some ways ambiguous components were encountered that could be confidently dated to this period and related to Inuit activities. In this paper, these two components are described and reasons for their rarity are discussed.

KEYWORDS: Herschel Island, Inuvialuit, interaction, whalers, ethnicity

INTRODUCTION

This paper is about looking for hard archaeological evidence for a key "event" in Inuvialuit history: the brief but critical period during which Inuit, Euro-American whalers, Athapaskans, and people of many other backgrounds interacted in the Mackenzie Delta region during the 1890s. Based on the prominence of this period in Inuvialuit histories, as well as its great weight in ethnographic and ethnohistoric studies of the region, this was a pivotal period and should be clearly manifested in the archaeological record. This is particularly true for Herschel Island, located in the Beaufort Sea on the Yukon north coast, which contained a natural harbor that served as the epicenter of whaler activities in the region (Fig. 1). However, despite the extremely high visibility of this period in the historic record, it proved very difficult to isolate archaeologically. After outlining the historic background and describing the relevant archaeology, I will discuss the reasons for and significance of this disjunction between archaeological expectation and reality.

THE WHALER ERA IN INUVIALUIT HISTORY

The Mackenzie Delta region generally, and Herschel Island specifically, have been occupied by Inuit since the Thule migration, currently dated in this region to around AD 1200 (Friesen and Arnold 2008). Extensive archaeological research shows an unbroken development from early Thule through the complex and diverse Mackenzie Inuit societies of the nineteenth century, as described by Franklin (1828), Petitot (Savoie 1970), Richardson (1828), and others. In essence, Mackenzie Inuit were the easternmost "Western Eskimos," more closely related to their Iñupiaq relatives in what is now Alaska than to the Central Inuit societies to their east. However, their cultural and social trajectory was influenced by relative isolation—no doubt some contact with the west always existed; however, it seems unlikely that it was ever particularly strong before the late eighteenth century (Morrison 1991).

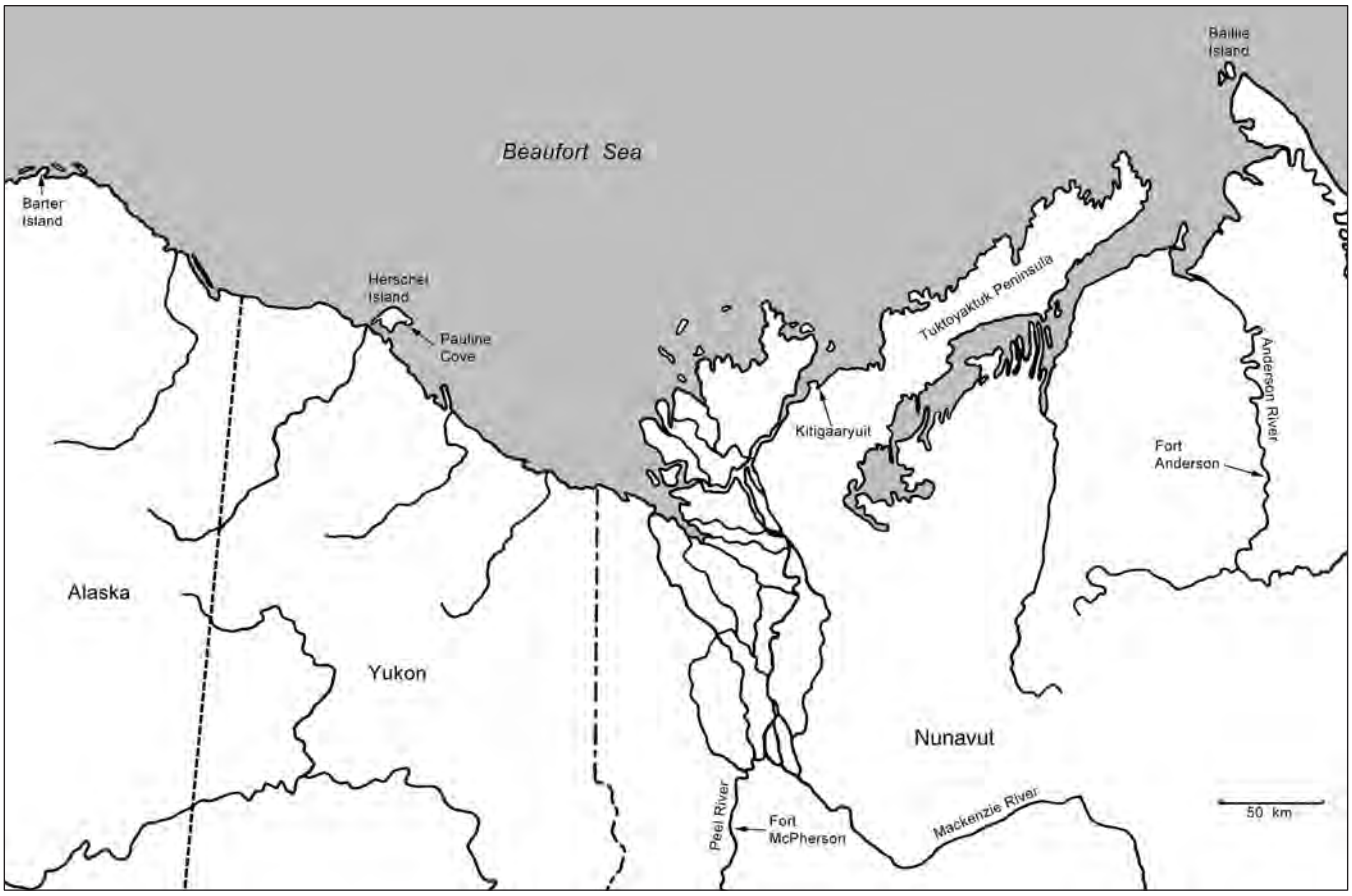

Figure 1. The Mackenzie Delta region, showing important locations mentioned in text.

Participation by Mackenzie Inuit in the expanding world economy appears to have increased gradually. From earliest Thule times, Mackenzie Inuit probably had knowledge of, and occasional access to, trade goods, especially iron, arriving from Asia via the Bering Strait region. In 1789, Alexander Mackenzie learned from his Dene companions that Mackenzie Inuit had acquired iron tools, probably from Russian sources via Barter Island in northeastern Alaska (Lamb 1970:191–212). The institution of regular trade at Barter Island had probably begun only a few years earlier (Morrison 1991), indicating a possible intensification of availability of Russian goods (direct contact between Russians and Alaska peoples had begun in the mid-eighteenth century).

In 1840, the Hudson's Bay Company built a trading post on the Peel River, which was eventually named Fort McPherson (Usher 1971a). The following decades saw ever-increasing access to Hudson's Bay Company trade goods by Mackenzie Inuit, initially through Dene intermediaries and eventually through direct travel to Fort McPherson and to Fort Anderson on the Anderson River during its brief existence from 1861 to 1866 (Hohn 1963). During this period, Petitot (1876, 1886, 1887; Savoie 1970) recorded the most extensive ethnographic description of Mackenzie Inuit life prior to intensive direct interaction. The late 1880s saw an increased number of direct visits to Mackenzie Inuit territory, as recorded by Bompas (Yerbury 1984), de Sainville (1984), and Lowther (Krech 1989), all of whom travelled through eastern Mackenzie Inuit territory.

Thus, before 1889, interaction between Inuvialuit and Euro-Americans, while important, was restricted to three main processes. First, occasional direct interaction occurred between Inuit and the explorers, traders, missionaries, and gentlemen adventurers who travelled through Inuvialuit territory. This process began in 1799 and continued at a low level throughout the nineteenth century, with a peak of activity related to the search for Franklin's lost third expedition (McGhee 1974). Second, there was an ever-increasing flow of Euro-American trade goods, both directly from Hudson's Bay Company trading posts such as Fort McPherson and Fort Anderson (Usher 1971b) and indirectly from Alaska Iñupiaq intermediaries who obtained goods from the Bering Strait region. Third, the

effects of epidemic disease ravaged the Inuvialuit population from at least as early as 1865 (Keenleyside 1990). The profound effects of these various processes on Inuvialuit society should not be underestimated; however, it is probably reasonable to say that as of 1889, the Mackenzie Inuit population had been reduced in number but resembled closely its "precontact" form in most aspects of society, including patterns of social organization, annual settlement patterns (often altered to include an annual visit to trading posts), house construction, and subsistence economy, which continued to be focused on resources such as beluga whales, fish, and caribou obtained for the most part through the use of indigenous technologies.

The year 1889 can be seen as a watershed in Inuvialuit history. In that year, Euro-American whalers traversed the treacherous northeast coast of Alaska to reach the eastern Beaufort Sea and Amundsen Gulf, the last refuge for the dwindling bowhead whale population (Bockstoce 1977). This was the culmination of a long-term process that saw the gradual northward expansion of the Pacific whaling fleet, reaching Bering Strait in 1848 and the western Beaufort Sea by 1873 (Bockstoce 1986). Throughout the western Arctic, Iñupiat and other indigenous peoples interacted intensively with whalers, serving as labourers and hunters (for archaeological approaches to this relationship, see Cassell 2000, 2004, 2005; Sheehan 1997). During each brief summer of the decade following the whalers' arrival in the eastern Beaufort Sea in 1889, whaling vessels plied the waters of the Beaufort Sea, and in addition to pursuing the bowhead whales, they were present at many points along the coast. From freezeup to breakup, many of these ships overwintered at Pauline Cove on Herschel Island and, to a lesser extent, Baillie Island. Because it contained the only relatively good harbor on the Yukon North Slope, whaling ships overwintered at Pauline Cove beginning in the winter of 1890–1891. At its peak in 1894–1895, Pauline Cove harbored fifteen whaling ships, with a total population of over five hundred whalers, Alaska Iñupiat, Siberian Inuit, and Dene (Bockstoce 1986). At Herschel Island, hundreds of whalers spent nine to ten months on shore, during which their ships were frozen into the harbor at Pauline Cove.

During this period, the ethnohistoric record expands rapidly in volume, with information contained in whaler's logs, Royal Canadian Mounted Police (RCMP) records, mission records, trading accounts, and autobiographies. The impact on Mackenzie Inuit society was immediate and major, with at least four main agents of change operating during the final decade of the nineteenth century. First, an increased volume of trade goods became available, with direct trade possible between Inuvialuit and whalers; prices were much lower than they were at the Hudson's Bay Company (Bockstoce 1986). Whalers also traded a much broader array of goods than did the Hudson's Bay Company, ranging from food items, such as flour, coffee, and syrup (Russell 1898:141–142) through chewing gum (Nuligak 1966:29) and apparatus for distilling whisky (Peake 1966:71), to items as large as whale boats (Ingram and Dobrowolsky 1989:150). The great variety of trade goods is perhaps best indicated by Russell's (1898:145) observation in 1894 of a group of Inuit on the mainland just south of Herschel Island:

> One of the men wore a new sombrero with a very broad brim. Others had miscellaneous odds and ends combined with their native costumes, with the effect on the beholder of having discarded a portion of their apparel and substituted an incongruous textile fabric to mark the loss. Several wore tight-fitting, red flannel drawers over their deerskin trousers.

In return for these trade goods, local Inuit exchanged fish, caribou meat, furs, and labor.

Second, increased waves of epidemic disease flowed into the Mackenzie Delta region. Although epidemics had begun to affect the region at least twenty-five years earlier, increased frequency of direct contact led to more opportunity for infection. New diseases became common (Whittaker 1937:115), and the epidemics of 1900 and 1902 reduced the population drastically (Jenness 1964:14): by some estimates, the population of indigenous Mackenzie Inuit dropped from as high as 2,500 to fewer than 150 by 1910 (Usher 1971a). Epidemics not only reduced the population, but were also responsible for the loss of much oral tradition and other cultural knowledge (e.g., Nuligak 1966:21).

Third, substantial immigration of indigenous peoples from outside of the Mackenzie Delta region occurred during this period, rapidly altering the ethnic makeup of local populations. Many Inuit, primarily interior North Alaska caribou-hunting peoples, were a part of whaling crews, and in many cases were engaged specifically to hunt caribou for food during over-winterings (Bockstoce 1986:274–275). Others, including Siberian and coastal Alaska Inuit, also arrived, and many chose to settle in the Mackenzie Delta region. In addition, large numbers of inland Dene regularly traded with the whaling ships at Herschel Island (e.g.,

Cook 1926:56–75). The impact of these immigrants on local Mackenzie Inuit populations was significant. For a society suffering enormous epidemic losses, new indigenous ideas must have hastened the changes that were already underway as a result of interaction with Euro-American society (e.g., Stefansson 1919:195).

The fourth agent of external influence was the combined effects of Euro-American religious and political ideology. The arrival of the whalers on Canadian territory led to the eventual deployment of Royal Northwest Mounted Police, who finally arrived in 1903 (Bockstoce 1986). Missionary activity also increased greatly in the period following 1892. Before that year, a few short trips had been made into Inuit territory by Petitot (1876, 1887), Bompas (Yerbury 1984), and Lefebvre (Duchaussois 1923). Steps toward a permanent mission were begun in 1892, when the Anglican missionary Isaac O. Stringer arrived at the Mackenzie Delta settlement of Kitigaaryuit and in the following year, when he visited Herschel Island for the first time. Stringer continually expanded his mission through regular visits to the coast, and in 1897 a permanent mission was established on Herschel Island (Peake 1966).

ARCHAEOLOGY OF THE 1890S ON HERSCHEL ISLAND

In sum, the arrival of the whalers in 1889 can be seen as a pivotal "event" in Inuvialuit history. Importantly, this view is not only a result of "southern" Euro-Canadian history; the whaler era, especially at Herschel Island, also looms large in Inuvialuit histories (e.g., Anonymous 1991; Nagy 1994; Nuligak 1966). However, very little archaeological research has been aimed at Mackenzie Inuit sites dating to the period after 1889, perhaps because this period is considered to be well represented in the historic record.

It was against this backdrop that I performed three seasons of fieldwork on Herschel Island between 1990 and 1992. My intent was to document and understand changes in Mackenzie Inuit culture in the centuries leading up to the whaler era. One of the central assumptions that went into fieldwork planning was that Inuit archaeological deposits dating to the whaler era would be common. Buildings constructed by Euro-American whalers still dominate Pauline Cove, and early photographs and documents (e.g., Bodfish 1936; Ingram and Dobrowolsky 1989; Nagy 1994) indicate that many Inuvialuit lived there during the whaler period. Therefore, it seemed a reasonable expectation that the archaeological record would contain numerous remains dating from the 1890s. In practice, however, samples relating to this period proved difficult to isolate.

Fifteen features at the Pauline Cove (NjVi-3) and adjacent Washout (NjVi-2) sites have been excavated over the years (Friesen 1995; Friesen and Hunston 1994; Yorga 1980). However, a great majority of the features are too old (pre-1889), too recent (1905 or later), or too disturbed to yield useful information on this period (Fig. 2). Many whaler-era buildings still stand on Herschel Island, and in 1992 we excavated the foundation of one, designated Feature 6 (Fig. 3). Predictably, although the structure was almost certainly constructed by whalers, its contents post-date abandonment and result from activities occurring after 1905 (Friesen 1994). The most general problem was that of mixed or disturbed deposits. The whaler era, and subsequent decades, have seen intensive use of Pauline Cove by both Inuvialuit and Euro-Americans. Each new group destroyed or altered evidence of previous occupations through activities such as construction of houses on top of earlier occupations, excavation of garbage or storage pits, amateur excavation to obtain artifacts, and tethering of dogs on earlier houses. These actions regularly destroyed artifacts, moved older artifacts into more recent levels, and provided the potential for deposition of recent artifacts in earlier assemblages. A number of houses were test excavated and determined to be too mixed for continued excavation. Others appeared to be almost completely sterile, possibly as a result of amateur excavation. Before my work on Herschel Island, Hunston (pers. comm. 1990) excavated one house on Herschel Island which may date to the 1890s; however, its precise chronology and its status as Mackenzie Inuit or Euro-American are unclear. In addition, in 1973 Bockstoce (1991, n.d.) excavated a house interpreted as having been occupied during the 1890s. However, because the artifact sample is very small and was destroyed in a fire, it is difficult to interpret the nature of this occupation.

Despite all of these issues, eventually two components dating to the period between 1889 and 1905 were identified and excavated. Both, however, offer challenges to interpretation.

PAULINE COVE FEATURE 8

Feature 8 is an enigmatic structure located in the south-central area of the site. It was originally visible as a low (approximately 35–40 cm high) horseshoe-shaped raised

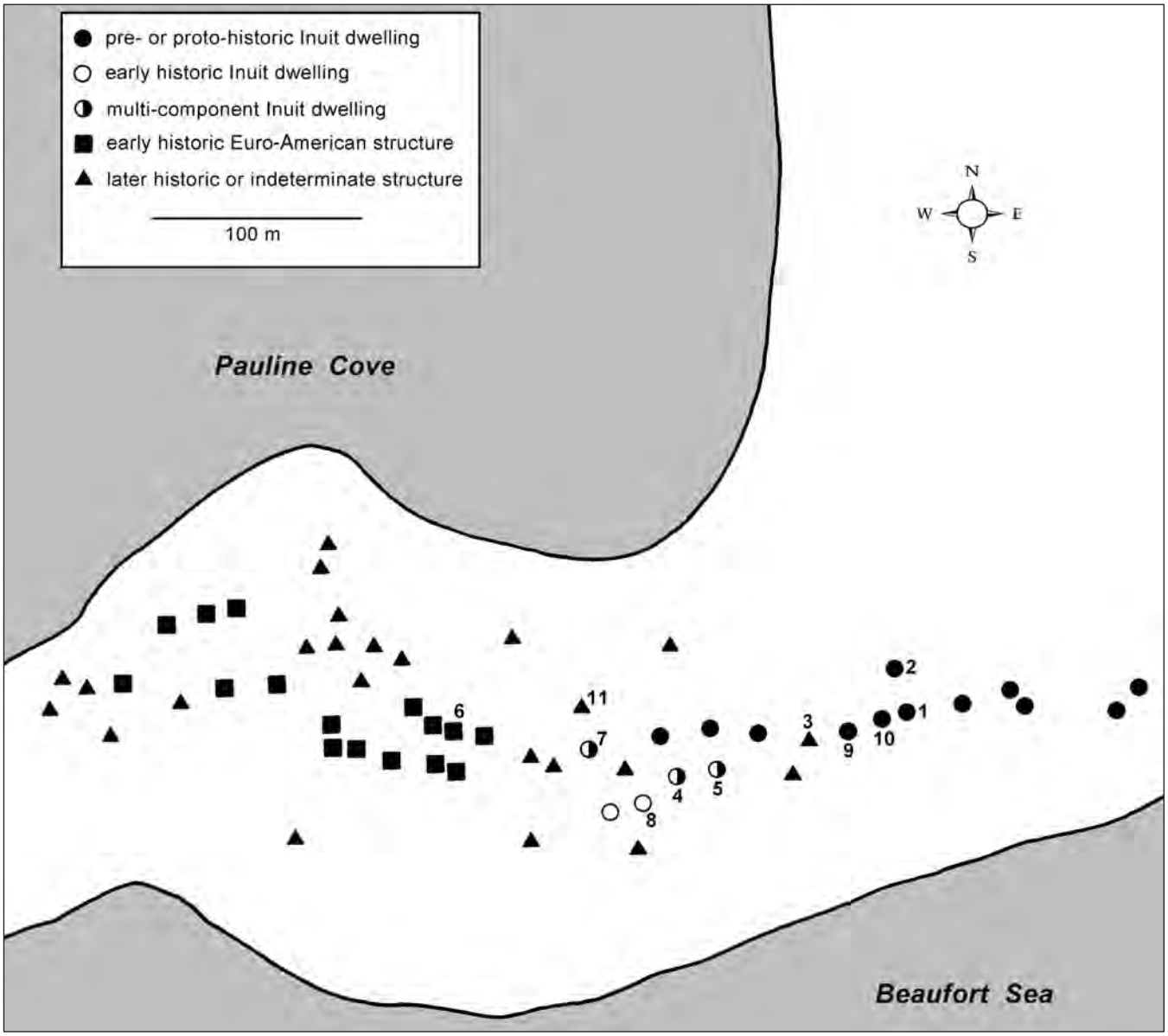

Figure 2. The site of Pauline Cove, Herschel Island, showing distribution of archaeological features and extant buildings.

rim of sod enclosing an area of approximately 3 x 3.5 m. It resembled a very small sod house in appearance, although it lacked any depression indicating an entrance tunnel. An initial test pit near the south end revealed a floor constructed of parallel driftwood logs, suggesting a traditional Inuvialuit occupation. Associated with this floor were a few historic artifacts, including a clay pipe fragment. Upon further excavation, however, it became apparent that this "floor" covered an area of only approximately 1 x 2.5 m near the front of the structure. The rest of the area enclosed by the sod rim was largely sterile (Fig. 4). Excavation beneath this limited floor area yielded a dense artifact cluster that appeared to date to the early historic period. Beneath this cluster of artifacts was another floor of almost exactly the same size as the upper one. However, the lower floor was constructed of boards, barrel staves, and packing crate ends (Fig. 5). Round nails were used exclusively in its construction.

Feature 8 does not fit readily into known architectural categories from the region, making interpretation difficult. The raised sod rim indicates insulation of some type of dwelling structure; however, it was clearly not a standard house. While the well-defined floor area in the front of the structure is underlain by a second floor, no walls, corner posts, entrance tunnel, or benches were present. The basal portions of two posts located in the middle

Figure 3. Pauline Cove Feature 6. This house was constructed by whalers during the 1890s, but was filled with midden deposits from later decades.

of the long axis of the feature probably indicate that this was in fact a tent foundation, perhaps banked with sod and with a complete or partial wood floor. It may have resembled, in some respects, the historic *qarmat* of the eastern Arctic (e.g., Stevenson 1984). Rectangular canvas wall tents that might leave a pattern such as this are visible in the earliest photograph of the Inuvialuit settlement on Herschel Island, dated circa 1894 (reproduced in Bockstoce 1986:267).

The description thus far leaves unexplained the two superimposed floors at the front of the structure and the rich artifact-bearing horizon between them. This concentration of artifacts does not neatly fit the profile of a refuse area or of a stratum of artifacts lost or abandoned under floor boards, as is common in many arctic sites (e.g., Ford 1959; Sheehan 1997). This interpretation is based on several factors, including the fact that both floors are well constructed and clearly linked to each other in a structural sense, that the concentration is situated within the house rather than outside it, and that the area contains a number of valuable items, including three labrets and many beads (Fig. 6). Thus, it seems more likely to have been a subfloor storage or cache area. Subfloor storage areas are not uncommon in semisubterranean winter houses, with particularly well-described examples from the Utqiaġvik site in Barrow, Alaska (Reinhardt and Dekin 1990); however, they are not known from lightly built structures such as Feature 8. For the moment, the precise nature of this feature must remain enigmatic.

Chronology. A number of lines of evidence suggest that Feature 8 was occupied during the 1890s and is, therefore, contemporaneous with the occupation of Herschel Island by Euro-American whalers (Appendix I). Six of the eight firearm cartridge types in Feature 8 are not chronologically diagnostic; however, two were produced for a relatively short period and therefore provide some higher resolution information. The .44 Smith & Wesson Russian was introduced in 1870 and phased out shortly after 1907 (Barnes 1989:245). The 45-125 Winchester Express was introduced in 1886, after which "it was not widely used and was discontinued after a few

Figure 4. Pauline Cove Feature 8. Upper floor, looking north.

years" (Barnes 1989:138). The cartridge was produced until 1916, but presumably in very small numbers.

Certain of the glass bottle fragments are also chronologically diagnostic. Two case bottles were produced using the dip-mold technique (numbers of bottles refer to minimum numbers of containers after refitting). This production method is generally early, with its use declining during the second half of the nineteenth century, although in many contexts it is "not useful for dating" (Jones and Sullivan 1989:26). Turn-molded bottles, represented by two specimens, generally date from the 1870s to the 1920s (Jones and Sullivan 1989:31). Finally, the technique using a two-piece mold with separate base, represented by a minimum of one specimen, was the most common type during the late nineteenth and early twentieth centuries, but was made obsolete by mechanical manufacturing techniques in the 1920s (Jones and Sullivan 1989:29).

The dating of this artifact sample to the whaler period is reinforced by more indirect evidence, namely its comparison with a sample from Pauline Cove Feature 6 (Friesen 1993, 1994). Feature 6 will not be described in detail here, but its contents are relatively securely dated to the period from around 1905 to 1920. In contrast to Feature 8, which contains all hand-blown bottles, all bottles in Feature 6 are machine made. This contrast implies a significant gap between occupations, increasing the likelihood that Feature 8 dates to the 1890s.

PAULINE COVE FEATURE 5

Before excavation, Pauline Cove Feature 5 was visible as the largest Inuvialuit house mound at Pauline Cove, standing over one meter above the surrounding land surface and covering a relatively large area (Fig. 7). Excavation revealed an Inuvialuit winter house of the form most common in the precontact period of the Herschel Island area. It had a main floor area of approximately 3.0 x 3.5 m, from which one rear and one side alcove extended. A short entrance tunnel entered the southern margin of the floor but was poorly defined. The large size of the mound apparently resulted from a relatively massive log construction and large amounts of insulating earth and sod piled against the walls. The House 5 excavations yielded large artifact and faunal samples. However, subsurface levels were severely

Figure 5. Pauline Cove Feature 8. Lower floor, looking south. Note that the floor in Fig. 4 is directly under the floor in Fig. 5, but the photos are taken from opposite angles.

disturbed, with the exception of a few small pockets of apparently undisturbed prehistoric or protohistoric artifacts.

Remarkably, the only large component that appeared to be unmixed is an early historic component recovered from the uppermost excavation layer as well as the entrance tunnel fill. The upper excavation layer consisted of the surface sod and the uppermost level of soil, to the base of active root system at a depth of 8–12 cm. Subsequent excavation of the tunnel yielded an assemblage that closely resembled that from the surface of the feature, which is incorporated into the sample listed in Appendix I.

This occupation is best interpreted as the result of a summer tent placed on the mound created by a collapsed earlier winter house. A similar placement of a historic tent floor on a house mound was recorded by Smith (1990:102) at the Utqiaġvik site in Barrow, Alaska. Such a placement probably resulted from the fact that house mounds are the highest points on an otherwise low, boggy, and occasionally inundated tundra. The dense accumulation of artifacts in the entrance tunnel probably represents a midden associated with the tent.

Chronology. Only one artifact was removed from the Feature 5 sample because it was deemed intrusive, namely a machine-made crown-cap lip fragment from a brown glass bottle that appears to be a recent beer bottle. This specimen was located very close to the surface. The remainder of the artifact sample closely resembles that from Feature 8 and does not appear to contain any recent artifacts or any typologically early artifacts from lower levels. As with Feature 8, all identifiable bottles were manufactured by hand, as opposed to automated processes. In addition, all rifle cartridge types were in use during the whaling period. One chronologically sensitive artifact consists of fragments of seven pages of the novel *The Freaks of Lady Fortune*, by Maria Crommelin (1889, 1891). This novel was originally published in 1889, with a first American edition in 1891, making it a good candidate for having been brought to Herschel Island during the 1890s. Finally, as with Feature 8, the profound differences between the Feature 5 sample and that from Feature 6 imply a significant time gap and, therefore, a chronological position within the period 1889–1905.

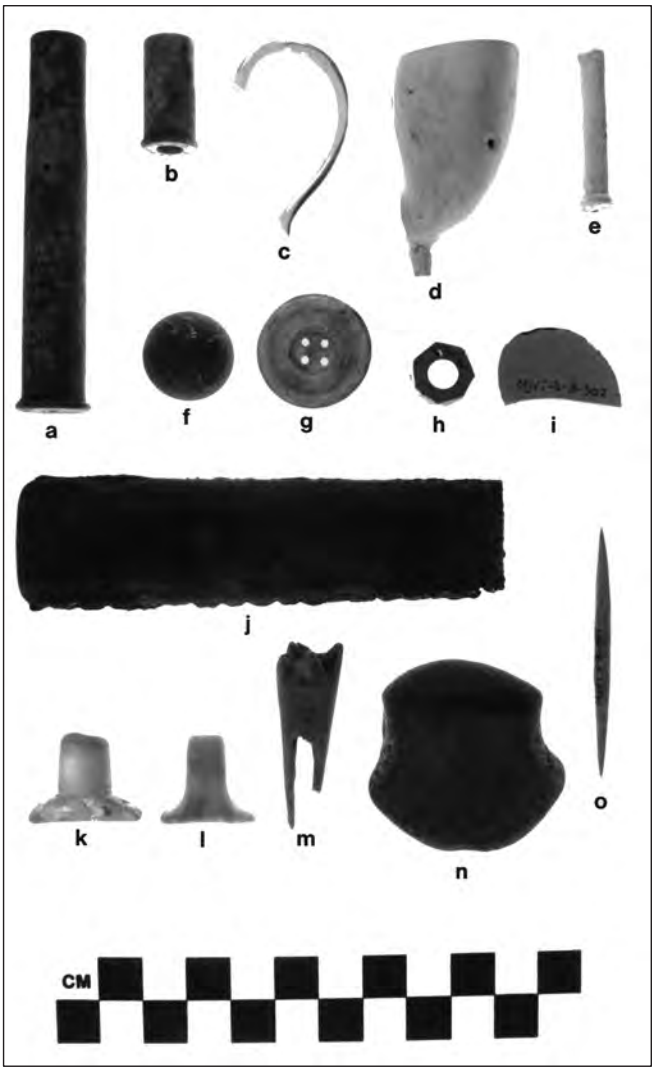

Figure 6. Pauline Cove Feature 8, representative artifacts: (a) 45-125 cartridge case, (b) .44 Smith & Wesson Russian cartridge case, (c) teacup handle, (d) clay pipe bowl, (e) clay pipe stem, (f) brass button with eagle and shield design, (g) bone button, (h) faceted blue glass bead, (i) sunglass lens fragment, (j) knife handle with incised geometric design, (k) labret manufactured from glass bottle stopper, (l) ivory labret, (m) blunt arrowhead, (n) stone net sinker, (o) gorge.

ETHNICITY

Having established that these two components were accumulated during the whaler period, it is important to determine the ethnicity of the occupants. However, this is a complex process due to the spectacularly diverse mix of people known to have been concentrated at Pauline Cove during the period. Initially, one must differentiate between Inuit and newly arrived whalers. "Whalers," in this context, included individuals from a great variety of backgrounds ranging from Americans and Europeans to Hawaiians (Bockstoce 1986). Though these groups were diverse, the Arctic was a very foreign place for all of them. They were closely tied to the over-wintering ships, and used limited amounts of locally produced material culture (with a few exceptions, such as Inuit skin clothing). Early accounts, photos, and paintings (e.g., Bockstoce 1986; Ingram and Dobrowolsky 1989) all indicate that whalers lived on board their ships and in a cluster of small frame structures on shore near the primary whaling structures. The extent of this area probably corresponds with the still-visible distribution of early historic Euro-American structures (Fig. 2). Features 5 and 8 are located over 50 m east of this cluster, consistent with their having been set apart spatially from the whalers' dwellings while in use, and thus increasing the likelihood that they represent Inuit occupations.

The form of the dwellings, and their contents, is also consistent with an Inuit, as opposed to whaler, origin. Feature 8, in particular, is best explained as the Inuit occupation of a canvas tent, banked with sod for warmth. Feature 5, on the other hand, does not contain any direct evidence for architecture; rather, the interpretation that it represents the remains of a tent on top of a house mound is based on the surface distribution and density of artifacts, and the Alaska analogue mentioned previously. The artifactual contents also argue for an Inuit attribution. Although the samples are numerically dominated by imported Euro-American items (a number that is inflated by the many broken bottles and metal waste fragments), a range of Inuit material culture across many functional classes is present (Appendix 1). A final class of material culture, consisting of the faunal remains, is not helpful. The faunal samples from Features 5 and 8 consist entirely of locally available species and both are dominated by ringed seal (Friesen 1995). While this would seem to be indicative of Inuit diet, at least one historic context on Herschel Island that can be confidently related to Euro-American lifeways is similar (Saxberg 1993); therefore the fauna cannot help in determining ethnicity. Nevertheless, all evidence points to an Inuit origin for these components.

A second, and inherently more difficult, question relates to whether these occupations relate to Mackenzie Inuit (local Qikiqtaryungmiut from the Herschel Island area, or others who travelled from farther east in the Mackenzie Delta), as opposed to Inuit

Figure 7. Pauline Cove Feature 5 during early stages of excavation. The early historic artifact sample was obtained from the surface of the house mound and from a dense midden deposit in the entrance tunnel, near bucket in center of photo.

from elsewhere, and in particular Alaska Iñupiat. Large numbers of Iñupiat came with the whalers and played many roles, ranging from providing labor for whaling crews to hunting caribou to sewing and repairing clothing. Here, the ethnohistoric record is not as much help as might be hoped. Many early accounts and secondary sources do not emphasize Inuit activities, and when they do, it is not always clear whether the Inuit referred to are Qikiqtaryungmiut and other Mackenzie Inuit (referred to as some variant of "Kogmollik" in most sources) or Alaska Iñupiat (referred to as some variant of "Nunatamiut"). Many individuals from this last group were brought to Herschel Island by whalers, and others travelled to the area by themselves (Bockstoce 1986). Importantly, interior Gwich'in (Athapaskan First Nations) also came to Herschel Island during this period, primarily to trade and to hunt for whalers' subsistence; however, their material culture is different enough that they can be ruled out as having occupied these two features.

Alaska Iñupiat culture, including material culture, was very similar to Mackenzie Inuit—very few categories of material culture can be used to differentiate the two. This is particularly true of the Qikiqtaryungmiut who lived on Herschel Island (e.g., Friesen 2006); these were the westernmost Mackenzie Inuit, many of whom travelled to Barter Island annually to trade with Iñupiat, before the arrival of whalers. However, Feature 8 did include one arrowhead, which hints at a Mackenzie Inuit origin. It is made of bone, in a form that is relatively common in the Mackenzie Delta region but rare or unknown to the west. In fact, Murdoch (1892:206) collected one of these arrowheads in Alaska where it was referred to as a "Kunmud'lin" type, the name being the Iñupiat term for Mackenzie Inuit (see Morrison 1988). When this is combined with the fact that these two features are located at some distance from the main whaler settlement, which is not what would be expected from Iñupiat closely connected to the whaling ships, it seems most likely, though not certain, that these two features represent local Mackenzie Inuit occupations.

DISCUSSION

Based on the ethnohistoric record, one of the primary expectations guiding archaeological fieldwork at Pauline Cove was that Inuit components dating to the 1890s would be common. This period was critical to the project's research goals, since it represented the "end point" of a cultural sequence documenting changes in Inuit lifeways from the precontact through early historic periods. However, after three field seasons on Herschel Island this expectation was not met. In particular, although evidence of the whaler period is common across much of Pauline Cove, and despite complete or partial excavation of fifteen features combined with extensive site surface survey, only the two components described above can be confidently dated to the whaler period *and* represent relatively unmixed results of Inuit activities.

However, neither component represents a "standard" archaeological manifestation of local Inuit society, as represented by winter semisubterranean houses or summer tents. Instead, one is a diffuse surface scatter occurring in the uppermost layer on top of a sod house but not associated with its main occupation, and the second is a tent rectangle banked with sod, with a carefully constructed double floor at its front, indicating some unclear and unusual function. To compound the interpretational issues, the attempt to determine the ethnicity of the two features' inhabitants results in a similar level of ambiguity. While the two occupations are safely interpreted as resulting from Inuit activities, and it is likely that they relate to Mackenzie Inuit (as opposed to Iñupiat) activities, the material evidence does not allow absolute certainty. Based on all of these factors, the material remains can be used, cautiously, to understand aspects of past Inuit activities during the whaling period but are not as robust as originally hoped. This circumstance raises the broader question of why the archaeological record of this period is so difficult to recover.

In his influential framework for understanding major processes in history, Braudel (1980) defined three levels of historical phenomena: events, conjunctures, and the *longue durée* (see Galloway 1997; Hull 2005; Knapp 1992 for considerations of relevance to archaeology). "Events," according to Braudel, are what traditional narrative history is built around and occur on the scale of short time spans, the actions or perceptions of individuals, and the rhythms of daily life. The *longue durée* refers to very large-scale, long-term patterns and cycles lasting for centuries or more, such as the impacts of environment and geography on the development of human societies. "Conjunctures" are intermediate—cycles and processes occurring on a scale of decades to centuries, playing a more dynamic role in human societal development than the *longue durée* (cf. Gallivan and Klein 2004), but not as ephemeral or idiosyncratic as "events." The level of the conjuncture is often at the limit of specificity with which archaeologists can understand processes and patterns of change and stability in the past (cf. Smith 1992:69). Importantly, these three categories of historical phenomena should not be seen as strictly divisible or definable in all instances; rather, they represent a continuum of historical scales (e.g., Tomich 2008).

Based on this scheme, and taken from the vantage point of the documentary record, the period of Inuit-whaler interaction on Herschel Island can be considered an event, and a pivotal one, in Inuvialuit history. It fills the pages of primary and secondary historical sources, leading to the impression that it should be well represented archaeologically. We can even begin to see aspects of this process through the eyes of individuals who participated, ranging from the shaman Kublualuk (Nagy 1994) and, slightly later, the famous Inuvialuit hunter, trapper, and historian Nuligak (1966), to the Anglican missionary Isaac Stringer (Peake 1966) and the whaling captain Hartson Bodfish (1936). When viewed in this light, the archaeology as outlined above is disappointing, having failed to yield an equally high-resolution range of information on Inuit lifeways.

However, there is another way to look at this situation: namely, that the very rarity of high-resolution components, and the unusual or ambiguous nature of those that have survived, is itself informative. Rather than observing an "event" at the moment of Mackenzie Inuit interaction with whalers, we are seeing the results of a much broader process of reorganization from Mackenzie Inuit into Inuvialuit society, with all its complex and diverse interactions between Mackenzie Inuit, Alaska Iñupiat, whalers, and others, and its radical waves of new material culture. In other words, this is a "conjuncture" in which larger scale historical cycles come together in a particularly emphatic way. When viewed in this light, each aspect of the archaeological record makes sense. The lack of high-resolution single-component contexts is now expected, and attributable to the wide range of activities occurring during the whaling period and the following decades. These activities obscured or destroyed the whaler-period components,

many of which would have been located on or near the surface of the site. Uncertainty about the ethnicity of the occupants of Features 5 and 8 becomes less important when the period is viewed as a conjuncture, because the people living here, regardless of whether they were local or nonlocal Inuit, were essentially embodying the "new" Inuvialuit society that arose as a dynamic combination of pre-existing Mackenzie Inuit with newly arriving Alaska Iñupiat. Furthermore, the fact that the two components are represented by ephemeral or unusual architecture is again explainable in terms of this conjuncture. The apparent remains of a tent on top of a house mound at Feature 5 may indicate a less formal occupation with a relatively short anticipated duration of occupation, resulting from altered Inuit settlement patterns. The odd construction of the superimposed floors in Feature 8, with a dense accumulation of artifacts between them, indicates an unusual episode of primary deposition, perhaps representing some sort of formal caching or even "hoarding" (e.g., Bradley 1996; Diehl 1998).

Finally, there are the artifacts. While their full interpretation will be elaborated upon elsewhere, it is worth noting several points in the present context. Artifacts from both features cover a wide range of activities, with both imported and locally produced items relating to food procurement, clothing, artifact production and maintenance, cooking, and other activities. Within this group, though, are interesting phenomena such as the great diversity of firearm ammunition calibers, which may indicate that the site's inhabitants were actively experimenting with new material culture during this time of upheaval. Also noteworthy is the relatively large number of artifacts relating to social activities, including liquor bottles, tobacco pipes, accordion keys, and playing cards; all of these speak of radical cultural influences. Perhaps the most profound illustration of multiple cultural strands coming together is seen in objects that bring together imported materials with local manufacturing techniques, including several scrapers made from glass, a blunt arrowhead made by placing an empty 30-30 cartridge case on a wooden arrow shaft, and a labret made from a glass bottle stopper.

In the final analysis, it is significant that the archaeological record of this period in Inuvialuit history is hard to find on Herschel Island and when found, difficult to interpret. Too many different historical trajectories were coming together, and too many "events" were occurring, to lead to neatly patterned material remains. However, the fragments of the past that do remain still tell an interesting story, even if they do not fit neatly into expected categories. That story is of a conjuncture in which Inuit were confronting the European world economy and reconfiguring their lifeways according to new opportunities and new constraints, all amid a tragic loss of life due to waves of epidemic disease. The archaeology does not easily reveal individual events in this process, but speaks profoundly to the radical change that was occurring.

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APPENDIX 1. EARLY HISTORIC PERIOD ARTIFACT FREQUENCIES FROM FEATURES 5 AND 8, PAULINE COVE, HERSCHEL ISLAND

IMPORTED ARTIFACTS	F5 (*n*)	F8 (*n*)
Land Hunting		
Bullet, .22	1	
Bullet, .44	1	2
Bullet, unknown caliber	1	1
Cartridge case, 30-30	8	
Cartridge case, 30 Army	1	
Cartridge case, .38	2	4
Cartridge case, .38 Smith & Wesson	1	
Cartridge case, 40-65		1
Cartridge case, .41 Long Colt		1
Cartridge case, .44 S&W Russian		1
Cartridge case, 44-40	23	22
Cartridge case, 45-60		29
Cartridge case, 45-70	3	7
Cartridge case, 45-125		2
Cartridge case, unknown caliber		1
Shotgun shell, 10-gauge		9
Gun grip (?)		1
Transportation		
Clasp		2
Manufacturing and Related Activities		
Knife blade, iron	1	1
Knife handle		1
Engraving tool tip, iron		3
Bolt	2	
Screw	4	3
Nail, round	20	42
Nail, square	9	78
Saw blade	1	
Window glass fragment		6
Chicken wire fragment	1	
Pail handle	1	
Spring, iron	1	
Pencil eraser, rubber		1
Pencil top, metal		1
Letter "H," iron		1
Household Maintenance and Food Consumption		
Lamp burner fragment	2	
Lamp chimney fragment	5	10
Candle		1
Coal nodule		3
Bowl fragment, ceramic	2	1
Cup fragment, ceramic	3	5
Vessel fragment, ceramic	5	20
Tray, metal		1
Bowl, iron		1
Spoon, metal		1
Can fragment	36	35
Can key		3
Bottle fragment, glass	528	234
Jar lid	1	
Lid, metal	2	
Cork	3	10
Clothing and Ornaments		
Boot insole	1	
Boot fragment, rubber		3
Belt buckle	1	1
Button	3	11
Snap		5
Button tab		1
Fabric fragment	14	8
Mitten fragment	1	1
Sunglass lens		1
Bead, glass	97	92
Bead, glass, large	3	4
Bracelet	1	1
Ring (?)	1	
Miscellaneous Activities		
Accordion parts	11	
Playing card	3	
Pipe bowl, wood	1	1
Pipe bowl, corncob	1	
Pipe bowl, brass		1
Pipe fragment, clay	12	3
Pipe stem fragment, plastic		2
Pipe stem band, brass	1	1
Pipe lid, metal		1
Pipe rim, metal		1

IMPORTED ARTIFACTS	F5 (*n*)	F8 (*n*)
Unidentified or Debitage		
Ferrous metal	63	136
Brass	5	5
Lead	1	
Other metal	2	
Glass	7	5
Plastic/Rubber	2	
Fiber		1
Paper	5	
Wood		1
Unidentified material		1

LOCALLY PRODUCED ARTIFACTS	F5 (*n*)	F8 (*n*)
Sea Hunting		
Harpoon head, Nuwuk (one with iron rivet)	2	
Darting harpoon head	1	
Land Hunting		
Arrowhead	1	1
Bola weight, bone	1	
Arrowhead, blunt (30-30 cartridge case on wood shaft)	1	
Fishing		
Net float	1	
Net sinker	1	1
Fish gorge		1
Transportation		
Swivel (swivel plate plus spindle, probably for dog harness)	1	
Manufacturing and Related Activities		
Engraving tool handle, wood		3
Bag handle (?)	1	
Whetstone	1	1
Household Maintenance and Food Consumption		
Small scraper, glass	1	1
Cobble spall scraper, glass		2
Scraper, slate	1	
Boot creaser (?)	1	
Spoon, wood	1	
Tray fragment, wood	1	

LOCALLY PRODUCED ARTIFACTS	F5 (*n*)	F8 (*n*)
Rectangular stone slab		1
Clothing and Ornaments		
Belt fastener (?)	1	
Earring, ivory	1	
Labret, glass		1
Labret, ivory	1	2
Pendant (?), ivory		1
Miscellaneous Activities		
Amulet box	1	
Whale carving	1	
Model harpoon head		1
Unidentified or Debitage		
Skin	2	1
Wood	13	13
Chert	1	
Baleen	3	
Slate	2	
Bone	8	6
Antler	6	1
Ivory	1	7
Whalebone		2
TOTAL	**961**	**878**

INUVIALUIT RISING: THE EVOLUTION OF INUVIALUIT IDENTITY IN THE MODERN ERA

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ABSTRACT

The Inuvialuit of the western Canadian Arctic were recognized by the government of Canada as the traditional owners and formal stewards of their territory by the Inuvialuit Final Agreement of 1984. During the pursuit of this claim, its progenitors replaced the Western term 'Mackenzie Inuit' with the Inuvialuktun term 'Inuvialuit' as the collective identifier of the seven or eight traditional groups of the Mackenzie/Beaufort region. The relationships between these groups, and their notions of collectivity, have a rich and complex history. This paper traces the evolution of Inuvialuit social and cultural identity from precontact times through the modern era. The primary focus, however, is on the forces and influences that have helped to shape contemporary Inuvialuit culture, society, and identity in the twentieth century.

KEYWORDS: Inuvialuit, identity, community-based research, land claims, Mackenzie River

The Inuvialuit are the Inuit of the western Canadian Arctic. They have lived along the lower reaches of the Mackenzie River and adjacent coastlines bordering the Beaufort Sea for much longer than recorded in historical documents or oral history. Their ownership and stewardship of this territory was formally recognized by the government of Canada in the Inuvialuit Final Agreement of 1984. The term 'Inuvialuit' only came into widespread use during preparations for the land claim, when it became the collective signifier for the regional groups that historically occupied the lower delta/Beaufort region and who were documented by Europeans in the contact era. Inuvialuit means 'the real people' (Inuvialuit Regional Corporation n.d.). Since the signing of the claim, Inuvialuit have represented themselves to the outside world by their chosen name and as a distinct group with their own languages, cultures, lands and resources (Fig. 1). They have increasingly articulated their own specific histories and cultural patterns and have begun to share these with the outside world.

The present paper asks how Inuvialuit identities have evolved in the modern era. In particular, I am interested in exploring the forces and influences that have helped to shape the Inuvialuit as a group and how these have changed over the course of contact history. Identity, as discussed below, is a sociopolitical and cultural concept that has been defined in many ways. I use both the singular 'identity' and plural 'identities' throughout this paper to suggest that, like individual identities, collective Inuvialuit identity is subject to multiple definitions and understandings, depending on context. Different identities may be constituted, used, reformulated, and shared by the Inuvialuit community at large, while others may be defined on a person-by-person basis. The term 'modern' refers to postcontact history and the origins and evolution of the modern world system, resulting from the configuration of European nationalism and imperialism and the global expansion of the capitalist system (Hall 2000; Voss 2008:13). The postcontact period began with the arrival of European explorers, starting with Alexander Mackenzie's descent of the river that would bear his name in 1789 (Mackenzie 1801). This paper, however, will focus on events of the twentieth century that have led towards and

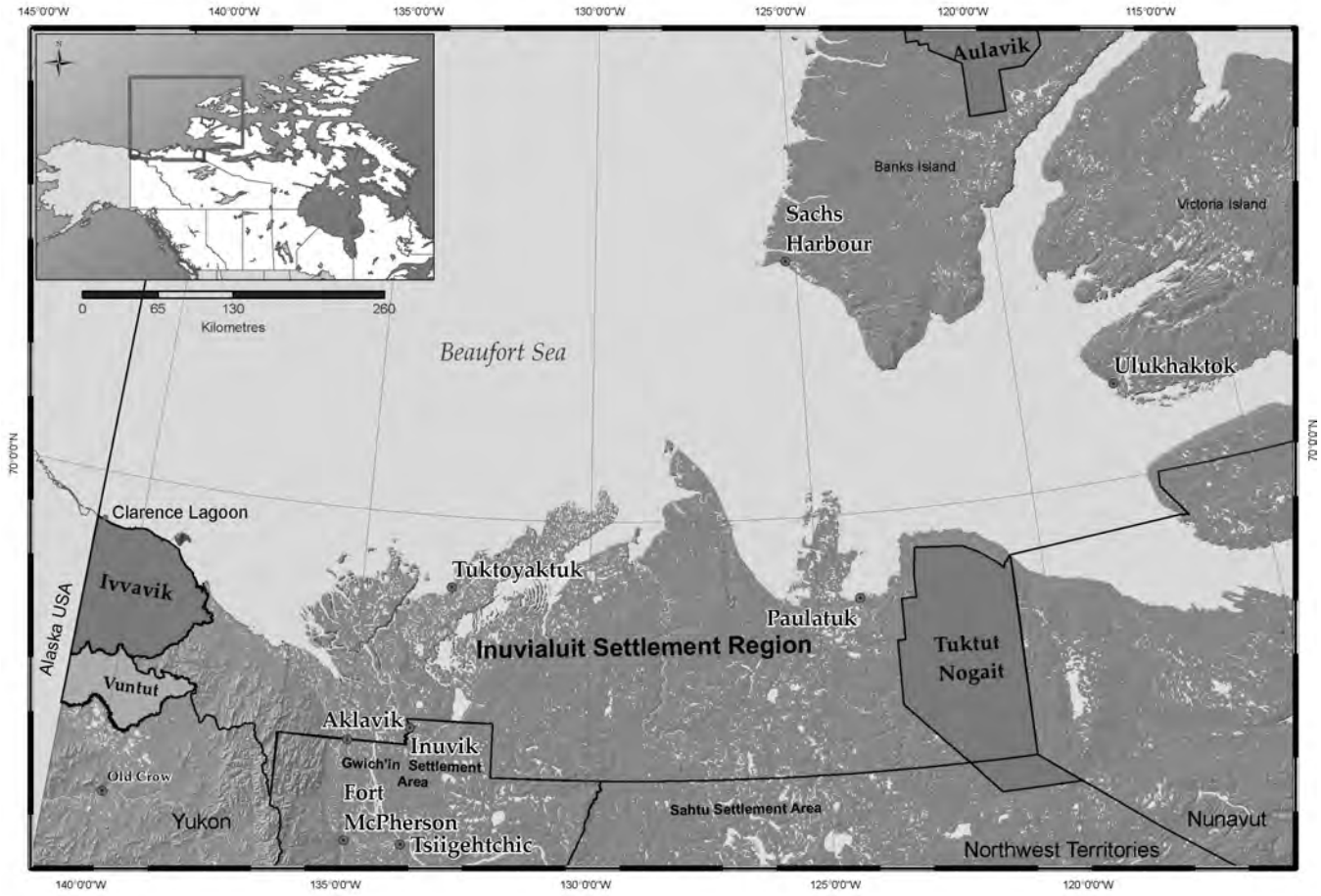

Figure 1. Map showing the communities of the Inuvialuit Settlement Region and national parks established by the claim.

helped constitute the present sociopolitical and cultural identity of the Inuvialuit.

DEFINING IDENTITY

Identity is a complex concept that has received considerable theoretical attention in the past several decades in the social sciences (e.g., Bentley 1987; Gupta and Ferguson 1992; Jones 1997; Meskell 2001, 2002). Identity, as used here, refers to the affiliation an individual feels to particular groups, ideas, and/or standpoints. Individual identities encompass a complex and fluid mosaic of traits relating to place, gender, language, sexual orientation, nationality, history, and ethnicity. "These conceptions, communicated inwardly to oneself or outwardly to others, constitute identity" (Smoak 2006:5). Identity is defined by difference, in terms of with whom or what one aligns oneself. Identity politics flow from various forms of social differentiation that can cause significant challenges to and ruptures in the status quo (e.g., the women's, black power, and American Indian movements; Sider 1994).

The concept of ethnogenesis refers to the creation of cultural identities. In contrast to a fixed or static notion of identity, ethnogenesis implies the fluidity of ethnic identities, which emerge, morph, and are eclipsed according to historical and political contingencies (Hill 1996; Smoak 2006; Voss 2008). A radical shift in social configurations is a frequent outcome of cultural contact, where both colonizer and colonized experience profound disruptions. Voss uses the term 'colonial ethnogenesis' to describe this situation and suggests that while

> indigenous populations displaced by or entangled with colonial institutions are the most severely affected [parties], the colonists themselves are also irrevocably transformed by their own displacement and by their encounters with local indigenous people. (Voss 2008:2–3)

Voss develops the example of a primarily Mexican population of late eighteenth-century San Francisco who abandoned elements of their ethnic roots to elevate their social standing within the colonial *sistema de castas* (Voss 2008).

Contemporary identity theorists conceive both individual and collective identities as complex, fragmented, overlapping, and intersecting (McIlwraith 1996; Weaver 2001). As suggested above, identities are both negotiated and evolving according to circumstance. Negotiation requires a back and forth movement between "two positions, two places, two choices" (Derrida 2002:12). This fluidity implies that a person may assume a certain constellation of social identities (mother, wife, Canadian) in one social setting and an entirely different set (activist, Mohawk, lawyer) in another, even if they appear outwardly contradictory. The discussion that follows maps out the changing landscape and contingent and evolving nature of Inuvialuit collective identities through time.

IDENTITY POLITICS IN CANADIAN ABORIGINAL COMMUNITIES

In aboriginal communities in Canada (and elsewhere), the politics surrounding the construction and maintenance of cultural identities are heavily loaded due to the specter of land claims and legislation (most notably, the Indian Act) which requires "proof" of aboriginality and historicity. In this context, Lawrence (2003:22) has noted that contemporary conceptions of identity as fleeting and changeable, rather than as innate and essential, have the potential to damage individual and group claims to aboriginal rights. Perhaps for this reason, theorists have approached aboriginal identity through the development of a politics of difference, which entails "an ongoing struggle by communities to capture recognition for the distinctive cultural and political attributes of their ways of life" (see Schouls 2003:4). Following this doctrine, aboriginal groups have tended to define themselves in opposition to cultural 'others,' rather than in affinity with them.

Part of the process of building collective identities is through the right to self-definition (Schouls 2003:53). Identity construction by Canadian aboriginal communities has recently involved shedding the names given to them by colonizers in favor of self-chosen designations. This process acknowledges that colonizers' designations are themselves cultural artifacts and have played an essential role in structuring the relationships of power between these groups (Campbell and Cameron 2006:147). For their part, indigenous peoples in the Canadian Arctic have actively pursued self-definition. Inuit of the eastern Canadian Arctic, for example, have represented themselves to the English world by the ancient Inuktitut term *Inuit*, which identifies "real" or "genuine" people, *inutuinnaq*, since the 1970s (Campbell and Cameron 2006; Dorais 1997:87). *Inuvialuit*, by comparison, is an Inuvialuktun word that has only recently been used to identify, and in a sense unify, this group of people. Inuvialuit identity thus has an emergent property, as it evolves in proximity (or opposition) to, and in relationship with, other aboriginal groups; southern Canadian culture; external structural, political, and economic forces, etc.

Membership within aboriginal groups may be determined through a number of legal, social, and cultural means (see Campbell and Cameron 2006; Weaver 2001). Aboriginal people in Canada are of course defined by juridico-legal terms such as Indian, Inuit, and Métis. Like many other land claims, the Inuvialuit Final Agreement specifies a blood quantum for claimant status (e.g., claimants must have one-quarter Inuvialuit blood or be married to a beneficiary). More organic criteria for community membership are also generated and practiced within aboriginal communities themselves. Weaver (2001) suggests that cultural identity may be reflected in the values, beliefs and worldviews of indigenous people. Aikio (1990, cited in Campbell and Cameron 2006:147) proposes a set of flexible criteria for membership in an ethnic group, including "self-identification; ancestry; special cultural characteristics, such as a command of the language; or, existing social organization for interaction among members." I will return to this set of criteria in relation to the shaping of present-day Inuvialuit identity below.

IDENTITY IN THE INUVIALUIT COMMUNITY

This paper will describe a loose chronology of events surrounding the construction and evolution of identity in the Inuvialuit community. This will involve examining the internal processes of identity-building and political action within the community, and tracing the nature and evolution of relationships between Inuvialuit and cultural others. I begin by briefly discussing aspects of "traditional" Inuvialuit identity, as suggested by the ethnographic record. I then turn to the contact period and its dramatic influences on Inuvialuit interaction with local and foreign cultural groups and the incorporation of the Inuvialuit socioeconomic structure into the world system (cf. Friesen 1996). Next, I examine the movement of Inuvialuit and other cultural groups into the delta, the florescence of delta communities, and the social changes promulgated by these changes. In closing, I discuss current axes of identity

development in the Inuvialuit community, including contemporary conceptions and the role of the land claim in renewing Inuvialuit cultural practices and identity.

The information presented in this paper is derived from a number of sources. It is drawn primarily from interviews and conversations with Inuvialuit elders, leaders, educators, and community members over the past several years during my involvement with them as an archaeologist and anthropologist interested in documenting insiders' understandings of Inuvialuit history and culture (Lyons 2006, 2007a, 2007b). This research has entailed working with twenty-five elders from Aklavik and Inuvik, Northwest Territories, to collect partial life histories and to document their views on a number of subjects related to Inuvialuit history, cultural heritage, and material culture. These elders primarily speak two Inuvialuktun dialects, Uummarmiut and Siglitun. Uummarmiut is the language that developed amongst Inupiat (called Nunatama below) who migrated in a series of historic waves to the delta and intermarried with Inuvialuit; Siglitun is the language of the original inhabitants of Inuvialuit territory (Freeman et al. 1992:11–16; Lowe 1991; Nagy 1994:1–3, 2006:72). A third Inuvialuktun dialect, called Kangiryuarmiut or Inuinnaqtun, is spoken by the easternmost community of the Inuvialuit, Ulukhaktok. Interviews and discussions with younger community members focused in part on Inuvialuit conceptions of Inuvialuit history, including the events of the land-claim era.

This paper also draws on the few published accounts of elders' oral histories (e.g., Alunik 1998; Alunik et al. 2003; Nagy 1994, 2002; Nuligak 1966), as well as the rich historic and ethnographic record of Inuvialuit life from the time of contact forward. While the ideas and opinions of specific Inuvialuit are presented below (these individuals are named and/or referenced by their initials throughout the following paper; interview details are provided in Appendix I), it should be noted that my emphasis is on questions of collective Inuvialuit identity, rather than individual experiences of identity, as it relates to ethnicity, gender, class, age, and religious or economic affiliation.

CONSTRUCTION OF IDENTITIES: THE TRADITIONAL INUVIALUIT

Based on ethnographic and archaeological evidence, Inuvialuit local groups had been evolving for at least several centuries at the time of contact with Europeans. Betts (this volume) suggests that the ethnogenesis of local Inuvialuit groups occurred between the arrival of Thule people in the western Canadian Arctic ca. AD 1250 and sustained contact with European-derived peoples in the nineteenth century. At the time of contact, Inuvialuit lived in seven, or possibly eight, named groups stretching from Herschel Island in the west to Darnley Bay in the east (Alunik et al. 2003:14–17). These groups named themselves to ethnographers as the Qikiqtaryungmiut, Kuukpangmiut, Kitigaaryungmiut, Nuvugarmiut, Avvarmiut, Igluyuaryungmiut, and Immaryungmiut (refer to Betts Fig. 2, this volume), appellations drawn primarily from place and economic focus (Betts 2007:4–5).

Autonomous and independent, these regional groups may not have felt a strong collective sentiment, but written and oral history does suggest that they distinguished themselves from neighboring Inuit and Dene groups (Nagy 1994:2–3; Stefansson 1919:23–24). Inuvialuit interaction was both relatively frequent and amicable with Inupiat of the Alaska North Slope, although raiding did occur between the two groups on occasion (Stefansson 1919:155). By contrast, Mackenzie peoples seem to have had little interaction with Copper Inuit to the east, at least in the immediate precontact period (Stefansson 1913:121, 159, 161, 1919:25). Inuvialuit were traditional enemies of the upriver Gwich'in, their interactions primarily consisting of intermittent hostilities and raiding for women (CC, TC; also Smith 1984:348; Stefansson 1919:24). Stories about these historical hostilities are remembered by Inuvialuit elders, as exemplified by Elizabeth Aviugana's recollections:

> We used to go down, when I was really young… right across from Bar C, [at] that…little point they call Nunariak in Eskimo.… [You] used to see graves. Must be Indian, because I heard Eskimos and Indians used to fight, kill each other. [O]ne time I found shell case, and it's got beadwork on it. (EA)

Rasmussen was also told of the traditional hostilities between Inuvialuit and Gwich'in in which the Inuvialuit "were notorious for their treachery and the Indians were afraid of them, especially because they stole their women; this is said to be the reason why so many Eskimos are half-Indians" (Ostermann 1942:51; also see Fred Inglangasuk in Nagy 1994:110).

Early historically recorded events—such as the downriver journey of Alexander Mackenzie in 1789 (Mackenzie 1801), and the explorations of the Mackenzie region by

Franklin in 1826 (Franklin 1828), seeking the Northwest Passage—did little to immediately disrupt the cultural patterns and traditional lifeways of Inuvialuit and other western arctic peoples. However, these explorations began a relationship between Native peoples and newcomers structured around difference, one that produced an us-vs.-them mentality. The newcomers applied new names to the waterways and landmarks in their paths, as observed in the "official" documentation. Evidence is seen in the work of Hudson's Bay trader Roderick MacFarlane, whose explorations of the (newly named) Anderson River caused him to open the short-lived Fort Anderson between 1861 and 1866 to service the local Inuvialuit (MacFarlane 1890–91; Morrison 2006:352–353).

Newcomers similarly named Native northerners in often arbitrary ways. Well-known examples include the generalized use of the terms 'Eskimo,' an Algonkian word meaning 'eaters of raw meat,' and 'Indian,' a misnomer of Columbus. European fascination with North America's Native peoples caused them to represent northern peoples in visual and print media in spectacularly misrepresentative and erroneous ways (e.g., Geller 2004; King and Lidchi 1998; Moser 2001), a process that also served to homogenize the differences between specific Inuit groups and First Nations peoples. The dichotomy constructed between aboriginal North American and Europeans at contact would structure and permeate the relationships between these groups in coming centuries.

NEGOTIATION OF IDENTITIES: EARLY CONTACT

The earliest sustained contact in the western Arctic occurred at trade locations such as Fort McPherson and Herschel Island. Fort McPherson was established in 1840 as a Hudson's Bay trading post by John Bell, first called the Peel's River Post and later named after Chief Factor Murdoch McPherson (Coates 1979:13; Cruikshank 1974). Fort McPherson was the most northerly post of the Hudson's Bay Company to this time, and it jumpstarted a brisk trade in furs with local Gwich'in and downstream Inuvialuit. Inuvialuit began venturing upriver to trade in increasing numbers, despite skirmishes with Gwich'in and the risk of traveling in their rivals' territory (McGhee 1988:2–4). As trade picked up and the Yukon became more populated with European-derived traders and miners, the RCMP felt the need to have a presence in the area and built posts at both McPherson and Herschel Island in the year 1903 (Coates 1979:76). The increasing interaction of Inuvialuit with these cultural "others" in this period of early sustained contact would lead them to the ongoing construction and maintenance of ethnic boundaries with these groups. This process was accompanied by the ongoing homogenization of the identities of Mackenzie regional groups by Western outsiders.

By the mid-to-late nineteenth century, Euro-American whalers had discovered the rich waters of the western Arctic and began to frequent the Beaufort Sea hunting bowhead whales. By 1889, whaling captains began basing their winter headquarters at Herschel Island, which quickly became a mecca for Inuit and Dene peoples whose services as hunters, guides, and seamstresses fed the rising industry (Bockstoce 1986:275; McGhee 1988:10). The social dynamics at Herschel Island were unprecedented in the western Arctic. This was the first time that different Inuit and Dene groups had lived in such close proximity for extended lengths of time, let alone with nonaboriginal newcomers. Whaling crews were mainly of Alaska and Siberian origin, while Gwich'in (also known in the literature as the Kutchin, Loucheux, and Rat Indians) and inland Alaska Inuit (known as Nunatagmiut or Nunatarmiut) were the primary provisioners of meat for the whalers, who preferred terrestrial game to fish and marine mammals (Bockstoce 1986:275). Inuvialuit found their principal role in the newfound industry as fur traders, in return receiving a seemingly boundless array of manufactured goods (Alunik et al. 2003:83–84).

The whaling year had a distinct on- and off-season that dramatically altered the traditional annual cycle of regional peoples. For the whalers, summer was characterized by the dogged pursuit of whales, and winter by a cycle of social festivities (Hadley 1915). For their provisioners, the year was now marked by the constant pursuit of game and production of derivative resources for trade, effectively extinguishing the traditionally slumberous winter season. In its heyday, Herschel was a "shantytown of Native houses, shacks, frame huts and storerooms" that housed "several hundred people—as many as a thousand during the peak year of 1894–95" (Alunik et al. 2003:81). Whalers of American, Polynesian, and African descent over-wintered onshore with local women, shocking the Anglican missionary Charles Whittaker with the range of colors of their children (Alunik et al. 2003:82). The whalers would later depart, leaving prominent traces in the local gene pool that persist to the present (CC, TC; also Inuvialuit Regional Corporation n.d.; Slobodin 1966:13).

Although the nature and extent of interaction between different Inuit and Dene groups during this period are unknown, it is clear these interrelations were generally increasing and intensifying. Stefansson (1919:15, 172–73, 195) mentions that marriages were occasionally arranged between Anderson River people and Hare Indians, and that both interaction and intermarriage between Mackenzie Delta Inuit and Point Barrow Inupiat had some historical depth. Present-day Inuvialuit say that some of the oldtimers used to speak Gwich'in and suggest that this began with increased interaction between the different local groups at places such as McPherson and Herschel. Cathy and Topsy Cockney's grandfather Nuligak, for instance, married a Métis woman named Margaret who had "French blood" (Nuligak 1966:139).[1] Dora Malegana remembered that the "Indian trail" to Herschel Island passed through Itqiliqpik (Whale Bay) on the Yukon North Slope, and that Inuvialuit in this area had close relations with Gwich'in from Old Crow (Nagy 1994:108–110).

Identity negotiation was a perpetual process between different groups during this period. The need to identify both individuals and groups of peoples, and to communicate between them, led to the use of personal nicknames, a lingua franca, and a variety of group identifiers (cf. Alunik et al. 2003:82; Williamson 1988:250). The language that developed amongst these groups was basically a pidgin form of English, mixed with Hawaiian, French, Inuit, and other words (Bockstoce 1986:194). Among Inuit groups, Nunatarmiut became the most prevalent dialect, primarily because of the close working relationship of this group with the whalers (cf. Stefansson 1919:195). Different groups came to be represented by simplified collective identifiers. The different Mackenzie peoples were called by the term Kogmullicks, an Anglicized version of the Inupiaq term for easterners. Alaska Inuit were called Nunatarmiut, shortened to Nunatama, an Inuvialuktun term for westerner (Nagy 1994:1).[2] Athapaskans, including the Gwich'in, were collectively called *Itqilik* (plural *Itqilit*), an Inuit word for 'Indian.'[3] Siberian Inuit were 'Masinkers,' Polynesians 'Kanakas,' and so on (Alunik et al. 2003: 80, 82). Nuligak (1966:191) called non-Inuit or white men *tanit* (sing. *tanik*), a parallel term to *qalunaat* in the eastern Arctic (although *qalunaat* also shows up in western Arctic literature).

The whaling industry caused profound changes to aboriginal cultures of the North Slope and delta regions, but perhaps most particularly to the Inuvialuit, who played host to the trade at Herschel Island. Beyond substantive effects on the gene pool, Inuvialuit culture was irreversibly impacted by assaults on language, culture, and community health. Linguistically, the use of pidgin English and Inupiaq had significant impacts on local Inuvialuktun dialects (see Lowe 1983:xv, 1991). Inuvialuit were also busy adopting many of the incoming technologies, behaviors, and ideas of Westerners, as well as those of the "American-oriented Alaskan Eskimos" (McGhee 1988:5; and see Stefansson 1919:195). Disease, in the form of measles, influenza, and syphilis, took an extremely heavy toll on Inuvialuit during this period, with estimates of up to 90% mortality[4] (McGhee 1988:5). In-migration of Nunatarmiut that began before whaling intensified with the resource declines in their country (Burch 1998:373–374; Freeman et al. 1992:13), and in turn caused some resistance on the part of Inuvialuit residents. Some Inuvialuit found the newcomers arrogant and made efforts to disguise the whereabouts of the Bluenose caribou herd (Alunik et al. 2003:92; Nuligak 1966). By the early twentieth century, however, intermarriage had become common, and in time, the newcomers would be considered Inuvialuit (Alunik et al. 2003:92).

Inuvialuit also resisted certain Western influences. For instance, Anglican minister Isaac Stringer did not have a single convert during his lengthy tenure amongst the Inuvialuit (Marsh 1967). Conversion would begin ca. 1907, with elements of the new religion strongly resembling those of traditional Inuvialuit culture (Alunik et al. 2003:103). Ishmael Alunik tells lively stories of Inuvialuit shamans eluding capture and playing games with the Herschel Island constabulary (Alunik et al. 2003:97,

1. Métayer, Nuligak's translator, echoes Whittaker's statement (Alunik et al. 2003:82) that one of the major products of the whaling era was a preponderance of mixed-race children, such as Margaret, in the delta. Metayer called Margaret a Métis, but she had no Dene ancestry; she was the child of an Inuvialuit mother and a whaling father of European ancestry.
2. "Nunatarmiut" was originally used to refer to inland Inuit from northern Alaska (known today as Nunamiut) but during the whaling era came to be used universally for all manner of Alaska Inuit (Stefansson 1919:10–11, 24).
3. This is a derogatory term given to Athapaskans by Inuit meaning 'eaters of lice' that likens their hunting habits to those of dogs (Petrone 1988:30).
4. Cathy Cockney (pers. comm. 2006, for complete text see Lyons 2007b) provides a critique of these figures.

101–102). Socially, Native northerners and whalers largely lived peaceably alongside one another at Herschel Island, and there was a preponderance of relationships between whalers and local women. The character of these interactions would change, however, in the 1894–95 season, when many whalers started to bring their families north for the long winters; it appears that social gatherings became somewhat more socially bifurcated at this time (cf. Bockstoce 1986:282–286).

The identities negotiated in the whaling era informed the relationships that were to continue developing, although in a rather asymmetrical fashion, in coming decades. Identities would become especially polarized between the indigenous delta inhabitants and the newcomers as contact progressed and the outsiders took a leading role in the emerging delta economy. This transition dramatically affected the social dynamics in the new delta centers.

POLARIZING IDENTITIES: THE MOVE INTO THE DELTA

The bowhead industry collapsed circa 1910, leaving environmental devastation across the Yukon North Slope. Caribou populations that had sustained the whalers experienced a sharp decline that resulted in human migrations into the Mackenzie Delta (Alunik et al. 2003:91–92; Usher 1971a). Delta towns, particularly Aklavik, rose in ascendancy as fur trade posts during this period, as the focus turned away from coastal to delta resources. Many Inuvialuit and Gwich'in families continued a land-based lifestyle, albeit tailored to the needs of the fur industry. Left with the environmental aftershocks of the whalers' retreat, many Alaska Inupiat migrated to Aklavik, which quickly became a large and vital center, housing dozens of trading posts by 1920 (Freeman et al. 1992:12; Usher 1971a:83, 86). In the first two decades of the new center's existence, most aboriginal trappers came in seasonally to cash in their furs, buy supplies, gamble, and socialize. Peak seasons for fur trading often coincided with social and religious events such as Easter and Christmas (DA, LC, VA; also see Honigmann and Honigmann 1970:47–48; Nagy 1994:35–36). Contemporary Aklavik elders talk about the unique qualities of the nascent community, as Inuvialuit, Inupiat, Gwich'in, and other peoples lived side by side with respect and under strong leadership (BA; also see Aquilina 1981:139).

However, the continued arrival of nonaboriginal southerners to Aklavik would continually shift both local demographics and attendant social relations. By the 1930s and '40s, southern-style hospitals, residential schools, an RCMP detachment, and government administration had been constructed by southerners, who also administered these services (Aquilina 1981:143). Increasingly, trapping families moved into town to join the wage-labor market and to send their children to school. By the early 1950s, the now-crowded spit of Aklavik reached its population peak at nearly 1,500 people (Campbell 1987:22). The building of Inuvik in the mid-1950s was meant to alleviate this crowding and create a showpiece of Arctic modernization. Instead, Inuvik created segregated settlement patterns and social services that served to polarize aboriginal and nonaboriginal populations (e.g., Smith 1971). Ishmael Alunik recalls the inequalities his people experienced in their new lives in town:

> Us Native people were treated different from the white man that we helped on our own land. We shared with them. We taught them how to survive on the land and hunt and trap. But we were not good enough to go into their hotel in Aklavik or get the same benefits as they got when they first moved to Inuvik. (Alunik et al. 2003:158)

Nevertheless, the ever-increasing proximity of these formerly distinct populations led to an increased rate of interactions and intermarriage among local aboriginal groups as well as with nonaboriginal southerners. Some of these partnerships were socially sanctioned, while others were not (Hamilton 1994:133–37). Inuvialuit and Inupiat, of course, had a long history of commerce and intermarriage by this point. Contemporary Inuvialuit also suggest that it was in this period that Gwich'in intermarriage with Inuvialuit and Inupiat started to increase; these unions became more common and socially accepted as the decades progressed (TC, CC, ACG). Florence Carpenter (née Ross), a young Gwich'in woman, met her future husband, Frank Carpenter, in Aklavik in the early 1950s (LC). Frank was a member of a very successful family of trappers from Banks Island who had capitalized on the white fox trade in that region. Annually, his family would travel to Aklavik on their schooner the *North Star* to trade their furs, resupply, and socialize. Florence and Frank, despite their different cultural backgrounds, fell in love and asked their parents to support their union. Both sets of parents condoned the marriage, though Florence's family worried that they would never see her again when she went to live on Banks Island (which turned out to be untrue). Their son Les tells many stories of their happy life

together (Figs. 2, 3) and Florence's fluency in Gwich'in, Inuvialuktun, and English language and culture.

Southerners also married into northern aboriginal communities, but there was a much greater stigma attached to these unions from the white community. By contrast, Annie C. Gordon recalls that southerners were generally welcomed into the delta aboriginal community through marriage. RCMP and navy men were forbidden to consort with local women (though these unions did happen on occasion). Southern traders, in comparison, married readily into the aboriginal communities of the delta and came to make their lives in the north. Several of these men are well remembered, having left their names in delta families, such as the Grubens, Hansens, Cournoyeas, Semmlers, Days, Areys, and Gordons (TC, CC, ACG, DCG; Nagy 1994:37).

The great influx of different cultural groups into the delta center of Aklavik, and later Inuvik, did not erode aboriginal identities as Canadian policy-makers of the time had predicted. Instead, government policies which treated aboriginal and nonaboriginal people separately heightened the difference between these groups, which in turn served to maintain and even perpetuate aboriginal difference. In the first decade of Inuvik's existence, for instance, the utilidor system serviced Euro-Canadian government workers on one side of town, while aboriginal people lived in the slum-like conditions (Ervin 1968:11) of a tent town called Happy Valley on the other.[5] Within the wage economy, Euro-Canadians occupied the higher paying jobs and indigenous people the lower (Wolforth 1965:53–56).

Honigmann and Honigmann (1970:13–17) posit the emergence of a frontier culture among the delta's aboriginal peoples in the early to mid-twentieth century. Frontier culture was characterized by the continuation of a land-based lifestyle, coupled with a general ambivalence towards certain middle-class southern Canadian values, such as church-sanctioned marriage and moderate drinking. The growing solidarity among aboriginal groups was fostered partly by the shared experience of social segregation in Inuvik and partly by the residential school experience, which brought young people from a wide region together and created lasting friendships (LC; Honigmann and Honigmann 1970: 39). These experiences diminished traditional disputes and differences amongst regional

Figure 2. Florence and Frank Carpenter, April 1956, Sachs Harbour.

Figure 3. Florence Carpenter with her young son Leslie, July 1960, Sachs Harbour.

5. Happy Valley became a place where Inuvialuit and other indigenous people of the delta gathered and socialized and was hence named (Bridget Larocque pers. comm. May 2009).

Inuit and Dene groups,[6] as well as accentuated the difference between them and Euro-Canadian society. The emergence of a pan-aboriginal identity thwarted government assimilation efforts and bound the aboriginal residents of the delta—particularly those in "urban" Inuvik—together in ways that would help rally them to action in the coming decade.

REJUVENATION OF IDENTITY: PURSUIT OF THE INUVIALUIT LAND CLAIM

The 1960s and '70s brought an array of new influences to the indigenous peoples of the delta, who were living an increasingly sedentary and centralized existence. As trapping families moved into town on a full-time basis, many experienced an acute loss of their traditional autonomy and independence (Lubart 1969:39). Trapping continued as an economic mainstay into the 1960s, but the crowded network of registered traplines in the delta precluded many families from making a full-time living (Freeman et al. 1992:34; Usher 1971b:181–82). Younger generations were quickly losing their languages and bush savvy in the government day school atmosphere of enforced English. Inuvialuit in their forties and fifties today talk about the shame in their culture, language, and aboriginal identity brought to them by the residential school experience, of their overall loss of cultural pride and confidence in who they were and where they came from (TC, CC, BA, GK). These are the generations born in hospitals throughout the delta who never lived a full-time, land-based lifestyle.

It was their parents' generation who responded to the wider social movements and political agitations of the 1960s by forming the Committee for Original Peoples' Entitlement (COPE) in 1969. COPE was originated by Nellie Cournoyea and Agnes Semmler, an Inuvialuk and Gwich'in Métis who worked cooperatively towards a better future for all aboriginal people of the delta region (Hamilton 1994:137). Their committee worked on behalf of the delta Inuvialuit, Métis, and Dene, seeking greater sovereignty on aboriginal lands, control over their lives, and continuation of their traditions (Alunik et al. 2003:182; Freeman et al. 1992:37). Justice Thomas Berger's Commission (1977), which would ultimately halt the Mackenzie Pipeline, put credence behind the land claim pursuits of COPE and other grassroots movements. Over time, the various COPE members divided to pursue claims independent of each other, leaving COPE to represent the 2,500 delta Inuvialuit (Dahl 1988:79; Morrison 1998:266).

The term Inuvialuit was adopted by the progenitors of COPE in pursuit of the land claim. An Inuvialuktun term proffered by elders, 'Inuvialuit' came to be used by COPE as a collective signifier for the Inuit of the Mackenzie Delta/Beaufort region (and see Nagy 1994:3). Danny C. Gordon defines Inuvialuit as "what we are, 'the real people'; [the term] 'Eskimo' was invented by the whites coming in." This self-definition was part of a larger movement towards cultural reclamation. It was a term, however, that had not previously been used as an ethnic signifier. Dahl (1988:79) contends that the term 'Inuvialuit' was used to represent a series of regional groups that were not formerly united by a collective sentiment; in particular, the communities of Sachs Harbour and Ulukhaktok (Holman), whose residents are related to Inuinnait farther east, and speak Inuinnaqtun, a central Arctic dialect (Lowe 1983:xv). Contemporary Inuvialuit feel that there was a certain collective sentiment amongst delta/Beaufort Inuit peoples in traditional times, but agree that they lived in distinct regional groups and used different dialects (BA). The historical record documents that Mackenzie regional groups occasionally feuded and initiated hostilities against one another (Alunik et al. 2003:15–16; Stefansson 1919:24, 171).

However one views the term Inuvialuit, it is clear that its adoption was part of a general rejuvenation of Inuvialuit culture. COPE provided a vehicle for the (re)formation and crystallization of a distinctive Inuvialuit identity, and kickstarted traditional use and linguistic research in pursuit of the land claim (e.g., Farquharson 1976; Lowe 1983, 1984a, 1984b; Usher 1976). Nellie Cournoyea, chair and CEO of the Inuvialuit Regional Corporation, feels that Inuvialuit "suffered from a pan-Inuit approach to culture in the north in the past," referring particularly to cultural studies and the development of educational materials in the post-World War II era (cited in Lyons 2007b:231). Preparation for the land claim focused Inuvialuit on their own distinctive histories, cultural attributes, and languages, a focus that has continued to flourish within the structures of the Inuvialuit Final Agreement (1984). One outcome of this process has been an expanded interest in the

6. Although there has been much intermarriage between the different groups residing in the delta from the fur-trade period forward, the term Métis is little used in the literature or in the local vernacular. However, there is a Métis Association in the delta that has been periodically active (Hamilton 1994:133–37).

histories of traditional Inuvialuit regional groups through archaeological, ethnographic, and oral history documentation (e.g., Betts 2004, 2005; Friesen 1996, 1998, 2004; Hart 1994, 1997, 2001; Lyons 2004, 2007a, 2007b; Nagy 1994; Parks Canada 2000; Prince of Wales Northern Heritage Centre n.d.). This work has fallen partly to the Inuvialuit Social Development Program, under the auspices of the Inuvialuit Cultural Resources Centre, and partly to independent scholars from the south who work to varying degrees with the Inuvialuit.

DISCUSSION: THE EVOLUTION OF INUVIALUIT IDENTITIES IN THE MODERN ERA

This paper has contemplated different processes that have influenced the evolution of Inuvialuit identities from the contact period forward and the ongoing process of Inuvialuit ethnogenesis. It has traced Inuvialuit negotiation with other northern indigenous groups, whalers, traders, government, and southern Canadian culture. While outside observers have often suggested that Inuvialuit culture and identity were threatened and even extinguished in the early twentieth century by disease and acculturation (e.g., Alunik et al. 2003:77, 89, 110; McGhee 1988:5; Stefansson 1919:195), Inuvialuit themselves hold considerably different perspectives. They have perpetually asserted their ability to survive, renew, and redefine themselves. This process has included the rejuvenation of the term Inuvialuit to unify communities of the Beaufort coast and delta region (cf. Dahl 1988; Lowe 1983) and today has turned towards the process of Inuvialuit cultural renewal. In contemporary terms, Inuvialuit identity is being actively constructed and negotiated on cultural, political, and economic fronts, at both the personal and collective level. This fluid process of ethnogenesis involves the continuity of certain elements of Inuvialuit culture with the emergence of others to suit new and changing circumstances (cf. Voss 2008).

Personal negotiation of Inuvialuit identities appears to be a fluid and evolving process. Young Inuvialuit are born into a much more socially complex world than their grandparents' and even parents' generations. They are required to negotiate identities in relation to other youth in the delta but also in relation to the pervasive cultural forces of the south. At the age of majority, young people of mixed heritage (e.g., Gwich'in and Inuvialuit backgrounds) must make a choice between land claims. By various accounts, young people make this choice based on the perceived strength of each claim, and, perhaps more significantly, on which culture they feel more affinity with (BA, CC, TC). A certain contingent of elders has faced a similar situation concerning self-definition. Elderly Inupiat who immigrated to Canada during the twentieth century may claim under both the Inuvialuit Final Agreement and the Alaska Native Claims Settlement Act; their children, while often maintaining family contacts in Alaska, are Inuvialuit claimants. Members of this elder Inupiaq generation often have a fluid sense of ethnic identity, asserting their Inupiaq identity in one social context and their Inuvialuit in another (e.g., DCG). Elders such as Ida Inglangasuk and Danny C. Gordon of Aklavik do not see a conflict in this position, instead using these different identities interchangeably depending on social circumstance.

Inuvialuit identities are also constructed by generational experiences. This can be seen in how different age sets view the Inuvialuit Final Agreement. Many present-day elders, for instance, were somewhat ambivalent about the claim during the days of COPE and even at its signing in 1984. Today they explain that during the late 1960s and 1970s, when the land claim was being pursued, the majority of Inuvialuit were still focused on land-based activities and had little knowledge of or even interest in this larger political scene. Some elders believe that the biggest motivating factor for the claim was the COPE members themselves, rather than the momentum of the broader populace (anonymous). Today, elders such as Annie and Danny C. Gordon (Fig. 4) feel that the claim has been of benefit to their people over the long run but note that there is a steep and ongoing learning curve amongst their leaders in the economic and political arenas.

Inuvialuit in the middle generations hold much stronger sentiments about the land claim that relate directly to the negative cultural experiences of their younger years. Many Inuvialuit of this generation feel that they lost their respect and self-sufficiency with the introduction of the welfare state and the residential school experience (GK, CC, BA). Cathy Cockney claims that pride and identity in being Inuvialuit have blossomed since the signing of the land claim. Like other members of his generation, Billy Archie did not learn about his own culture and language at school and was made to feel culturally and socially inferior to the southerners who taught him. He describes what he calls an Inuvialuit cultural revival that has flourished in his middle years. Billy states: "[Inuvialuit] have to know their history and their present circumstances in order to know the future, where they're going. Culture is their backbone." To this cohort, the claim has raised cultural

awareness and generated opportunities for Inuvialuit to (re)learn traditional stories, games, and skills on the land and to teach them to youth (JK).

Nearly thirty years after the signing of the claim, Inuvialuit community members define themselves along a number of formal and informal lines. The Inuvialuit Final Agreement created one set of legal criteria for membership. This includes a blood quantum, which requires one-quarter Inuvialuit ancestry (or access through intermarriage). More organic criteria for community identification revolve around special cultural characteristics and language (Aikio 1990). For instance, Inuvialuit distinguish themselves by their common pursuit of certain land- and sea-based activities and practices related to these, such as the hunting of beluga whales and the consumption of muktuk (Alunik et al. 2003:202–3, Freeman et al. 1992). Inuvialuit (and other Inuit) also define themselves by their methods of sharing country food (cf. Bodenhorn 2003; Usher 2002).

Command of one or more of the Inuvialuktun dialects is also, at least theoretically, a defining characteristic of Inuvialuit identity. Language revitalization is a critical component of the Inuvialuit Final Agreement. However, because of early sustained contact between Inuvialuit and Westerners, and the legacy of residential schools, Inuvialuktun dialects are threatened and little spoken by younger generations. Recognizing the importance of language to Inuvialuit cultural vitality, the focus of the Inuvialuit Cultural Resource Centre is currently trained on language reclamation (C. Cockney, pers comm. April 2006). Another interesting issue is the inclusion of the northern Copper Inuit group the Ulukhaktokmiut within the Inuvialuit land claim in the easternmost community of Ulukhaktok (also known as Holman; Fig. 1). This group speaks Inuinnaqtun, a language of the central

Figure 4. Inuvialuit elders Annie and Danny C. Gordon at home in Aklavik, 2005.

Arctic, and is closely associated with present-day residents of Coppermine and Cambridge Bay. This community was included in the Inuvialuit claim due to a combination of their geographical position and the western arctic heritage of some families who identify themselves as Inuvialuit (Condon et al. 1996:xix).

Present-day development of Inuvialuit culture unites continuity with renewal. There is a rather emergent sense to cultural programming in the Inuvialuit Settlement Region that is partly related to the short historical duration of a collective Inuvialuit identity. For instance, Cathy Cockney has been involved for more than a decade in the revival of drum dancing in the communities of the Inuvialuit Settlement Region, and emphasizes how this knowledge had to be retaught. Paulatuuq's Moonlight Dancers largely learned to drum dance by way of old videos. Esther Wolki comments, "It's funny; we realized a couple years ago that we've been doing some of the movements backwards. We mirrored what we saw on tape, so when the dancers used their left hands, we would use our right." Her involvement with this activity makes Wolki "feel happy that I am passing down traditional dance and song to the little kids" (Ho 2007:24–25). For their part, Topsy Cockney and the Inuvialuit Communications Society have worked hard to bring culturally appropriate television programming in both English and Inuvialuktun to the Inuvialuit Settlement Region. Programming includes Tamapta (All of Our People), a program about traditional Inuvialuit culture in Inuvialuktun, and Suaangan (To Have Strength), a program about contemporary Inuvialuit issues in English.

The rapid movement towards the creation of a distinct Inuvialuit identity has had several clear outcomes in this community. At a collective level, cultural boundaries between Inuvialuit and other aboriginal groups are more defined than they have perhaps ever been. This is seen most clearly in cultural and educational programming and in the economic and political arenas. Although the Gwich'in and Inuvialuit live side by side in several delta communities, their cultural and language research and programs are conducted independently of one another due to their administration under distinct claims. In the same vein, leaders such as Nellie Cournoyea have created an increasingly clear and resonant Inuvialuit voice in both territorial and national politics. The shift is observed by Stern (2006:106), who suggests that two and a half decades ago Native northerners were virtually "non-participants in the activities of the Canadian nation." Today, the Inuvialuit, in particular, are in Cournoyea's words "trying to get in" to Canada, denoting their pursuit of full rights as Canadian citizens (Nemeth 1995:34). Inuvialuit are strong proponents of the pipeline and are working hard to develop the human and environmental resources of their territory. This work has included the development of a large spectrum of home-grown companies, foreign investments, and the aggressive pursuit of a stake in the oil and gas industry. Inuvialuit Regional Corporation views the prospective pipeline as an opportunity to develop the skills and prospects of their people; Inuvialuit beneficiaries similarly see the pipeline as a route to increased opportunities for employment, education, and training (Salokangas 2005; Stern 2006).

Inuvialuit are not alone in their drive towards self-definition and governance, sharing this goal with Inuit groups across the circumpolar North. Notions of a pan-Inuit identity emerged in the 1970s with the initiation of the Inuit Circumpolar Conference (ICC). This body was created to pursue discussion on common political and economic issues related to conservation and protection, subsistence rights, and the perpetuation of Inuit culture (Petersen 1984). Events like the Northern Games have solidified ties amongst Inuit around the circumpolar North and helped to publicize their distinct cultural traditions. In the political arena, movements towards sovereignty and self-definition have occurred at different time frames in Greenland, Siberia, Scandinavia, Alaska, and the Canadian North (Aikio 1990; Anderson 2000; Balzer 1999; Chance 1990; Cruikshank and Argounova 2000; Dahl 1988; Minority Rights Group 1994). Different Inuit and Native Siberian groups have commonly faced persecution in socioeconomic and political arenas, and their cultures and languages have been threatened by their envelopment by larger nation states. Yet in almost routine fashion, these minorities have asserted their identities by rejecting the assimilationist agendas of national governments and agitating for the establishment of land claims, home rule, or similar types of governance.

SUMMARY AND CONCLUSIONS

This paper has traced the evolution of a collective Inuvialuit identity through the course of the twentieth century. Recent Inuvialuit history has involved an ongoing negotiation of self in opposition to cultural others

who have entered their territory and asserted claims to it. In the face of this onslaught, Inuvialuit have perpetually sought to define, assert, and renew their identity. Today, Inuvialuit identity is perhaps more concrete, multifaceted, and evolving than ever before.

In the present environment of cultural renewal, Inuvialuit are increasingly representing themselves as a distinctive collectivity to the outside world. They are producing works in print, video, art, and other media. They are also spearheading complex political, social and economic agendas and initiatives. Through these activities, Inuvialuit join other circumpolar peoples in their quest to define their difference from other Inuit and northern indigenous groups and from the broader Euro-Canadian populace. Inuvialuit today are asserting their right to articulate and share their distinctive histories, culture, and languages in ways and on terms of their own choosing.

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APPENDIX 1. LIST OF INUVIALUIT COLLABORATORS REFERENCED IN THIS PAPER

The following Inuvialuit have been part of wider ongoing research efforts to document knowledge of traditional life and the impacts and changes to it brought by contact with westerners and the events that followed. They are listed below in alphabetical order, first by initials, second by their full name, and then by their place of residence and date of interview. Several of these individuals have been interviewed on numerous occasions; the interview date recorded is the one pertinent to issues and events discussed in this paper. Recordings and transcripts of interviews with these and other individuals involved in this research in the Inuvialuit community are on file with the author and with the Inuvialuit Cultural Resource Centre in Inuvik, Northwest Territories, Canada.

Initials	Name	Place of residence	Date of interview
ACG	Annie C. Gordon*	Aklavik, NT	28 March 2007
BA	Billy Archie	Aklavik, NT	29 March 2007
CC	Cathy Cockney	Inuvik, NT	30 March 2007
DA	Donald Aviugana*	Aklavik, NT	17 June 2005
DCG	Danny C. Gordon*	Aklavik, NT	28 March 2007
EA	Elizabeth Aviugana*	Aklavik, NT	22 June 2005
GK	Gerry Kisoun	Inuvik, NT	11 April 2006
II	Ida Inglangasuk	Aklavik, NT	23 July 2005
JK	Jerry Kisoun	Inuvik, NT	11 April 2006
LC	Les Carpenter	Whitehorse, YK	19 Sept. 2007
NC	Nellie Cournoyea*	Inuvik, NT	1 May 2006
TC	Topsy Cockney	Inuvik, NT	30 March 2007
VA	Victor Allen*	Inuvik, NT	21 July 2005

* These individuals are considered Inuvialuit elders, while the other collaborators listed are Inuvialuit leaders and community members.

THE ETHNOBIOLOGY OF THE CENTRAL YUP'IK ESKIMO, SOUTHWESTERN ALASKA

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ABSTRACT

Alaska is the home of many diverse Native peoples who inhabit a wide variety of environments. To survive and flourish in these environments it was essential for people to be aware of the wide range of plant and animal species in their area. Published texts on Alaska Natives, particularly the Eskimo (e.g., Lee and DeVore 1968), and early popular films depicting Eskimo peoples (e.g., *Nanook of the North*, *Igloo*, *Eskimo*) have stressed the dependence of Native people on hunting in order to survive. While this dependence is undoubtedly true, the awareness and intensity of use of vegetal resources has often been overlooked. It is impossible to summarize in a single article the use of indigenous plants among all Native peoples of Alaska. This article focuses on southwestern Alaska in order to illustrate the range of knowledge and use of indigenous flora and shellfish by the Central Yup'ik Eskimo for food, medicine, and utilitarian purposes.

INTRODUCTION

Few early ethnographic studies in Alaska have highlighted Native knowledge and use of local flora. In fact the opposite was often the case, in that some observers expressed a belief that Eskimos had little knowledge of local herbs and roots (Whittaker 1937:115). While Young and Hall (1969:43) found that the Western Eskimo were more aware of and made use of more plant species than is generally acknowledged, the majority of regional studies fail to note the indigenous use of plants aside from the use of several tundra berry species and local greens. While the present study summarizes the known traditional use of indigenous plants in southwestern Alaska (Central Alaska Yup'ik), comparative data are also included for plant use among the peoples of St. Lawrence Island and Siberia (Siberian Yupik) and the Pacific Yupik of Prince William Sound (Alutiiq or Sugpiaq) (Fig. 1). To highlight the similarity and diversity in plant use and naming conventions in the coastal areas of Alaska and its offshore islands, information on the use of eighty-five species of indigenous terrestrial and marine plants and shellfish is noted.

FOCAL AREA OF RESEARCH

Information in this paper was primarily obtained from a twelve-year (ca. 1995–2006) collaborative anthropological project between the author and the Nuniwarmiut of Nunivak Island (see Fig. 2), and a compilation of published and unpublished sources of ethnobotanical use. Initial work with the Nuniwarmiut focused on dissertation research (Griffin 1999, 2004), tracing the history and importance of an Alaska Native village over the past 2,600 years by combining information available from a variety of sources (i.e., archaeological excavations, oral history narratives, ethnographic and ethnohistoric documents, historic photographs, and ethnological collections). This research sought to compile a history of the changing land use of one village and its position in Nuniwarmiut settlement and subsistence strategies. Specific use of the island's flora during the initial phase of research (1995–1996) was gathered informally while interviewing island elders about other information and

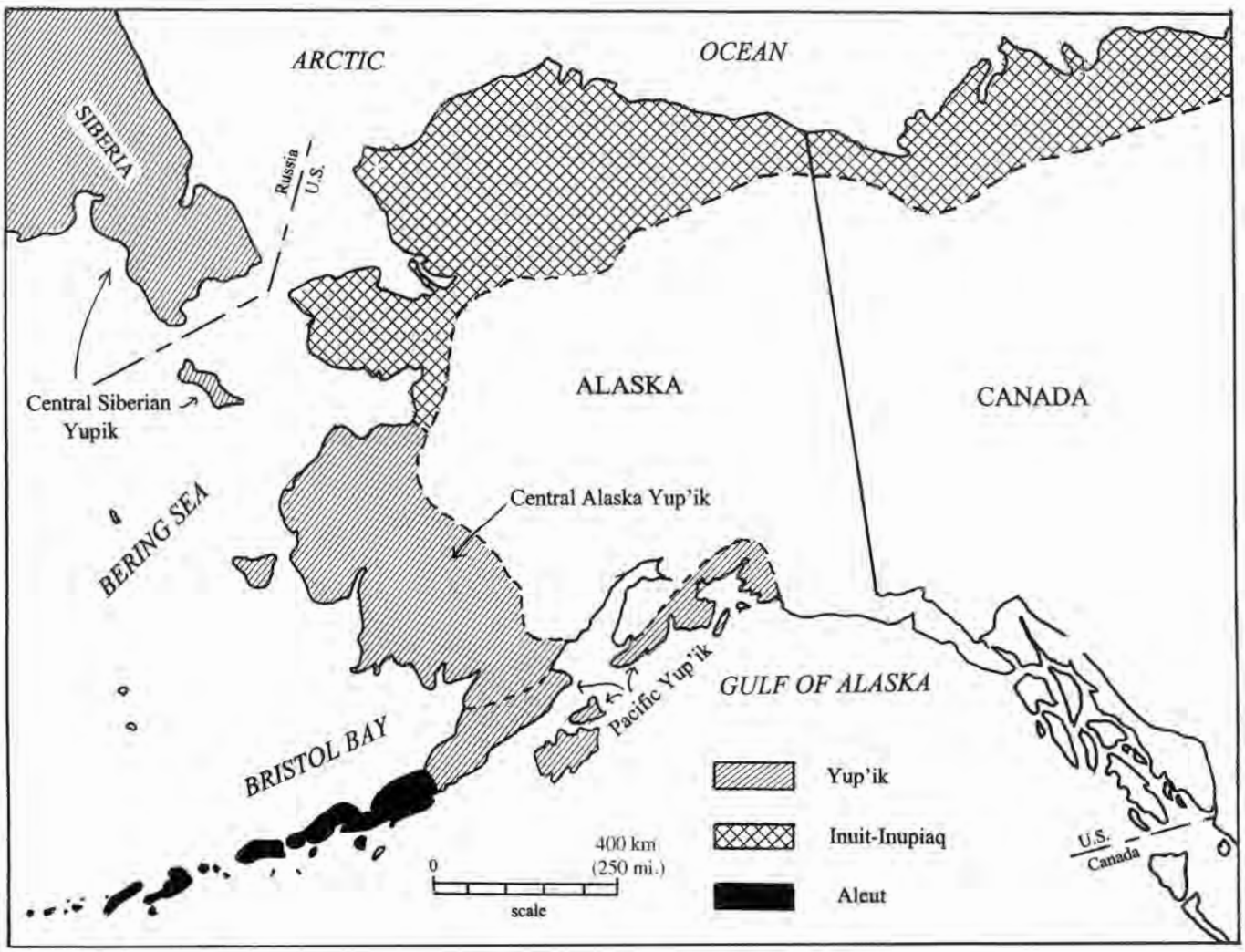

Figure 1. Distribution of Yup'ik speakers in Alaska.

Figure 2. Nuniwarmiut elders examining plant specimens (from left to right: Nan Kiokun, Helen Williams, George Williams, Sr.).

by joining local families on plant forays to gather seasonal greens or berries. Plant-specific information was shared during these trips. Subsequent, more in-depth interviews with elders took place from 1996–1998, during all seasons of the year, consisting of elders examining indigenous plant species. Fresh specimens were not always available during discussions so pressed and dried specimens collected while on the island were examined by elders. In cases where dried specimens proved of little use due to poor recognition resulting from color change and withered condition, published botanical guides with large color plates (e.g., Schofield 1989) were used to assist the discussion. Information regarding plant identification was later corroborated by Muriel Amos, a Nuniwarmiut educator who had conducted preliminary research on local plant species during the process of compiling a Cup'ig Eskimo dictionary (Amos and Amos 2003).

Initial interviews focused on the use of indigenous plants found growing in the low-lying tundra portions of Nunivak (the island's north and east coasts) culminating in a 2001 publication (Griffin 2001). Subsequent grants from the U.S. Fish and Wildlife Service permitted continued research on Nunivak from 1999–2006 to collect plant-use information along the southern coastal sand dunes and Nunivak's western cliff areas. Nuniwarmiut interpreters were used during all interviews to assist in gathering data on plant usage since my limited knowledge of Cup'ig prevented me from freely conversing with most elders, resulting in perhaps more abbreviated discussions of plant use. The majority of plant information was shared by both Nuniwarmiut women (ages 66–87; n = 8) and men (ages 73–95; n = 6), with interviews generally being conducted with two to four elders at a time in order to see if there was a general consensus on plant use. All plant and shellfish specimens were examined by a minimum of six elders. Most information shared by elders was consistent between interviews. However, the use of a few plant species was known only by one or two individuals. When information was limited or contradictory, I have listed the source of my information in the tables. In cases where many elders offered data consistent with previously published sources, no new specific references are cited. Audio recordings were made of all interviews in addition to video recordings during interviews from 1996–2006. Copies of all tapes and video recordings are on file with the Nunivak Island Mekoryuk Alaska (NIMA) Corporation and in the author's possession.

Species identification of plant specimens was obtained by using published guides to the flora of Alaska (Argus 1973; Barr and Barr 1983; Duddington 1971; Grout 1940; Hultén 1968; Viereck and Little 1972; Welch 1974) with taxonomy following that of Hultén (1968), except in cases of identifying bryophytes, where I used Grout (1940) and Steere (1978), and for seaweeds Abbot and Hollenberg (1976) and Guiry (1974). Plant specimens were preserved in the field by drying in plant presses. Voucher specimens are currently in the possession of the author. Not all plant species listed in the tables were identified during the current study. Previous collections of Nunivak flora have been collected by Eric Hultén (1968), Margaret Lantis (ca. 1946), Janet Fries (ca. 1976), Peter Stettenheim (ca. 1954), Charles Utermohle (ca. 1973), and by personnel of the U.S. Fish and Wildlife Service's Yukon-Kuskokwim Refuge (ca. 1970–1990s). The results of the previous investigations have been incorporated here in order to provide a comprehensive summary of Nuniwarmiut plant use. The location of earlier Nunivak botanical collections include Hultén, State Museum of Natural History, Stockholm; Lantis, University of California Herbarium, Berkeley; Fries, Middlebury College, Vermont; Stettenheim, Michigan State University, East Lansing; Utermohle, University of Alaska Museum Herbarium, Fairbanks; and the Alaska U.S. F&WS, Y-K Delta Refuge herbarium, Bethel.

Data from published and unpublished reports on Native use of indigenous species on mainland Alaska is relatively sparse but has been incorporated here to provide a more regional perspective. No effort has been made to validate information found in these earlier sources. The absence of comparative data for many of the included species is thought to be due to the lack of effort to record such data in the past and has little relationship to the actual Native knowledge of local flora and shellfish. For example, information on the use of specific species of shellfish or sea invertebrates was not found for mainland coastal Native populations, but general references to a more universal consumption of marine species can be found for the Nelson Island Yup'ik (e.g., clams and mussels: Fienup-Riordan 1983:92); Pacific Eskimo (e.g., sea urchins, periwinkles, clams, blue mussels, and chitons: Clark 1984:190), Aleut (e.g., sea urchins, clams, limpets, and mussels: Lantis 1984:175), and to the east with the Inuit of Quebec (e.g., sea urchins, mussels and sea cucumbers: Saladin D'Anglure 1984:487) and west Greenland (e.g., seaweed and mussels: Kleivan 1984:608).

Eskimoan people[1] in the western coastal region of Alaska are largely divided into two linguistic groups, the Yupik and Inuit-Inupiaq (Woodbury 1984). Yupik languages were spoken aboriginally on Alaska's west coast with Siberian Yupik spoken on the coasts of the Chukchi Peninsula in Siberia; Central Yup'ik was spoken in Alaska from Norton Sound south to the Alaska Peninsula and east along the Pacific Ocean to Prince William Sound (see Fig. 1). Inuit-Inupiaq was spoken north from Norton Sound and east across Arctic Alaska and Canada to the coasts of Labrador and Greenland (see Anderson 1939; Jones 1983; and Nickerson et al. 1973 for ethnobotanic information for the Inuit-Inupiaq portion of Alaska). This

1. The Aleut occupy the southern tip of the Alaska Peninsula and the Aleutian Islands. Their use of indigenous flora is not discussed in this paper (see Bank 1953).

paper focuses on the ethnobotany of the Yup'ik Eskimo in southwestern Alaska, an area historically dominated by the Yukon-Kuskokwim Delta but which also includes Nunivak and Nelson islands and Bristol Bay. Athabascan-speaking peoples largely inhabit the interior. While not addressed in this article, the ethnobiology of this interior region can be found in Carroll (1972), Fortuine (1988), Garibaldi (1999), and Kari (1987).

REGIONAL SETTING

The Yukon-Kuskokwim Delta and Nunivak Island (Fig. 3) encompass an area of almost 81 million kilometers (31,250 square miles) or 8.1 million hectares (20 million acres). This delta region consists of a vast and largely roadless expanse of low-lying tundra. Native villages are predominantly located along the area's coast and major waterways, with development largely limited to commercial fishing. The degree of early contact between cultural groups within the delta cannot accurately be determined due to conflicting early historical data and later movements of peoples throughout the region, but villages are known to have been linked by extensive trade networks, intermarriage, and alliances during times of warfare (VanStone 1984:224). Ponds, lakes, streams, and sloughs, which make travel throughout southwestern Alaska extremely difficult, cover half of the Yukon-Kuskokwim Delta. Not surprisingly, the immense wetlands provide suitable habitat for millions of waterfowl, small and large mammals, and abundant flora. The seasonal harvest of marine mammals (e.g., seals, sea lion, walrus) and many species of fish (particularly salmon, halibut, whitefish, and blackfish) remains vital for local survival.

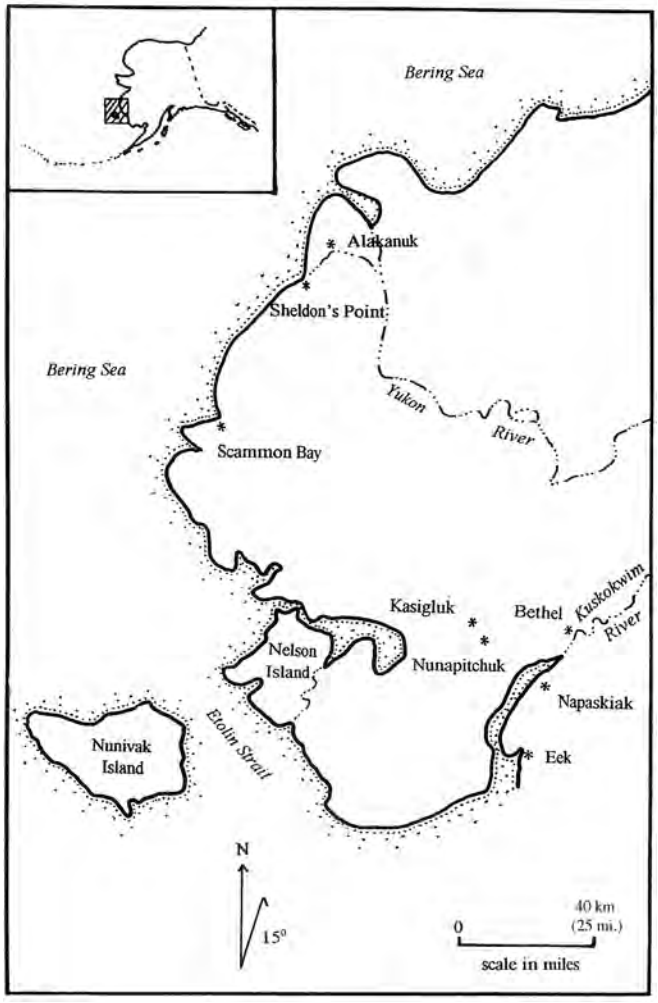

Figure 3. Map of Yukon-Kuskokwim Delta.

The delta has a subarctic maritime climate, influenced by the surrounding sea, which produces a relatively stable temperature. Summers are generally cool and windy, with some areas experiencing frequent fog; winters are cold with both wet and dry periods. The region's mean annual temperature is –20°C (3°F) with mean daily temperatures ranging from –25°C (–20°F) in January and February to 10°C (50°F) in August (Selkregg 1976; Swanson et al. 1986). Rain and snowfall is heavier on the mainland than neighboring islands (e.g., Nunivak), with islands experiencing more frequent overcast days with dense fogs. This difference between mainland and island areas is due to the greater effect of the Bering Sea on the island environment. Precipitation is moderate with a mean annual rainfall of 40.6 cm (16 inches) and snowfall of 127 cm (50 inches).

The Yup'ik Eskimo traditionally practiced a hunting, fishing, and gathering subsistence economy that revolved predominantly around the harvest of the above-mentioned species, in addition to the numerous plant species that were critically important to survival. Hultén (1966, 1968) has studied the vascular flora of the Yukon-Kuskokwim Delta and Bos (1967) and Palmer and Rouse (1945) that of Nunivak Island. The region's vegetation is predominantly arctic tundra containing a variety of lichens, grasses, sedges, flowers, and shrubs. It is similar to vegetation found throughout western and northwestern Alaska. The tallest tundra plants are shrubby willows that can reach up to eight feet in height along some river courses. Major vegetation types include wet tundra, dry tundra, alpine tundra, and grass-browse (i.e., grass hummock and beach grass-forb). Wet tundra is most prevalent along the coast in poorly drained areas, with the dominant cover species consisting of sedges (*Carex* spp.), cottongrass (*Eriophorum* spp.), willow (*Salix* spp.), crowberry (*Empetrum nigrum*),

and various species of mosses and lichens (e.g., *Sphagnum*, *Pohlia*, and *Cladonia*). Dry tundra is found on areas of sloping terrain having good drainage and is dominated by species similar to those found in wet tundra areas, in addition to bearberry (*Arctostaphylos alpina*), Labrador tea (*Ledum palustre decumbens*), woodrush (*Luzula nivalis*), bog blueberry (*Vaccinium uliginosum*) and dwarf birch (*Betula nana exilis*). Alpine tundra, found at higher elevations on hills and mountains, is similar to that in dry tundra areas and is dominated by crowberry, alpine bearberry, Labrador tea, white mountain-avens (*Dryas octopetala*), and moss. Grass-browse is generally found interspersed with the dry tundra subtype and along edges of streams and rivers adapted to periodic flooding. This vegetation type is dominated by fescue (*Festuca* spp.), bluejoint (*Calamagrostis canadensis*), willow, lichens, sedge, wild celery, and seacoast angelica (*Angelica lucida*).

USE OF INDIGENOUS FLORA

Indigenous plants were an integral part of the year-round diet of Eskimo people in addition to their incorporation in other facets of their lives. Contrary to the popular perception of Eskimo people surviving solely on fish and meat, they utilized a large number of local plants for food, medicinal, and utilitarian purposes. An earlier Alaska study estimated that up to 15% of the diet of western Eskimo people (Kotzebue to Alaska Peninsula) is made up of vegetable resources (Young and Hall 1969:43). While plant resources remained sparse on some offshore islands such as St. Lawrence (Young 1971; Young and Hall 1969), on Nunivak and Nelson islands they provided a significant addition to the Natives' diet.

Knowledge of the Native use of indigenous flora in the delta remains limited. Previous ethnobotanical studies are limited to research on Nunivak Island (Fries 1977; Griffin 2001, 2004, 2007; Lantis 1946, 1959; Nuniwarmiut Taqnelluit n.d.), Nelson Island (Ager 1982; Ager and Ager 1980), the Kuskokwim villages of Napaskiak (Oswalt 1957), Eek, Kasigluk, and Nunapitchuk (Andrews 1989; Lantis 1958, 1959), several lower Yukon Delta and coastal villages (e.g., Alakanuk, Sheldon's Point, Scammon Bay) by Fienup-Riordan (1986) and a more regional study by Alix and Brewster (2004). St. Lawrence Island and the Chukchi coastal area of Siberia are similar in landform to southwestern Alaska in that lands are covered by low-lying arctic tundra, although the number and variety of plant species differ between areas. Knowledge of the indigenous use of plants in these areas remains limited to two published and unpublished accounts (Young and Hall 1969 and Ainana and Zagrebin n.d., respectively). Ethnobotanical knowledge among Pacific Yupik speakers is largely limited to studies among the Chugach (Birket-Smith 1953; Fortuine 1988; Wennekens 1985) in Prince William Sound, Kodiak Island (Graham 1985), and the Alaska Peninsula (Morseth 2003). Since the flora of the first two of these areas is very different from that of the Yukon-Kuskokwim Delta and Nunivak Island (i.e., forest vs. tundra), only information on the use of similar plant species is addressed here. Several recent regional publications have attempted to summarize knowledge of the indigenous use of plants throughout Alaska (e.g., Biggs 1999; Garibaldi 1999; Schofield 1989); however, the Yupik-speaking areas remain poorly documented.

Limited data are available on the use of marine plant and shellfish resources in the study area. Previous studies in the region have largely ignored such use. As a result of the collaboration between the author and Nunivak people, data on the traditional use of nine indigenous marine plant and invertebrate species and sixteen shellfish species have been identified. These data has been incorporated in the following tables.

Table 1 provides a list of the seasonal use of indigenous plants, marine invertebrates, and shellfish that were used for food by the Yup'ik Eskimo. This index provides data on the Yup'ik use of seventy-one indigenous species in southwestern Alaska, which includes forty-five terrestrial plant species, ten marine plants and invertebrates, and sixteen shellfish species. In Table 1, species are arranged in alphabetical order by each species' scientific name. Details regarding season of harvest, part used, and if the species was stored for winter consumption/use are provided. In addition, the known range and extent of use of each species among Eskimo peoples is included.

Medicinal knowledge of indigenous plants varies from area to area, with twenty-eight plant species used in the Yukon-Kusokwim Delta and Nunivak Island. Table 2 provides a list of medicinally used plants in the region, along with references to texts that provide greater detail on the collection, processing, and application of each species.

In addition to the use of plants for food and medicine, many indigenous species were used for a variety of utilitarian purposes. Table 3 provides details on twenty-eight species used in southwestern Alaska, including twenty-six terrestrial and two marine species. Name, season of harvest, and specific use are included.

Table 1: Seasonal use of indigenous food plants and shellfish among Yup'ik-speaking Eskimo.

Terrestrial Plants					
Scientific Name	**Common Name**	**Season**	**Plant Part**	**Storage**	**Region***
Angelica lucida	Wild celery	Su	leaves, stalk, root	X	Y-K Delta, Seward Pen., PWS/LKP, Chukotka, Nunivak
Arctostaphylos alpina	Alpine bearberry	Su, F	fruit		Y-K Delta, Seward Pen., Nunivak
Boltenia ovifera	Sea potato, Sea onion	S, Su	bulb		Nunivak
Caltha palustris	Marsh marigold	W, S	entire plant	X	Y- K Delta, Nunivak
***Carex* spp.**	Sedges	F	root, stem		Nunivak
***Cladonia* spp.**	Lichens	S	entire plant		Nunivak
Claytonia tuberosa	Wild potato, Tuberous spring-beauty	Su	corm		Y-K Delta, Chukotka, Nunivak
Conioselinum chinense	Western hemlock-parsley	S, Su	root		PWS/LKP, Nunivak
Draba hyperborea	Wild lettuce	S, Su	leaves	X	Nunivak
Dryopteris dilatata	Shield fern	Su, F	fronds, fiddleheads		Nunivak
Empetrum nigrum	Crowberry	Su, F	fruit, plant	X	Y-K Delta, Seward Pen., PWS/LKP, Chukotka, Nunivak
Epilobium angustifolium	Tall fireweed	S, Su	leaves,	X	Y-K Delta, Nunivak
		S	young shoots		PWS/LKP, Seward Pen.
Epilobium latifolium	Dwarf fireweed	Su	leaves, young shoots	X	Nunivak
Equisetum arvense	Common horsetail	S, Su	roots, nodules on roots		Kuskokwim Delta, Nunivak
Eriophorum angustifolium	Tall cottongrass	Su, F	base of stem, greens, roots		Y-K Delta, Seward Pen., Nunivak
***Fucus* spp.**	Bladderwrack	year round	plant,		Y-K Delta, Nunivak
F. Gardneri	Rockweed	S, Su, F	young plant		PWS/LKP
Hippuris tetraphylla* or *H. vulgaris	Mare's tail	S, F	leaves, stems, roots	X	Y-K Delta, Nunivak
Honckenya peploides	Beach greens, Seabeach sandwort	S, Su	leaves, stems	X	Y-K Delta, Chukotka, Seward Pen., Nunivak
Ledum palustre	Labrador tea	year round	leaves		Y-K Delta, Seward Pen., PWS/LKP, Nunivak
Lingusticum scoticum	Beach lovage, Wild parsnip	S, Su	roots, leaves, stems		Y-K Delta, Seward Pen., Nunivak
***Lycoperdon* spp.**	Puffballs	?	fruit		Chukotka
Mertensia maritima	Oysterleaf	S, Su	leaves, stems		Kuskokwim Delta, Nunivak
Nephroma arcticum	Arctic kidney lichen	S, Su, F	lichen		Nunivak
Oxycoccus microcarpus	Bog cranberry	Su	berries		Nunivak
Oxyria digyna	Mountain sorrel	S, Su	leaves	X	Kuskokwim Delta, Chukotka, Seward Pen., Nunivak
***Parrya nudicaulis* (?)**	Wild cabbage/celery	Su	leaves	X	Nunivak
Pedicularis verticillata	Woolly lousewort	S	flowers, roots		Y-K Delta, Chukotka, Seward Pen., Nunivak
Pohlia nutans/Webera nutans	Moss	S	plant		Y-K Delta, Nunivak
Polygonum alaskanum	Alaska rhubarb	S, Su	leaves		Yukon Delta, Nunivak
Polygonum bistorta	Pink plumes, Bistort	S, F	leaves, root stalk	X	Chukotka, Seward Pen., Alaska Pen., Nunivak
Polygonum viviparum	Alpine bistort, Wild rhubarb	S, Su	rhizome, bud, leaves, root		Y-K Delta, Chukotka, Nunivak
Ranunculus Pallasii	Pallas buttercup	S, Su	leaves, stems		Y-K Delta, Nunivak
Rhodymenia palmata	Red seaweed, Dulse	year round	plant		Y-K Delta, PWS/LKP, Nunivak
Rubus arcticus	Nagoonberry	Su	fruit	X	Y-K Delta, PWS/LKP, Seward Pen., Nunivak
Rubus chamaemorus	Cloudberry	Su	fruit	X	Y-K Delta, Chukotka, PWS/LKP, Seward Pen., Nunivak
Rumex arcticus	Dock, sourdock	S, Su	leaves, stems	X	Y-K Delta, Ak. Pen., PWS/LKP, Nunivak

Table 1 (continued)

Terrestrial Plants					
Scientific Name	**Common Name**	**Season**	**Plant Part**	**Storage**	**Region***
Salix alaxensis	Alaska willow	S, Su	catkins, leaf top		Y-K Delta, Seward Pen., Nunivak
Salix pulchra	Diamondleaf willow	Su	catkins, leaves		Y-K Delta, Chukotka, Nunivak
***Saxifraga* spp.**	Saxifrages	S, Su, F	leaves	X	Chukotka, Seward Pen., Nunivak
Sedum rosea	Roseroot, Stonecrop	S, Su, F	flowers, stalk, root		Y-K Delta, Chukotka, Seward Pen., Nunivak
Senecio pseudo-arnica	Ragwort, Fleabane	Su	leaves, stems, top of shoot	X	Y-K Delta, Nunivak
Streptopus amplexifolius	Twisted stalk	Su	berries		Nunivak
Vaccinium uliginosum	Alpine blueberry	Su	berries		Y-K Delta, Chukotka, Seward Pen., Nunivak
Vaccinium vitis-idaea	Low-bush cranberry	Su	berries		Y-K Delta, Chukotka, Seward Pen., Nunivak
Marine Plants and Invertebrates					
Scientific Name	**Common Name**	**Season**	**Part**	**Storage**	**Region***
Abarenicola pacifica	Pacific lugworm	S	body		Nunivak
***Anthopleura* spp.**	Sea anemone	S, Su	body		Nunivak
A. artemesia	Sea anemone	S, Su	body		Nunivak
Boltenia ovifera	Sea potato, Sea onion	when available	bulb		Nunivak
Cucmaria miniata	Sea cucumber	when available	body		Nunivak
***Dendrodo*a spp.**		when available	branches		Nunivak
***Epiactis* spp.**	Sea anemone	S, Su	body		Nunivak
Fucus gardneri	Bladderwrack	year round	plant		Nunivak
Palmaria palmata	Dulse, Seaweed	year round	plant		Nunivak
Urticina crassicornis	Christmas anemone	S, Su	body		Nunivak
Shellfish					
Scientific Name	**Common Name**	**Season**	**Part**	**Storage**	**Region***
Clinocardium nutallii	Nuttall's cockle	S, Su	meat		Nunivak
Dendraster excentricus	Sand dollar	S, Su	meat		Nunivak
Glycymeris subobsoleta	West Coast bittersweet clam	S, Su	meat		Nunivak
Littorina sitkana	Periwinkle	S, Su	meat		Nunivak
Macoma calcarea	Chalky macoma	S, Su	meat		Nunivak
Modiolus modiolus	Horse mussel	S, Su	meat		Nunivak
Mytilus edulis	Blue mussel	S, Su	meat		Nunivak
Natica clausa	Arctic natica	S, Su	meat		Nunivak
Nucella lamellosa	Frilled periwinkle	S, Su	meat		Nunivak
Pandalus borealis	Pink shrimp	when available	meat		Nunivak
Paralithodes camschatica	King crab	S, Su	meat		Nunivak
Protothaca staminea	Pacific littleneck	S, Su	meat		Nunivak
Siliqua patula	Razor clam	S, Su	meat		Nunivak
Spisula polynyma	Stimpson's surf clam	S, Su	meat		Nunivak
Telmessus cheiragonus	Helmet crab	S	meat		Nunivak
***Tonicella* spp. (?)**	possible chiton	F	meat		Nunivak

Season Abbreviations: S = Spring; Su = Summer; F = Fall; W = Winter

Location Abbreviations: Y-K Delta = Yukon-Kuskokwim Delta, PWS/LKP = Prince William Sound and Lower Kenai Peninsula

All plants are used on Nunivak Island unless otherwise noted.

Nunivak information largely extracted from oral history interviews conducted by author (except where noted by Lantis [1958, 1959] and Nowak [1975]). Mainland data obtained from published texts.

Table 2: Medicinal plant use among Yup'ik-speaking Eskimo.

Scientific name	Common name	Plant part	Plant application	Symptom	Location*	Reference**
Achillea spp.	Yarrow	Leaves, stem	Infusion, gargle, poultice, chew, switch	Congestion, sore throat, boils, arthritis, uterine evacuation, increase milk after parturition	Nunivak, PWS/LKP, N. Bering Sea	Anderson 1939; Fortuine 1985; Morseth 2003; Schofield 1989; Wennekens 1985
Alnus spp.	Alder	Leaves, bark, branch	Poultice, switch	Cut/scrapes, arthritis, sore muscles, stool softner	Y-K Delta, PWS/LKP	Ager and Ager 1980; Garibaldi 1999; Morseth 2003; Wennekens 1985
Angelica spp.	Wild celery	Root, stem	Chew, infusion, switch	General ill health, seasickness remedy, sore joints	Yukon Delta, SLI	Anderson 1939; Garibaldi 1999; Hultén 1968; Jones 1983; Morseth 2003; Oswalt 1957; Young and Hall 1969
Artemisia Tilessi	Stinkweed, Wormwood	Leaves, branch, seed head, plant	Poultice, switch, infusion/decoction, hair rinse, vapor, chew	Cuts, dandruff, sore muscles, arthritis, stomach trouble, constipation, bleeding, asthma	Nunivak, SLI, Y-K Delta, PWS/LKP	Ager 1982; Ager and Ager 1980; Fienup-Riordan 1986; Garibaldi 1999; Griffin 2001, Lantis 1959; Oswalt 1957; Overfield et al. 1980; Wennekens 1985; Young and Hall 1969
A. vulgaris	Stinkweed	Leaves	Poultice	Sore joints, gas pains	Nunivak, Norton Sound	Garibaldi 1999; Griffin 2001; Lantis 1958
Betula nana exilis	Dwarf birch	Leaves	Infusion/decoction	Boiled for stomach or intestinal problems	Nunivak, K. Delta	Griffin 2001; Lantis 1958, 1959
Caltha palustris	Marsh marigold	Leaves	Infusion/decoction, chew	Constipation, diarrhea	K. Delta	Garibaldi 1999; Lantis 1959
Dryopteris austriaca	Shield fern	Fronds	Infusion/decoction	Boiled for stomach problems, intestinal	Nunivak, K. Delta	Griffin 2001; Lantis 1958, 1959
D. dilatata americana	Wood fern	Plant	Infusion/decoction	Stomach trouble	K. Delta	Garibaldi 1999
Epilobium angustifolium	Tall fireweed	Leaves, root	Infusion/decoction, poultice	Boiled for stomach or intestinal , constipation, cuts	Nunivak, K. Delta, PWS/LKP	Ager 1982; Ager and Ager 1980; Garibaldi 1999; Griffin 2001; Lantis 1958, 1959; Wennekens 1985
Equisetum spp., *E. avense*	Horsetail	Upper stem, plant	Infusion/decoction, poultice	Internal bleeding, hemorrhages, pimples	Y-K Delta, PWS/LKP	Ager 1982; Ager and Ager 1980; Garibaldi 1999; Wennekens 1985
Eriophorum spp.	Cottongrass	Flower, cotton, stem, leaves	Chew, poultice	Cuts/scrapes, ill health, sores, inflamed eyes, boils	Nunivak, K. Delta	Garibaldi 1999; Griffin 2001; Lantis 1959; Oswalt 1957
Fomes igniarius	Chew ash fungus	Fungus	Infusion/decoction	Constipation, stomach trouble	K. Delta	Garibaldi 1999; Lantis 1959
Ledum palustre	Labrador tea	Leaves, stems	Infusion/decoction, incense	Constipation, stomach trouble, colds, TB, cure to drive out ghosts	Y-K Delta, PWS/LKP	Ager 1982; Ager and Ager 1980; Andrews 1989; Fienup-Riordan 1986; Jones 1983; Oswalt 1957
Matricaria matricarioides	Pineapple weed, Arctic chamomile, False chamomile	Leaves	Infusion	Stomach gas and disorders, laxative, nursing mothers	Aleutians, Kenai, Y-K Delta	Ager 1982; Bank 1953; Kari 1987; Schofield 1989; Smith 1973
Nephroma arcticum	Arctic kidney lichen	Plant	Infusion	Ill health	Y-K Delta	Garibaldi 1999; Oswalt 1957

Table 2 (continued)

Scientific name	Common name	Plant part	Plant application	Symptom	Location*	Reference**
Oxycoccus microcarpus	Bog cranberry	Fruit	Chew	Pneumonia, stomach trouble	Y-K Delta	Garibaldi 1999
Petasites frigides	Coltsfoot	Stalk, root	Infusion	Colds	Nunivak, Siberia, PWS/ LKP, Kenai	Griffin 2007; Hultén 1968; Kari 1987; Nuniwarmiut Taqnelluit n.d.; Wennekens 1985
Phellinus igniarus	forest fungi, Punk	fungus ash	Ashes mixed with tobacco - chew	Euphoric; increase nicotine delivery	Y-K Denta	Blanchette 2001; Blanchette et al. 2002; Prufer 2001
Picea glauca	White spruce	Needles, gum	Infusion/decoction, chew, salve	Cit/scrapes, cough, chest congestion	Y-K Delta	Garibaldi 1999; Lantis 1959; Oswalt 1957
Rubus chamaemorus	Cloudberry	Fruit	Chew	Diarrhea, skin trouble	Nunivak, K. Delta	Garibaldi 1999; Griffin 2001; Lantis 1959; Schofield 1989
Rumex spp.	Dock	Leaves, root	Chew, snuff, poultice; infusion/decoction	Diarrhea, constipation, headache, chill fever	PWS/LKP, Napaskiak, Y-K Delta	Ager 1982; Birket-Smith 1953; Garibaldi 1999; Morseth 2003; Oswalt 1957; Wennekens 1985
Salix spp.	Willow	Leaves, inner and outer bark, catkins, cambium	Infusion/decoction, chew, gargle, poultice	Lung hemorrhage, pain, sore throat or mouth, skin sores, cut/ scrapes, eye trouble	Y-K Delta	Ager 1982; Ager and Ager 1980; Garibaldi 1999; Griffin 2001; Lantis 1958, 1959; Oswalt 1957; Wennekens 1985
S. pulchra	Diamondleaf willow	Leaves	Chew	Sore mouth	Nunivak, Y-K Delta	Ager 1982; Griffin 2001
Sedum rosea	Roseroot, Stonecrop	Leaves, flower, root	Infusion/decoction, chew	Boiled for stomach prob., intestinal, sore mouth, TB	Nunivak, K. Delta, NI	Ager 1982; Ager and Ager 1980; Garibaldi 1999; Griffin 2001; Lantis 1958
Sphagnum spp.	Sphagnum	Moss	Chew, poultice	Diarrhea, cuts/scrapes	K. Delta	Fortuine 1985; Garibaldi 1999; Lantis 1959
Vaccinium vitis-idaea	Low-bush cranberry	Fruit	Chew, poultice	Diarrhea, eye trouble	K. Delta	Garibaldi 1999; Lantis 1959
Valeriana spp.	Valerian	unknown	unknown	Stomach trouble, good luck	Y. Delta; SLI	Garibaldi 1999; Young and Hall 1969

* Location abbreviations: Y Delta = Yukon Delta; K Delta = Kuskokwim Delta; NI = Nelson Island; SLI = St. Lawrence Island

** Medicinal reference data taken from published sources. Griffin data are derived from elder interviews conducted by author on Nunivak Island.

Table 3: Utilitarian use of indigenous plants and shellfish by Yup'ik-speaking Eskimo.

Terrestrial Plants					Location*
Scientific Name	Common Name	Season	Plant Part	Purpose	
Aconitum delphinifolium	Monkshood	Year round	root	hunting poison	Nunivak, PWS/LKP
Alnus spp.	Alder	S, Su, F	wood	firewood	Nunivak
Angelica lucida	Wild celery		root	amulet to ward off polar bear	Siberia
Betula spp.	Birch bracket fungus	Year round	bark, limbs	firestarter, snowshoes, canoes, containers	Nunivak, Y-K Delta
Betula papyrifera	Paper birch	S, Su, F	bark	firestarter, smudge	Nunivak
Carex spp.	Sedges	F	grass	boot lining, socks	Nunivak, Y-K Delta
Cladonia rangiferina	Lichens, Reindeer moss	Year round	plant	seal oil applicator	Nunivak, Y-K Delta
Elymus mollis	Wild rye grass	S, Su, F	grass	menstrual pad, baskets	Nunivak, Y-K Delta
				roof thatching, mats	PWS/LKP
Empetrum nigrum	Crowberry	Su, F	leaves	storage pit liner	Nunivak, Y-K Delta
Equisetum arvense	Common horsetail	S, Su, F	stems	play matches for child	Nunivak, Y-K Delta
Eriophorum spp.	Cottongrass	Su, F	stems	boot soles	Nunivak, K Delta
Eriophorum angustifolium	Tall cottongrass		reeds, stems	basket, mat	Nunivak, K Delta
Fomes pinicola	Fungi		fungus	added to tobacco and snuff	Nunivak, Y-K Delta
Larix laricina	Larch	Year round	tree	bows, arrows, paddles	Y-K Delta
Matricaria matricacarioides	Pineapple weed, Arctic chamomile	S, Su, F	leaves, bud	clean honey bucket of smell	Nunivak
Petasites spp.	Compositae			added to tobacco and snuff	Y-K Delta
Petasites frigidus	Coltsfoot	Su, F	leaves	berry basket	Nunivak,
Phellinus igniarius	Birch bracket fungus	S, Su, F	fungus	formerly used for fires, now mix ash w/chewing tobacco	Nunivak, Y-K Delta
Picea mariana	Black spruce	S, Su, F	wood	firewood, harpoon shafts	Y-K Delta
Poa spp.	Blue grass	F	grass	boot lining, diapers	Nunivak, Y-K Delta
Pohlia nutans, Webera nutans	Moss	S, Su, F	plant	diaper, basket-lining, fire starter, pottery pad	Nunivak, Y-K Delta, PWS/LKP
Populus balsamifera	Cottonwood	S, Su, F	wood	steam fish, firewood	Y-K Delta
Rumex arcticus	Sourdock	Su, F	plant	navigation aid, cache pit lining, landmark	Nunivak, K Delta
Salix spp.	Willow	S, Su, F	wood	firewood, harpoon shafts	Nunivak, Y-K Delta
Spahagnum spp.	Sphagnum moss	Year round	moss	menstrual pad, diaper, lamp wick	Nunivak, Y-K Delta
Valeriana capitata	Valerian	Su, F	leaves	clean nets of fish smell	Nunivak, Y Delta
Shellfish					
Denraster excentricus	Sand dollar	S, Su, F	sand dollar	whistle	Nunivak
Modiolus modiolus	Horse mussel	S, Su	shell	scraper for sea mammal intestines	Nunivak

Season Abbreviations: S = Spring; Su = Summer; F = Fall; W = Winter

Location Abbreviations: K Delta = Kuskokwim Delta; Y Delta = Yukon Delta; Y-K Delta = Yukon-Kuskokwim Delta; PWS/LKP = Prince William Sound and Lower Kenai Peninsula.

Sources: Nunivak data collected from elder interviews. Data from other areas obtained from published references.

NATIVE PLANT TAXONOMY

An examination of general Yup'ik terms (Jacobson 1984) provides comparative data useful in identifying linguistic distinctions made in Yup'ik plant taxonomies. Yup'ik speakers (including Cup'ig speakers on Nunivak Island who speak the most divergent dialect within the Yup'ik branch) tend to divide plants into basic groups based on how plants were traditionally used, their similarity in appearance, or physical characteristics. For example, on Nunivak, the Cup'ig plant name ***ciwassit***[2] translates to 'wild greens that can be cooked' and is used to denote several distinct species that are prepared in a similar manner (i.e., *Rumex arcticus* [sour dock], *Polygonum bistorta* [bistort], and *P. viviparum* [alpine bistort]). *Kumarutet* is used to denote all moss species (e.g., *Pohlia nutans*) based on the traditional use of moss as a wick in lamps (***kuman*** = lamp, light). Examples of plants grouped by similarity in appearance, characteristics, or setting include (1) ***elquat***: term used to designate several varieties of seaweed (e.g., *Palmaria palmata* [dulse], *Fucus* spp. [bladderwrack]); (2) *megtat neqiat*: meaning bumble bee food for several local plant species (e.g., *Pedicularis verticillata* [wooly lousewort], *Sedum rosea* [roseroot]); and (3) ***agyam an'a(i)***: used for all puffball species (*Lycoperdon* spp. and *Calvatia* spp.) In Yup'ik, ***agyam ana*** translates to meteor and meteors, which are traditionally said to turn into puffballs when they land (Jacobson 1984:48). Still other plant names highlight distinctions within a genus such as ***qugyuguat***, which is used to refer to all *Salix* (willow) species except those exhibiting catkins, which are referred to as ***qimugkararat***. Further analysis is needed in order to fully understand the Yup'ik concept and categorization of local flora.

Some plant uses and names are shared by Yup'ik, Cup'ig, and Inupiaq speakers (i.e., Seward Peninsula) to the north has been identified. Similarities between some Yup'ik, Cup'ig, and Inupiaq plant names (e.g., ***kavlak – kavlag – kavlaq*** [*Arctostaphylos alpina* or alpine bearberry]), ***paunraq – paunrat – paungaq*** [*Empetrum nigrum*, crowberry], ***pekneq – pekner – pikneq*** [*Eriophorum angustifolium*, cottongrass], ***tukaayug – tuk'ayut – tukaayuk*** [*Linguiticum scoticum*, lovage]) and food preparations (e.g., ***akutaq – akutar – akutuq*** [Eskimo ice-cream comprised of berries, seal oil, reindeer tallow or Crisco, snow and sometimes salmon eggs]) highlight extended contact between western Alaska peoples over time. Further research is needed to evaluate the degree of sharing between these language branches with regard to the recognition and use of indigenous plants. See Table 4 for a glossary of Native names for all identified indigenous terrestrial and marine plant species, marine invertebrates and shellfish, and Table 5 for specific information on marine resource use.

PLANT HARVEST, PREPARATION, AND STORAGE

In the Yukon-Kuskokwim Delta and on Nunivak Island, women and children traditionally gathered most indigenous plants while the men were harvesting other available resources (e.g., caribou, waterfowl, seal) (Fienup-Riordan 1983; Lantis 1946). While fresh spring greens provided a welcome addition to the diet, which in winter was based largely on dried and stored foods, other greens were harvested throughout the year as they ripened and used with some of those stored for winter use. With the melting of the snow pack, local greens and berries not picked during the previous fall's harvest begin to appear and were added to the local diet. Depending on the timing of break up, Yup'ik families began to move to their spring camps to harvest available resources. Along the coast, Yup'ik men would journey out along the ice to harvest arriving sea mammals (seals, walrus) while women would spend much of their time harvesting available plant resources (greens and seaweeds) and shellfish. Early harvestable spring food plants included marsh marigold (*Caltha palustris*), sour dock (*Rumex arcticus*), wild celery (*Angelica lucida*), wild lettuce (*Draba hyperborea*), wild parsnip (*Ligusticum Hultenii*), wild rhubarb (*Polygonum viviparum*), mountain sorrel (*Oxyria digyna*), Pallas buttercup (*Ranunculus Pallasii*), and Labrador tea (*Ledum palustre*).

After the completion of the spring hunting season, families would move to summer fish camps. Fish comprised the most prolific and essential subsistence resource for many Alaska Natives living in southwestern Alaska, and their harvest would occupy the majority of the families' efforts for several months. Traditional indigenous plants would continue to be harvested as they ripened and were eaten fresh or placed in underground caches for temporary storage. By late summer/early fall, several berry species (e.g., cloudberry [*Rubus chamaemorus*], nagoonberry [*R. arcticus*], crowberry [*Empetrum nigrum*]) and local greens (e.g., sourdock [*Rumex arcticus*]) were ready to be

2. A glossary of Yupik and Cup'ig plant names is included in Table 4.

Table 4: Glossary of Yup'ik names for indigenous plants, invertebrates, and shellfish.

Terrestrial Plants					
Scientific Name	**Common Name**	**Yup'ik**	**Cup'ig**	**Siberian Yupik**	**Inupiaq**
***Achillea* spp.**	Yarrow	*punaiyulinu'kait*			
Aconitum delphinifolium	Monkshood		*cetegneg*		
***Alnus* spp.**	Alder	*cuukvaguaq; chufu'koak*[1]			
Angelica lucida	Wild celery	*ikiituk*	*ik'itut, ik'iituq, ik'iitug*		*ikuusuk*
Arctostaphylos alpina	Alpine bearberry	*kavlak, kavlagpak*	*kavlag, kavla, kutag*		*kavlaq*
Artemisia tilesii* and *A. vulgaris	Stinkweed, Wormwood	*caiggluk, qanganarvaq*	*neqniallngut*		
***Betula* spp.**	Birch	*kasruq, nelnguq*			
Betula nana exilis	Birch, Dwarf birch	*chupuaiya'hak*	*ciq'ur*		
Betula papyrifera	Birch	*u'linguk*			
Caltha palustris	Marsh marigold	*allngiguaq, irunguaq*	*wivlug*		
***Carex* spp.**	Sedges		*pekneret*		
***Cladonia* spp.**	Lichens	*ciruneruat*	*qelqun'at*		
Cladonia rangiferina	Reindeer lichen, Reindeer moss	*ciruneruat, tuntut neqait*	*ungagar, ungagat*		*niqaat*[2]
Claytonia tuberosa	Tuberous spring-beauty	*ulqit, utqiq, ulqiq*	*ulpit*	*ulkik*	
Conioselinum chinense	Western hemlock-parsley		*tuk'ayug*		
***Cornus* spp.**	Bunchberry	*cingqullektaq*			
Draba hyperborea	Wild lettuce		*inguqit*		
Dryopteris austriaca	Shield fern	*ciilavik, qecuguaq*	*centurkar, ceturqa'ar*		
Dryopteris dilitata	Shield fern	*ceturqaaraat, cetuguar*	*cilqaarat, ilqaarat*		
Elymus mollis	Wild rye grass	*taperrnaq*	*taperrnaq*		
Empetrum nigrum	Crowberry	*paunraq, tan'gerpak*	*paunrat, pauner*	*pagungak*	*paunbaq, paungaq*
Epilobium angustifolium	Fireweed	*ciiqaaq*	*cilqaar*		*quppiqutaq*
Epilobium latifolium	Dwarf fireweed, River beauty		*qilqaarat*		
Equisetum arvense	Common horsetail	*qetgoq, qetek*	*kenret*		
***Eriophorum* spp.**	Cottongrass	*melquruaq*	*melqiutet, pal'it*		
Eriophorum angustifolium	Tall cottongrass	*anlleq, iitaq*	*pekner*		*pikneq**
Fomes igniarius	Chew ash fungus	*kuma'hak*			
Fomes pinicola	Fungi	*iqmik*			
Hippuris tetraphylla	Mare's tail	*tayaruq*	*tayarut*		
Honckenya peploides	Beach greens	*qelquayak, teptuyak*	*tukulleg'at*	*mytknagrak*	
Larix laricina	Larch	*elriguq*			
Ledum palustre	Labrador tea	*ayuq, ai'yut, ayu*	*ay'ut*		
Lingusticum scoticum hultenii	Beach lovage, Wild parsnip	*tukaayuq, mecuqelugaq*	*tuk'ayat, ciukarrat*		*tukaaguk**
***Lycoperdon* spp.**	Puffballs	*agyam anaa*	*agyam an'a(i)*	*atykyrygak*[1]	
Matricaria matricarioides	Pineapple weed, False chamomile	*atsu'koak, atsarvaq, atsaruaq*			
Mertensia maritima	Oyster leaf		*civnerturpag*	*mytknagrak*	
Nephroma arcticum	Arctic kidney lichen	*kus'koak*	*aksarurnat*		
Oxycoccus microcarpus	Bog cranberry	*uingiar, tumagliq*	*tumaglir*		*qunmun*
Oxyria digyna	Mountain sorrel	*quunartiarraat*	*quulistar*	*kugylnik*	*qufuliq, qunulliq*
Parrya nudicaulis	Wild cabbage		*inguqit*		*masu aibaq*
Pedicularis verticillata	Wooly lousewort	*ulevleruyak*	*megtat neqiat*	*kakykak*[2]	
Petasites frigidus	Coltsfoot	*qaltaruaq, plugu'tuk*	*kallngagguar*	*kamgyak*[2]	
Picea glauca	White spruce	*mingkot'moak, mingqutnguaq*			
***Poa* spp.**	Bluegrass	*euget*			
Pohlia nutans	Moss	*kuma'hotit*	*kumarutet, nanikiitaq*		
Polygonum alaskanum	Alaska rhubarb	*nakaaq*			*qusrimmak*

Table 4 (continued)

Polygonum bistorta	Bistort, Pink plumes	*cuassaaq, cuqlamcaq*	*ciwassat*	*siukl'iak*	
Polygonum viviparum	Alpine bistort		*ciwassat*	*siukl'iakyak*	
Poria obliqua	Birch bracket fungus	*kumakaq, ararkaq, pupiguaq*			
Ranunculus Pallasii	Pallas buttercup	*uivlut, kapuukar*	*uivluk, aggulunguat*		
Rubus arcticus	Nagoonberry	*puyuraaraq*	*puyurarag*		
Rubus chamaemorus	Cloudberry, Salmonberry	*atsalugpiaq, aqevsik*	*atsar atsakutag*	*akavsik*	*aqpik*
Rumex arcticus	Sourdock, Wild spinach	*quagciq, cuassaaq, aatunaq*	*ciwassat, ciwassar*	*al'kyhkak*	*quabaq, quagaq*
Salix alaxensis	Alaska willow	*uqvigpak*	*qugyuguat*	*kukunat*[2]	
Salix fuscescens	Willow		*qimugkararat*		
Salix pulchra	Diamondleaf willow		*qugyuguat*	*kukunat*	*kanufiq*
***Saxifraga* spp.**	Saxifrages		*quulistat*	*siknak*[2]	
Sedum rosea	Roseroot, Stonecrop	*cuqlamcaraat*	*megtat neqiat*	*nunivak*	
Senecio pseudo-arnica	Ragwort, Fleabane		*qugyuguat*		
***Sphagnum* spp.**	Sphagnum moss	*uruq, urut*	*kumarutet, nanikiitaq*		
Streptopus amplexifolius	Twisted stalk		*atsarrlug*		
Vaccinium uliginosum	Alpine blueberry, Bog blueberry	*curaq, qiuq*	*cur'at*	*siugak*	*asriavik, asiaq, subaq*
Vaccinium vitis-idaea	Lingonberry, Low-bush cranberry	*tumagliq, kavirliq, kitngiq*	*tumaglir, tumaglikatat*	*kitmik*	*kikmieeaq, kipmifnaq*
Valeriana capitata	Valerian	*teptukuyuq*			
Marine Plants and Invertebrates					
Abarenicola pacifica	Pacific lugworm		*ussunglu*		
***Anthopleura* spp.**	Sea anemone	*anarsaraq*	*et'er*		
A. artemesia	Sea anemone		*lagturyaqleg'et*		
Boltenia ovifera	Sea potato, sea onion		*arnaut*		
Cucmaria miniata	Sea cucumber	*uraruq*	*urwagnar*		
***Dendrodoa* spp.**			*tukurnar*		
***Epiactis* sp.**	Sea anemone		*qacautar*		
Fucus gardneri	Bladderwrack		*elquar, elquat*		
Palmaria palmata	Dulse, Seaweed		*elquat, elquarnar*		
Urticina crassicornis	Christmas anemone		*aaruyeg*		
Shellfish					
Clinocardium nutallii	Nuttall's cockle		*aatevtar*		
Dendraster excentricus	Sand dollar		*qallriucet'ar*		
Glycymeris subobsoleta	West Coast bittersweet clam				
Littorina sitkana	Periwinkle		*aalemyar*		
Macoma calcarea	Chalky macoma		*amyagyar*		
Modiolus modiolus	Horse mussel		*amyagyar*		
Mytilus edulis	Blue mussel		*qapilat*		
Natica clausa	Arctic natica		*nakuunar, ka pongioq*		
Nucella lamellosa	Frilled periwinkle		*nakuunar*		
Pandalus borealis	Pink shrimp	*cungaralukvak*	*nastarnar*		
Paralithodes camschatica	King crab		*iwallriyar*		
Protothaca staminea	Pacific littleneck		*pilagtuaruter*		
Siliqua patula	Razor clam		*ciileviat*		
Spisula polynyma	Stimpson's surf clam		*wiilu, aliruar*		
Telmessus cheiragonus	Helmet crab		*melqulgat*		
unidentified species	Striped jellyfish	*eqaarniq*	*arnauq*		

1 Secondary spelling from Oswalt 1957.

2 Name references same species but possibly different subspecies.

Native orthography taken from primary sources unless specified: Yup'ik, Jacobson 1984; Cup'ig, Amos and Amos 2003; Siberian Yupik, Ainana and Zagrebin n.d.; Inupiaq, MacLean 1981 and Webster and Zibell 1970.

Table 5: Use of marine resources by Yup'ik-speaking Eskimo.

Scientific Name	Common Name	Native Name	Native Use	Reference
Clinocardium nutallii	Nuttall's cockle	*aatevtar*	Small cockles eaten raw while larger shells are cooked. After ice melts in spring they can be found on beach; sometimes dug for.	Amos and Amos 2001; Kiokun 1997a; Kiokun et al. 2001; Nowak 1975:27; Williams and Williams 1997b
Dendraster excentricus	Sand dollar	*qallriucet'ar*	Children would use sand dollars as whistles. Small hole was drilled in center/top, dollar placed inside mouth between teeth and lips, and child would blow to create whistle.	Amos and Amos 2001; Kiokun et al. 2001; Lantis 1946:216
Glycymeris subobsoleta	West Coast bittersweet clam		Reported to have been eaten by Nuniwarmiut but no specific information regarding consumption is currently known.	Nowak 1975:27
Littorina sitkana	Periwinkle	*aalemyar*	Eaten raw. Mostly eaten by children but some adults also indulge. Children place fresh water in shell and sing to snail to encourage it to come out of shell to assist in eating.	Amos and Amos 2001; Kiokun et al. 2001; Kiokun 1995b; Williams and Williams 1997a
Macoma calcarea	Chalky macoma	*amyagyar*	Eaten when they drift ashore.	Amos and Amos 2001; Kiokun 1995b; Kiokun et al. 2001
Modiolus modiolus	Horse mussel	*amyagyar*	Many families did not eat meat due to red color and warned children to avoid. Others eat meat like other shellfish. Large mussel shells were used to scrape flesh from seal and walrus intestines.	Amos and Amos 2001; Curtis 1978:46; Kiokun et al. 2001; Williams and Williams 1997b
Mytilus edulis	Blue mussel	*qapilat*	Dipped in hot water and seal oil or eaten raw.	Amos and Amos 2001; Kiokun 1995b; 1997a; Kiokun et al. 2001; Lantis 1946:204
Natica clausa	Arctic natica	*nakuunar*	Species are known to have been used on Nunivak but elders have forgotten specific details on preparation.	
Nucella lamellosa				
Pandalus borealis				
Paralithodes camschatica				
Protothaca staminea				
Spisula polynyma				
Siliqua patula				
Telmessus cheiragonus				
	Hairy crab	*melqulgat*	Cooked in hot water. Legs and inner parts eaten. Speared from kayak in spring or caught with line.	Kiokun 1997b; Williams and Williams 1997a
Tonicella spp. (?)	possible chiton		Usually measures approx. 18" long and comes in different colors and appears only in fall when cold water comes or during storms. Inside is hard like cartilage or rubber, which is removed and washed in fresh water for 1–2 days. Eaten raw, with seal oil or dry fish.	Davis and Davis 2001; Kiokun 1997c; Williams and Williams 1997a
Marine Plants			Species are known to have been used on Nunivak but elders have forgotten specific details on preparation.	
Abarenicola Pacifica				
Anthopleura				
A. artemesia				
Boltenia ovifera				
Cucmaria miniata				
*Dendrodo*a spp.				
Epiactis				
Fucus gardneri				
Palmaria palmata				
Urticina crassicornis				

All source data, aside from Curtis 1978 and Lantis 1946, taken from interviews conducted by author. Absence of references from other parts of southwest Alaska does not mean that above resources were not used by Eskimo people, only that their use is generally not reported.

harvested and women and children would spend most days on the tundra gathering plant resources.

Most plants were available in a variety of locales, and their harvest did not dictate moving the family to specific camps. Plants that grew in abundance in specific terrain, such as several varieties of cliff greens, usually offered other resources that could be harvested at the same time (e.g., fish, sandhill cranes). Greens such as *Rumex arcticus* could be found throughout the delta and on Nunivak Island and old camp sites are said to contain buried cache pits once used for plant storage.

As an example, when harvesting wild spinach or sourdock, Nunivak elders state that they would stay in an area until they had harvested enough for their family's long-term needs (Amos 1991; Kiokun 1995a). After picking, they would cook the spinach a little bit before placing it into a cache dug underground.

> Cook 'em half way, just for the leaves to just shrivel up and not take much space, and they would dig ditches and line it with a certain type of twigs and grass and put 'em in there until the weather gets colder, before the ground get hard, knowing that when it freezes, that *ciwassat* [*Rumex arcticus*] would freeze in with the earth. So before that time they would go over there again, pull the *ciwassat* out and this time leave 'em on top of the ground.... They would cover them with grass, probably willows too to keep them together and they would leave them until it freezes. (Amos 1991:16)

Before placing the spinach in the caches, the cooked leaves would be drained of juice and the pit lined with woven grass mats (e.g., *Elymus mollis*). "Some people rolled them up like a ball and put them away. Each roll was made enough for one meal. They rolled the spinach ball big enough for their dinner or a snack. That's how they took them out of the ground" (Amos and Amos 1989:25). Grass was placed on top before the cache was covered with rocks to ensure it would not be disturbed until needed (Kiokun 1995a). Berries were stored in much the same way, except that these pits would be lined with rocks (Kiokun 1995a; Whitman 1995) and raw spinach (e.g., *Rumex arcticus*) was used as an inner lining (Kiokun 1995a). The berries would have no juice when removed, since they would have dried out while being stored underground. In the fall, people would return to their seasonal caches and transport their stored berries and greens to their winter villages. Edward Curtis (1978:36) described a berry cache as "a small box-like structure of flat stones lined with grass and covered with sod until air- and water-tight." Examples of such features were discovered during recent archaeological excavations on Nunivak Island (see Fig. 5). An analysis of soil sediments (Endo 2006) recovered from these caches revealed the presence of crowberry seeds (*Empetrum nigrum*), which supports their earlier use as berry caches.

CHANGES IN PLANT USE

While recent investigations on Nunivak Island (Griffin 2001, 2004, 2007; Nuniwarmiut Taqnelluit n.d.; U.S. BIA 1995) have added extensive details to previous knowledge of traditional subsistence procurement and storage techniques among the Nuniwarmiut, research within the mainland delta region remains largely unpublished. In researching current use of indigenous flora and seashore species, one must keep in mind that the memories of earlier subsistence use may be affected by historic changes to Native culture. The most obvious change in Yup'ik indigenous plant use, between that found in early ethnographies and at present, is the current lack of knowledge of many previously harvested plants. With the abandonment of many small villages in favor of larger villages with established schools and an increased reliance on western foods, fewer families rely on traditional subsistence resources. Studies (e.g., Nowak 1975) have documented a link between continued traditional subsistence activities and a family's economic position. With village centralization, the cost of purchasing and maintaining the equipment needed to continue traditional subsistence activities (e.g., boat,

Figure 5. Rock-lined cache pits at Ellikarrmiut Village, Nunivak Island, Alaska.

four-wheeler, gas) made people dependent on having a steady source of income and time to pursue such activities. In time, information on earlier plant use is forgotten and influences resulting from increased contact with non-Yup'ik mainland peoples can add to or supplant earlier local knowledge. For example, in 1927, Curtis (1978:35) recorded the use of willow leaves (*Salix* spp.) on Nunivak Island as a food and medicinal item. In 1939, Lantis (1959:60) found only one elder on Nunivak who still recalled the earlier use of willow. Today elders routinely deny such traditional use. However, recent influence of northern Eskimos on the island population has resulted in a renewed use of the plant, although contemporary Nuniwarmiut elders believe that its use is only of recent innovation. A similar pattern of traditional versus recent use has been noted for stinkweed/wormwood (*Artemesia tilesii*).

It is easy to assume that observed Native lifeways in the early twentieth century reflect those practiced during the late prehistoric period or before. However, in spite of the evident continuity of tool use and general subsistence practices on Nunivak Island (Griffin 2001, 2004) and the Yukon-Kuskokwim Delta (Shaw 1983) throughout the past five hundred years, traditional lifeways were likely more complex than those historically recorded. Following increased contact between mainland Native peoples (i.e., trade, intermarriage) and Euro-Americans during the nineteenth century, change in the use of indigenous plants was probably an ongoing process, influenced by the degree and type of contact, as well as impacts from a serious loss in Native population resulting from the introduction of western diseases.

Previous research in Native communities within the delta and Nunivak has focused on documenting changes to Native lifeways following the arrival of Euro-Americans to the region (e.g., Fienup-Riordan 1983; Lantis 1946). However, these studies have provided little detailed information on traditional use of indigenous plants. The collection of ethnobotanical information was rarely a focus of research efforts, and a systematic analysis of Native plant use throughout the region has yet to be undertaken. Given the incorporation of western foods in Native diets and a corresponding decline in the harvest of many indigenous plants, efforts to collaborate with Native communities need to be undertaken before information on traditional use of area flora has been forgotten.

CONCLUSION

The degree of contact between mainland and island Eskimo people before the arrival of Russian and Euro-Americans in the late eighteenth and nineteenth centuries is unknown but would have largely been limited to trade between neighboring groups during the summer months. Having to rely primarily on locally available resources for their subsistence, the Yup'ik incorporated many indigenous plants into their diet. Contrary to earlier stereotypes in popular film and literature of Arctic peoples' sole reliance on a meat-based diet for survival, local flora were routinely incorporated into the Yup'ik diet in addition to Native pharmacology and utilitarian tasks.

There are few Native elders with a rich knowledge of traditional plant use in the Yukon-Kuskokwim Delta or on Nunivak Island, and younger generations have not expressed a strong interest in preserving these data. Except for the continuing harvest of a few popular plant species (e.g., *Angelica lucida* [wild celery], *Rumex arcticus* [sour dock], *Caltha palustris* [marsh marigold], *Rubus chamaemorus* [cloudberry]), much traditional knowledge is not being passed on and will likely disappear with the passing of today's elders. It is important that additional research efforts to record traditional use of plants occur before knowledge of such use is forgotten.

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LOST IN THE COLLECTION: RECONSIDERING THE MEAT CACHE 35 ASSEMBLAGE AND THE QUESTION OF A THULE OCCUPATION AT KUKULIK

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ABSTRACT

Nearly seventy-five years after excavation, the archaeological collections from the Kukulik site on St. Lawrence Island, Alaska, were recently the focus of an extensive rehousing and stabilization project funded by the National Park Service's Save America's Treasures program. During the course of that project, a series of uncataloged artifacts were re-identified from a small assemblage originally excavated in 1935 from an isolated storage feature. This assemblage figured prominently in the original site analysis (Geist and Rainey 1936) but was, until the current relocation, thought to have been lost. The original analysis presented the possibility that Meat Cache 35 represented a Thule occupation at Kukulik. This had implications regarding the prehistory of the Bering Sea region beyond St. Lawrence Island, because before this, evidence of the Thule culture was primarily restricted to the Eastern Arctic and the mainland of Alaska. This paper will discuss the cultural and temporal relationship of the so-called "Thule Meat Cache" assemblage to the site of Kukulik through a combination of stylistic typology, radiocarbon data, and spatial information. Through this reanalysis, the cultural and temporal interpretations of the site are brought back into question, especially those concerning a Thule presence at Kukulik.

KEYWORDS: St. Lawrence Island, Punuk, Bering Strait prehistory

INTRODUCTION

From 1931 through 1935 Otto Geist carried out excavations at the site of Kukulik on St. Lawrence Island, Alaska (Fig. 1). During the 1935 season a small storage feature, Meat Cache 35 (MC 35), was excavated that attracted some attention. The "Thule Meat Cache," as it was described, contained materials originally determined to represent a "pure Thule" occupation at the site of Kukulik (Geist and Rainey 1936:198). This conclusion was based both on the stratigraphic location of the feature and through comparison of the artifacts to others at the site and abroad. The possibility that Thule people had actually maintained a presence on St. Lawrence Island was contrary to the then-current interpretations. At the time of the Kukulik excavations, a Thule culture was only recently defined in the Eastern Arctic by Mathiassen (1927). Yet the assemblage of artifacts found in association with the feature suggested both to Geist and to Rainey, who analyzed the collections, that the meat cache represented an early Thule occupation at Kukulik.

At the time of excavation in 1930, Kukulik was an abandoned Siberian Yupik village comprised of two prominent mounds that were essentially anthropogenic middens, the result of an estimated 2,000 years of human habitation. This deposit presented an unrivaled potential to trace the sequence of development of Eskimo culture at a single site (Geist and Rainey 1936).

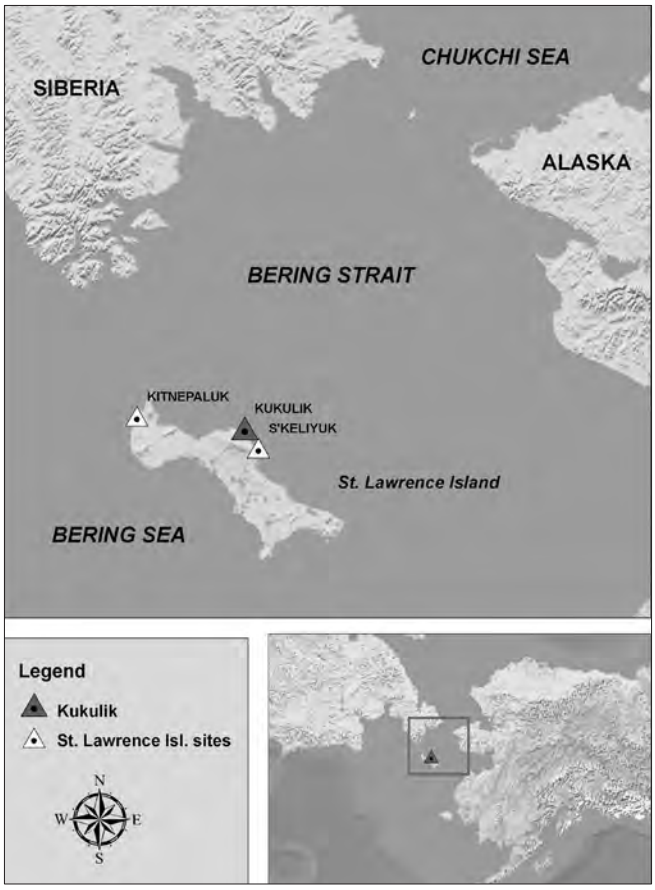

Figure 1. Map of St. Lawrence Island and the Bering Strait region.

As Collins (1939:481) observed, "[a]t Kukulik the remains of all [Eskimo] periods are found in stratigraphic sequence in a single huge midden." The first formal excavations at Kukulik were carried out by Geist between 1931 and 1933 as a test trench that bisected the larger of the two mounds, the "single huge midden" referred to by Rainey (1936). The results of this work were used as the foundation for seeking support to conduct a more expansive project in 1934–1935 by the Department of the Interior-Alaska College Expeditions (DOI-ACE) (Geist and Rainey 1936). Subsequent excavations at Kukulik focused on the easternmost of the two mounds, often referred to as the Main Midden (Fig. 2). This large mound was an average of 5 m high, roughly L-shaped, and measured 194 m long by 41 m wide at its base.[1] Excavation revealed that the mound contained a stratified matrix of alternating layers of habitation refuse and noncultural plant material and sedimentary matrix (Geist and Rainey 1936).

Numerous habitation-related features, including the remains of semisubterranean house pits, meat caches and various other storage structures, were unearthed during the excavations at Kukulik. During the 1934 and 1935 seasons the majority of the Main Midden northeast of the test trench was removed to 92 to 107 cm below the original surface (Geist and Rainey 1936:85). Geist and Rainey (1936) only briefly describe their excavation methods and no specific provenience data were ever published, despite the elaborate data-recording techniques in place.[2] Several stratigraphic details were mentioned, including, most prominently, a series of "compressed sods" that were encountered during excavation and noted in the test trench profile (Geist and Rainey 1936:40). A second vertical cut or trench excavated lengthwise across the northeastern beach slope of the mound during 1935 produced a similar stratigraphy (Geist and Rainey 1936:200). The sod "lines," or layers, were assumed to be evidence for periods of site abandonment, potentially useful in delineating the cultural horizons within the deposit (Geist and Rainey 1936:45).

One distinctive sod line was encountered across the entire site throughout the 1935 season. This feature was described by Geist (in Geist and Rainey 1936:57) as occurring "at an average depth of 36 inches [91.4 cm] from the original surface" and representing "the lower limit of the deposit laid by the last inhabitants." The artifacts discovered in excavations through this layer were typically identified as the Thule type. Importantly, the Meat Cache 35 feature was also discovered below this layer and contained similar specimens. According to Rainey (1936:198), "the objects found in Meat Cache 35 include harpoon heads . . . and associated artifacts . . . like those described by Mathiassen (1927) as Thule types," which suggested that a "pure Thule" phase at Kukulik preceded an altered "Alaska Thule" phase. Should this be the case, Meat Cache 35 would have critical implications for the prehistory of the Bering Sea region beyond St. Lawrence Island, because

1. The original measurements recorded during excavation were in feet. For this paper all such measurements are converted to the approximate metric value.
2. During the 1934 and 1935 seasons the section of the Main Midden east of the test cut was divided into sections, each of which was excavated gradually as thawing permitted, by working from the seaward side up the slope of the mound, across the surface, and back down the landward side. As features were uncovered the location and depth measurements of the corners and the floor were measured through use of engineering survey techniques and tools including a Lietz transit.

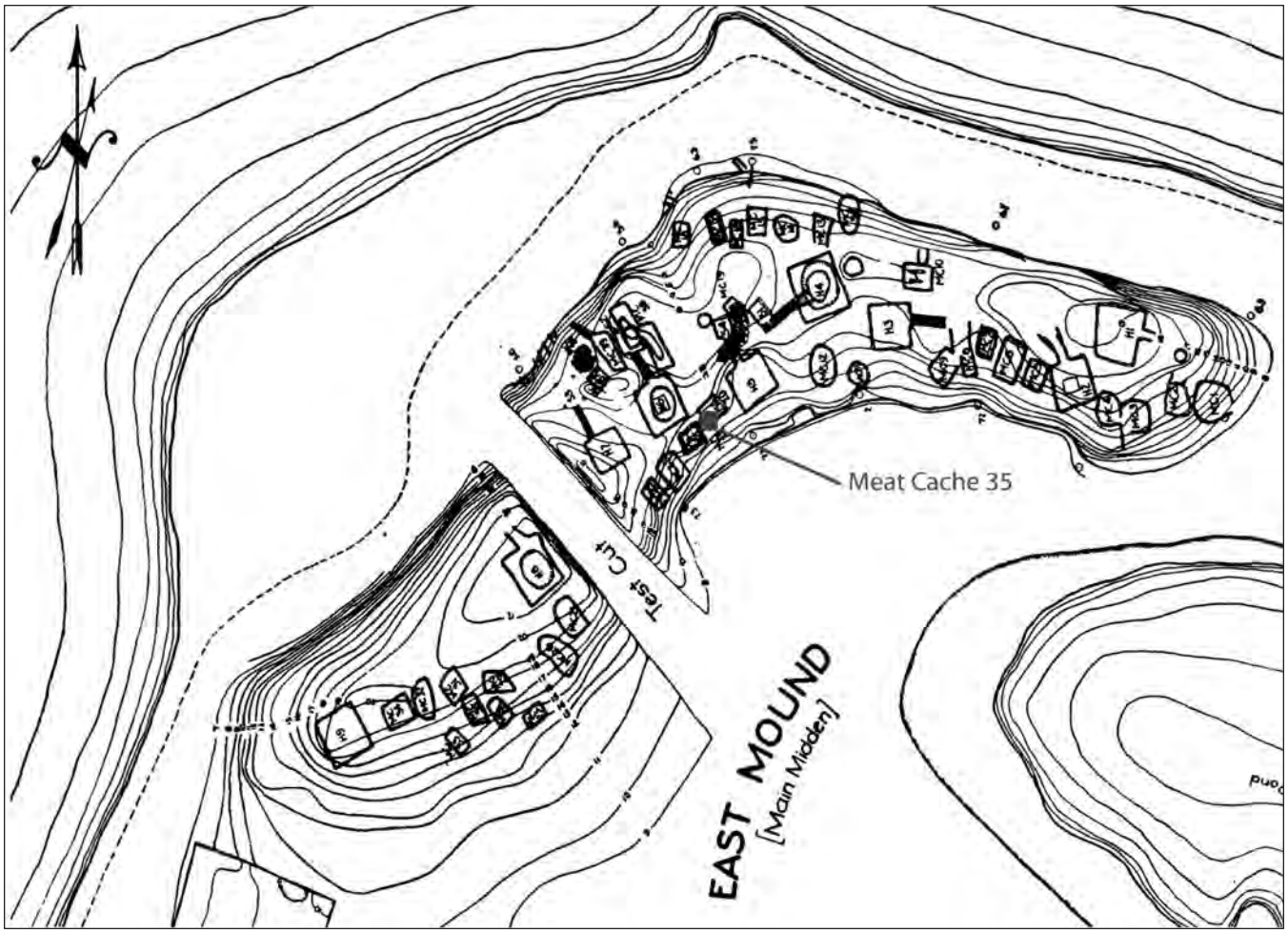

Figure 2. Site map of Kukulik showing location of Meat Cache 35 (Geist and Rainey 1936:54).

before this, evidence of the Thule culture was primarily restricted to the Eastern Arctic and the Alaska mainland.

An extensive rehousing and stabilization project focused on the archaeological collections from Kukulik[3] was recently completed at the University of Alaska Museum of the North (UAMN). The result of this project was the stabilization, through reorganization and rehousing, of the 1934 and 1935 DOI-ACE materials to current, best-practice curatorial standards. In 2008, as a direct result of these efforts, numerous uncataloged artifacts were located that had been separated from the majority of the 1934–1935 collection. Many of the artifacts were determined to be those originally excavated from MC 35, with a number of other MC objects located over the next several months. The relocation of these artifacts prompted this reinvestigation of some of the original interpretations of Kukulik, specifically the possibility of a Thule occupation.

THULE AT KUKULIK? RECONSIDERING MEAT CACHE 35

Following the publication of the Kukulik report (Geist and Rainey 1936), some controversy surrounded the claim that the Thule culture was found at Kukulik. In reviewing the report, de Laguna (1939:291) noted that "Rainey's 'Thule' stage is a complete misnomer" and instead interpreted MC 35 as "Late Punuk." In another review, Collins (1939:480) claims that "there cannot be both Thule and a Punuk phase, separated in time, since in this particular locale the two were practically equivalent," further proposing that "the Punuk stage on St. Lawrence, being contemporaneous with the Thule at Bering Strait and, approximately, with Mathiassen's [1927] central Canadian Thule, has much in common with both, despite its numerous local peculiarities" (Collins 1939:480). One of

3. Official grant title: Preserving the 1934–35 Department of the Interior: Alaska College Expedition Archaeological Collection at the University of Alaska Museum under IMLS Grant ST-00-05-0005-05.

the aims of this paper is to review the analysis of the MC 35 collection and through comparisons with more recent literature, gain new insight into these long-standing conflicts of interpretation.

THE MEAT CACHE 35 ASSEMBLAGE

The meat cache features at Kukulik are not uniform in either construction or use, as described by Geist and Rainey (1936:66), although the structures are generally smaller than the house features. Structurally, the caches are excavated pits lined with walls of stone and wood, often with wooden roofs supported by whale jawbones and covered with dirt and sod (Geist and Rainey 1936:66). Including MC 35, ten cache structures were described briefly, mostly in relation to their construction, without artifact inventories (Geist and Rainey 1936:66–72). Five of the structures were comparatively recent, analyzed in association with the Modern House (Rainey in Geist and Rainey 1936: 87–134). Unfortunately, this analysis was not feature-based; instead, all six assemblages are described as a single collection.

Due to the perceived historical importance of the MC 35 feature, Geist and Rainey presented its analysis in a distinct section, with each artifact described and compared to other assemblages (Geist and Rainey 1936:191–198). The MC 35 feature is described as "a floor made of poles, covered by five or six layers of walrus hide" (Geist and Rainey 1936:191–192). MC 35 "lay…approximately 5 feet [1.52 m] below the surface under meat caches 20 and 21," and this stratigraphic position meant that it was "entirely unrelated to recent-prehistoric meat caches" (Geist and Rainey 1936:191, 198).

While most of the artifacts excavated from MC 35 were described and even photographed for the report (Geist and Rainey 1936:191–198, 307–310) the objects were never cataloged, and until their recent rediscovery were considered lost. Not until the fortuitous discovery of the first uncataloged specimens was a concerted effort undertaken to relocate the entire MC 35 assemblage. As it happened, MC 35 artifacts were scattered throughout UAMN collections. Some had remained uncataloged for several generations, set aside as quandaries to be addressed at a future time. Others, at some point, were mislabeled and were consequently stored with unrelated or "miscellaneous" collections. As items were located, each was meticulously compared to the written descriptions and to photographs from the report. Fortunately, the original manuscript for the report, complete with photo plates, is archived in the Geist collection in the Alaska and Polar Regions Department at Rasmuson Library, UAF. As shown in Table 1, compiled from the original descriptions (Geist and Rainey 1936:191–198), the MC 35 assemblage contains a total of seventy-two items. To date, all but nineteen of the MC 35 artifacts have been relocated.

For this reanalysis, I adapted the system of classification of Nelson (1983 [1899]) used to describe the ethnographic artifacts collected during fieldwork in the Bering Strait region. Following this system, the artifacts from MC 35 can be divided into eight functional categories: Hunting, Fishing, Travel/Transportation, Utensils/Implements 'Domestic,' Tools/Utensils 'Arts and Manufacture,' Personal Adornment, Entertainment, and Miscellaneous. Following this system, the MC 35 assemblage contains mostly two implement types (Fig. 3.1), foremost, arts and manufacture (n = 25), followed by domestic (n = 14). The next most frequent types relate to hunting (n = 18). Least represented are the personal adornment and entertainment categories (n = 5 combined), while the miscellaneous category is not represented at all. Sixty-eight percent of the assemblage is ivory or wood, while nonorganic materials include stone (n = 20; 28%) and ceramics (n = 3; 4%) (Fig. 3.2).

For the sake of comparison, the other meat cache features at Kukulik were similarly analyzed for related artifacts (n = 3,845) (Figs. 4.1 and 4.2). The features contained in this analysis of the 1934 collection were excavated from the uppermost levels of the deposit, considered to represent the more recent occupations. Significantly, the percentages of functional categories were similar to that of MC 35, with the majority (n = 1,787; 47%) represented by the two implement categories. However, in the "modern" case, contrary to the MC 35 results, the domestic category outnumbered the arts and manufacture. Comparable to the MC 35 assemblage these categories were followed by hunting paraphernalia (n = 431; 11%). Similarly the composition of materials is represented primarily by ivory and wood (n = 1,714; 61%). In contrast, besides stone and ceramic, the nonorganic materials include metal (mostly iron and copper) and glass, neither of which was found in the MC 35 assemblage. Like Rainey's (in Geist and Rainey 1936) original effort, this present analysis is a preliminary effort combining the various features. A more thorough analysis would treat each feature as a distinct assemblage, an effort beyond the scope of the current project. Suffice to say, these comparative efforts suggest that, while a certain

Table 1. The Meat Cache 35 artifacts.

Catalog Number	Artifact Common Name	Material	Found?	Image #	Page #	Category Code
3-1935-0001	Harpoon head	Ivory	Y	Pl.63-c1	192	Hunting
3-1935-0002	Harpoon head	Ivory	Y	Pl.63-c2	192	Hunting
3-1935-0003	Harpoon head	Antler	Y	Pl.63-8a	192	Hunting
3-1935-0004	Harpoon head	Antler	Y	Pl.63-8b	192	Hunting
3-1935-0005	Harpoon head	Antler	Y	Pl.63-1	192	Hunting
3-1935-0006	Harpoon head (unfinished)	Ivory	Y	Pl.63-2	192	Hunting
3-1935-0007	Harpoon foreshaft receiver	Ivory	Y	Pl.63-3	192	Hunting
3-1935-0008	Tool handle	Antler	Y	Pl.63-4	192	Tool/Implements (Arts and Manufacture)
3-1935-0009	Tool sharpener	Walrus tooth	Y	Pl.63-5	192	Tool/Implements (Arts and Manufacture)
3-1935-0010	Awl?	Ivory	Y	Pl.63-6	193	Tool/Implements (Arts and Manufacture)
3-1935-0011	Wedge	Ivory	Y	Pl.63-7	193	Tool/Implements (Arts and Manufacture)
3-1935-0012	Wedge	Ivory	N	na	193	Tool/Implements (Arts and Manufacture)
3-1935-0013	Wedge	Ivory	N	na	193	Tool/Implements (Arts and Manufacture)
3-1935-0014	Wedge	Ivory	N	na	193	Tool/Implements (Arts and Manufacture)
3-1935-0015	Wedge	Ivory	N	na	193	Tool/Implements (Arts and Manufacture)
3-1935-0016	Blubber scraper	Ivory	Y	Pl.63-8	193	Utensils/Implements (Domestic)
3-1935-0017	Adze head	Ivory	N	Pl.63-9	193	Tool/Implements (Arts and Manufacture)
3-1935-0018	Armor slat	Bone	Y	Pl.63-10	193	Personal Adornment
3-1935-0019	Armor slat	Bone	Y	Pl.63-11	193	Personal Adornment
3-1935-0020	Armor slat	Bone	Y	na	193	Personal Adornment
3-1935-0021	Snow beater	Bone	Y	Pl.63-12	193	Utensils/Implements (Domestic)
3-1935-0022	Lamp trimmer or meat fork	Bone	N	Pl.63-13	193	Utensils/Implements (Domestic)
3-1935-0023	Boat or blubber hook	Ivory	Y	Pl.64-1	194	Travel
3-1935-0024	Fish line sinker	Bone	Y	Pl.64-2	194	Fishing
3-1935-0025	Fish line sinker	Ivory	Y	Pl.64-3	194	Fishing
3-1935-0026	Fish line sinker	Ivory	Y	Pl.64-5	194	Fishing
3-1935-0027	Net sinker	Ivory	Y	Pl.64-6	194	Fishing
3-1935-0028	Net sinker?	Ivory	Y	Pl.64-4	194	Fishing
3-1935-0029	Sled runner	Ivory	Y	Pl.64-7	194	Travel
3-1935-0030	Sled runner	Ivory	Y	Pl.64-8	194	Travel
3-1935-0031	Sod hoe	Bone	Y	Pl.64-9	194	Utensils/Implements (Domestic)
3-1935-0032	Notched barb	Wood	Y	Pl.36-1	195	Tool/Implements (Arts and Manufacture)
3-1935-0033	Notched barb	Wood	Y	Pl.36-2	195	Tool/Implements (Arts and Manufacture)
3-1935-0034	Drag line handle	Wood	Y	Pl.36-3	195	Hunting
3-1935-0035	Toy lance shaft	Wood	N	Pl.36-4	195	Entertainment
3-1935-0036	Toy bow	Wood	Y	Pl.36-5	195	Entertainment
3-1935-0037	Arrow	Wood	N	Pl.36-6	195	Hunting

Table 1 (continued)

Catalog Number	Artifact Common Name	Material	Found?	Image #	Page #	Category Code
3-1935-0038	Arrow	Wood	Y	Pl.36-7	195	Hunting
3-1935-0039	Foreshaft insert	Bone	Y	Pl.36-7	195	Hunting
3-1935-0040	Bow	Wood	Y	Pl.36-9	196	Hunting
3-1935-0041	Bucket handle	Wood	Y	Pl.36-8	195	Utensils/Implements (Domestic)
3-1935-0042	Drying rack frame piece	Wood	Y	Pl.36-12	196	Utensils/Implements (Domestic)
3-1935-0043	Drying rack frame piece	Wood	Y	Pl.36-13	196	Utensils/Implements (Domestic)
3-1935-0044	Boat frame piece	Wood	Y	Pl.36-11	196	Travel
3-1935-0045	Bow	Wood	Y	Pl.36-10	196	Hunting
3-1935-0046	Harpoon rest?	Wood	Y	Pl.36-14	195	Hunting
3-1935-0047	Ulu blade	Slate	N	na	196	Utensils/Implements (Domestic)
3-1935-0048	Ulu blade	Slate	Y	Pl.66-1	196	Utensils/Implements (Domestic)
3-1935-0049	Point base	Slate	Y	Pl.66-2	196	Hunting
3-1935-0050	Point	Slate	Y	Pl.66-3	196	Hunting
3-1935-0051	Point	Slate	N	na	196	Hunting
3-1935-0052	Blade?	Slate	Y	Pl.66-4	196	Tool/Implements (Arts and Manufacture)
3-1935-0053	Blade?	Slate	N	na	196	Tool/Implements (Arts and Manufacture)
3-1935-0054	Blade?	Slate	N	na	196	Tool/Implements (Arts and Manufacture)
3-1935-0055	Scraper or blade blank	Slate	Y	Pl.66-6	196	Tool/Implements (Arts and Manufacture)
3-1935-0056	Scraper or blade blank	Slate	Y	Pl.66-7	196	Tool/Implements (Arts and Manufacture)
3-1935-0057	Scraper or blade blank	Slate	N	na	196	Tool/Implements (Arts and Manufacture)
3-1935-0058	Scraper or blade blank	Slate	N	na	196	Tool/Implements (Arts and Manufacture)
3-1935-0059	Scraper or blade blank	Slate	N	na	196	Tool/Implements (Arts and Manufacture)
3-1935-0060	Blade?	Slate	Y	Pl.66-5	196	Tool/Implements (Arts and Manufacture)
3-1935-0061	Adze blade	Basalt	Y	Pl.66-8	196	Tool/Implements (Arts and Manufacture)
3-1935-0062	Adze blade	Basalt	Y	Pl.66-10	197	Tool/Implements (Arts and Manufacture)
3-1935-0063	Point?	Basalt	Y	Pl.66-9	197	Hunting
3-1935-0064	Rubbing or hammerstone	Stone	Y	Pl.66-11	197	Tool/Implements (Arts and Manufacture)
3-1935-0065	Rubbing or hammerstone	Stone	Y	Pl.66-12	197	Tool/Implements (Arts and Manufacture)
3-1935-0066	Whetstone?	Basalt	Y	Pl.66-13	197	Tool/Implements (Arts and Manufacture)
3-1935-0067	Potsherd	Ceramic	N	Pl.66-14	197	Utensils/Implements (Domestic)
3-1935-0068	Potsherd	Ceramic	N	Pl.66-15	197	Utensils/Implements (Domestic)
3-1935-0069	Potsherd	Ceramic	N	Pl.66-16	197	Utensils/Implements (Domestic)
3-1935-0070	Bucket handle?	Baleen	Y	Pl.66-18	197	Utensils/Implements (Domestic)
3-1935-0071	Toboggan cross piece?	Baleen	N	Pl.66-17	197	Travel
3-1935-0072	Knotted line fragment	Walrus hide	Y	Pl.66-19	197	Utensils/Implements (Domestic)

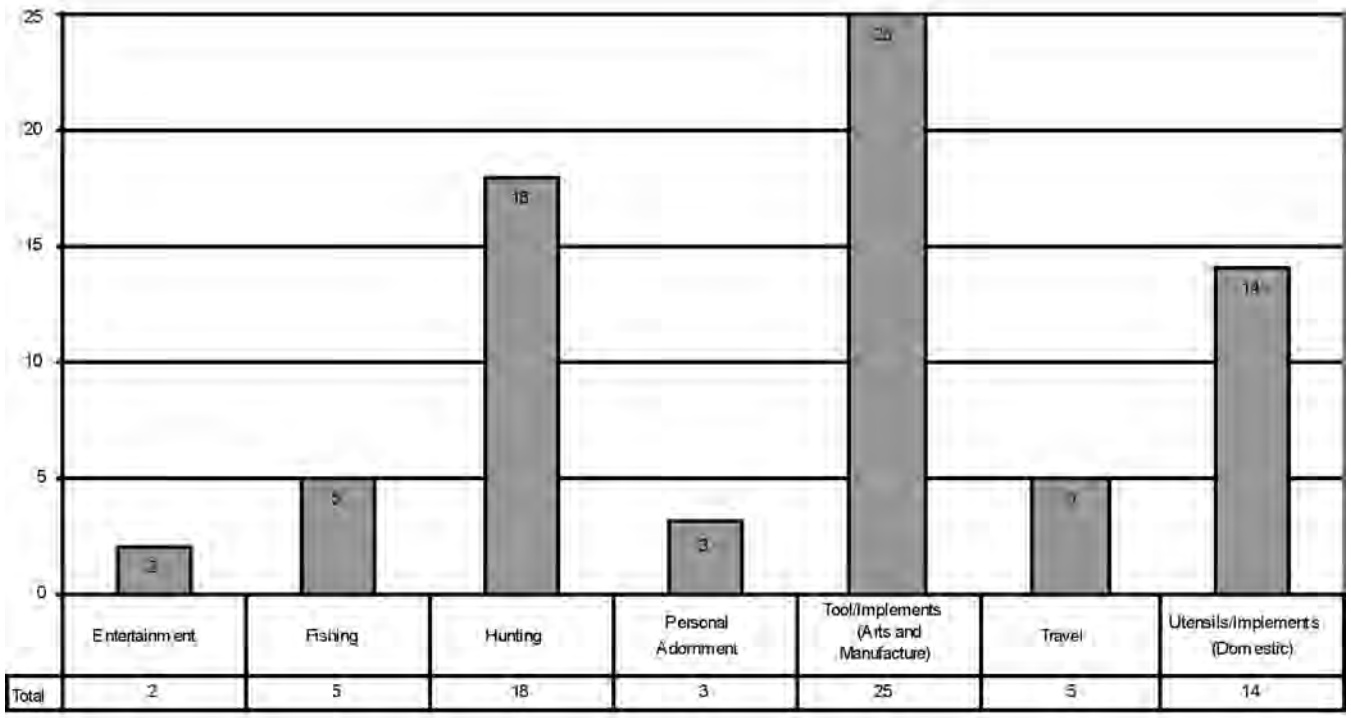

Figure 3.1. Meat Cache 35 artifacts classified by functional category.

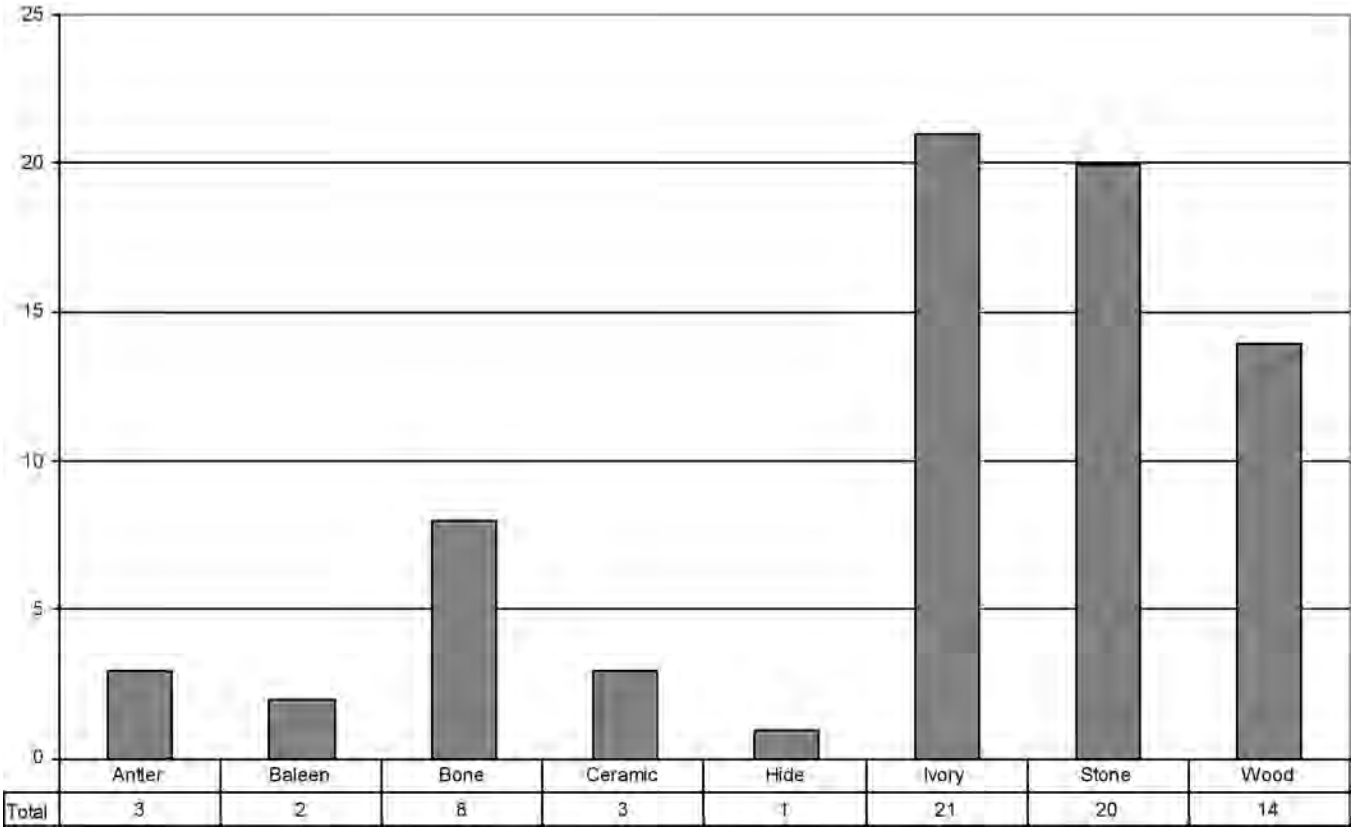

Figure 3.2. Meat Cache 35 artifacts classified by material type.

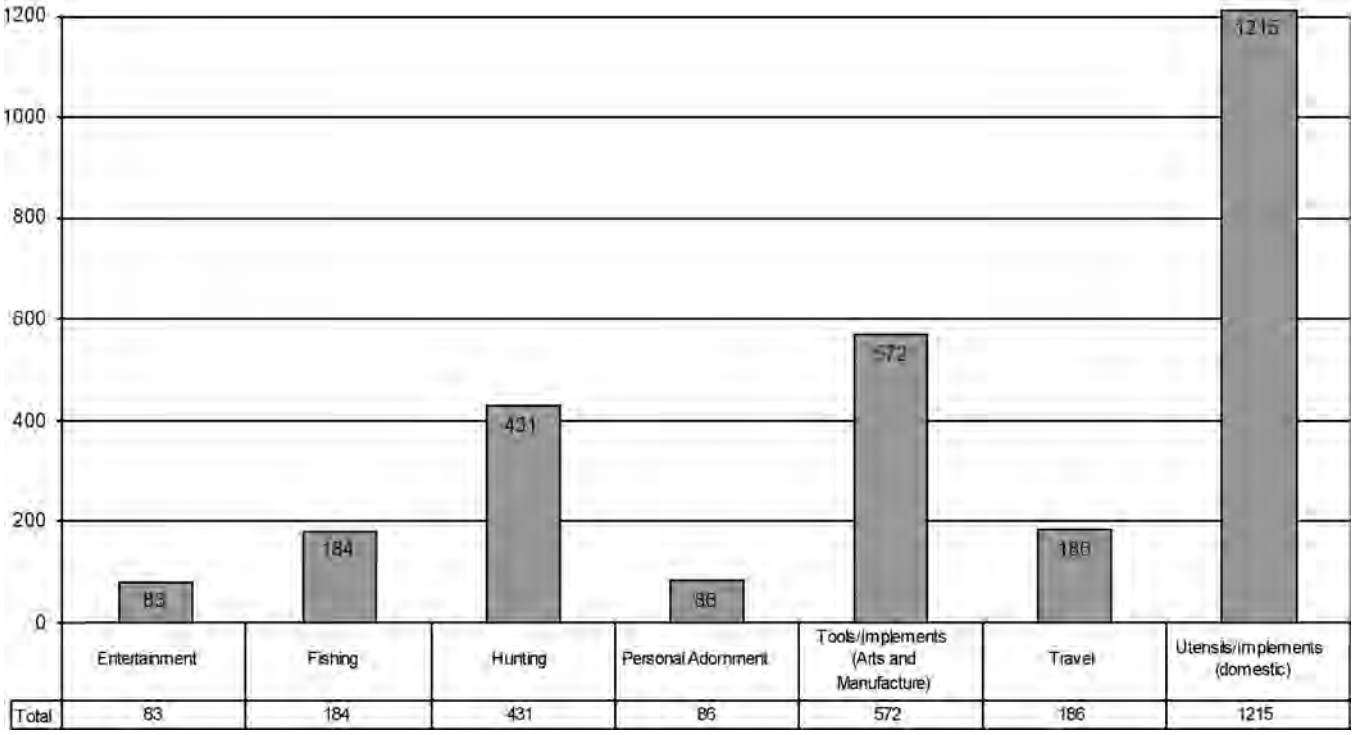

Figure 4.1. Kukulik meat cache artifacts classified by functional category.

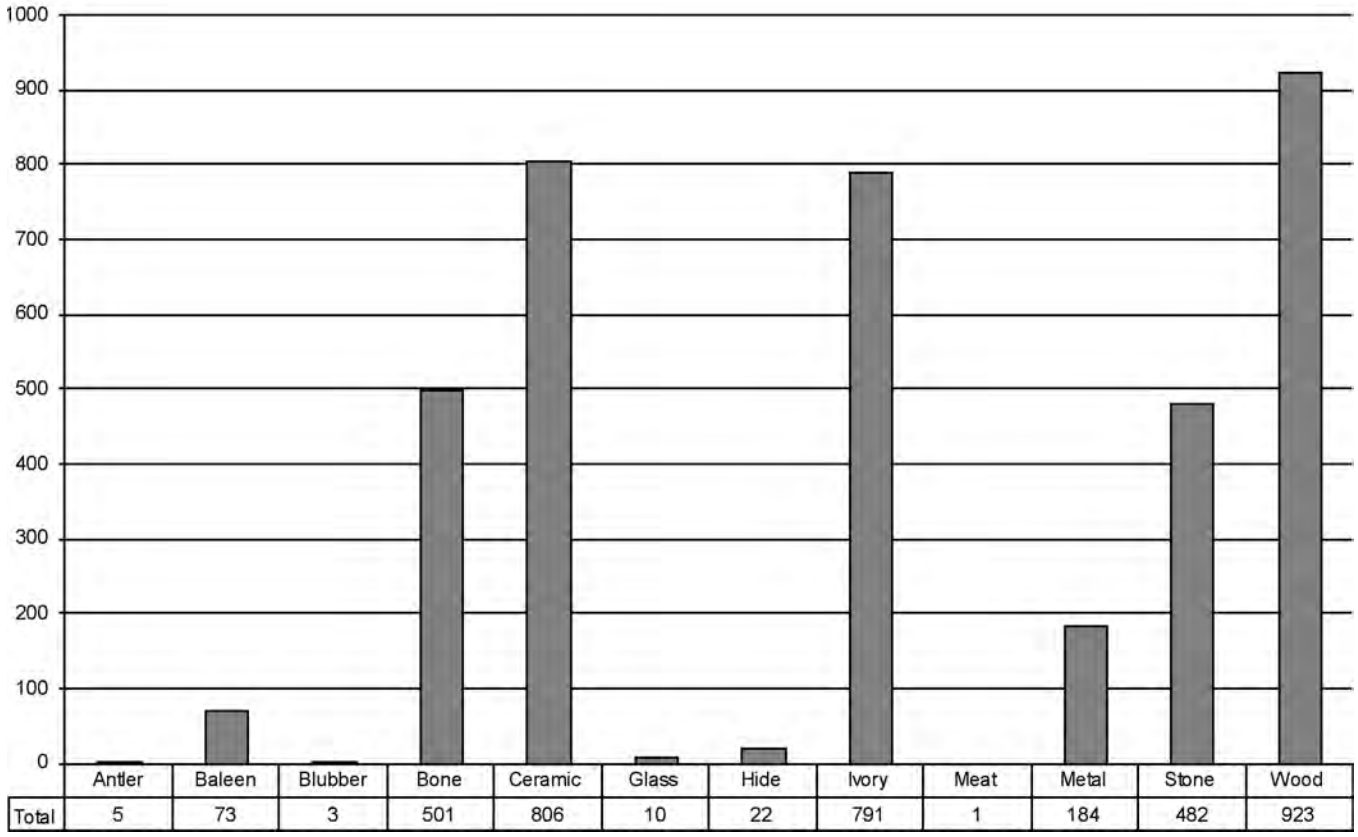

Figure 4.2. Kukulik meat cache artifacts classified by material type.

similarity occurs in the categories of artifacts, suggesting similar use patterns through time, it may be significant that domestic implements were more prevalent in the analysis of the 1934 collection, possibly suggesting gendered activities or a modern sedentary occupation. The variation in material types (glass, metal, etc.) in the 1934 collection is attributed to a nineteenth-century occupation, providing evidence for Euro-American trade.

The comparison of MC 35 to other assemblages outside the island was difficult, because it is rare that such meat cache features are discussed, given the long-standing analytical preference to excavate house structures by most Thule archaeologists. In addition, in terms of the general composition of artifacts represented in the MC 35 assemblage, the "types" are largely ubiquitous forms found in most Neo-Eskimo assemblages, including sledge runners, fishing line sinkers, and various hunting implements (Figs. 5.1 and 5.2). A single adze head (Fig. 5.1a, artifact 9) in the assemblage follows the "boot shaped" form found primarily on St. Lawrence Island, defined by Collins (1937a) as a unique Punuk type. Geist and Rainey (1936:196) note that one of the two wooden bow fragments (Fig. 5.2a, artifact 10) matched a style described by Stefansson from Victoria Island in the Western Canadian Arctic, with a well-defined "V shaped" notch on one end, signifying that it was part of a composite reflex bow. Similar types have also been described by Collins (1939) and Ford (1959). An object described as a boat or blubber hook (Fig. 5.1b, artifact 1) is similar to objects described by Ford (1959:185) from the Nuwuk and Utqiagvik sites.

The most diagnostic elements in the MC 35 assemblage are harpoon heads, an artifact type that has held particular prominence in the analysis of arctic maritime assemblages (e.g., Collins 1937a; Ford 1959; Geist and Rainey 1936; Lewis 1995; Mathiassen 1927). The particular characteristics of construction and decorative motifs (and often specific combinations thereof) frequently found on harpoon heads have led to their use as diagnostic types or "index fossils." Thus, researchers have turned to harpoon heads in attempts to assign an assemblage to one culture or another or to establish the cultural chronology of a site (Collins 1937a; Ford 1959; Geist and Rainey 1936; Yama'ura 1984). Arguments against this practice suggest that not only is a single artifact a poor representation of a complete assemblage but that the same type or form of artifact may be used and/or curated across both time and space, thus blurring

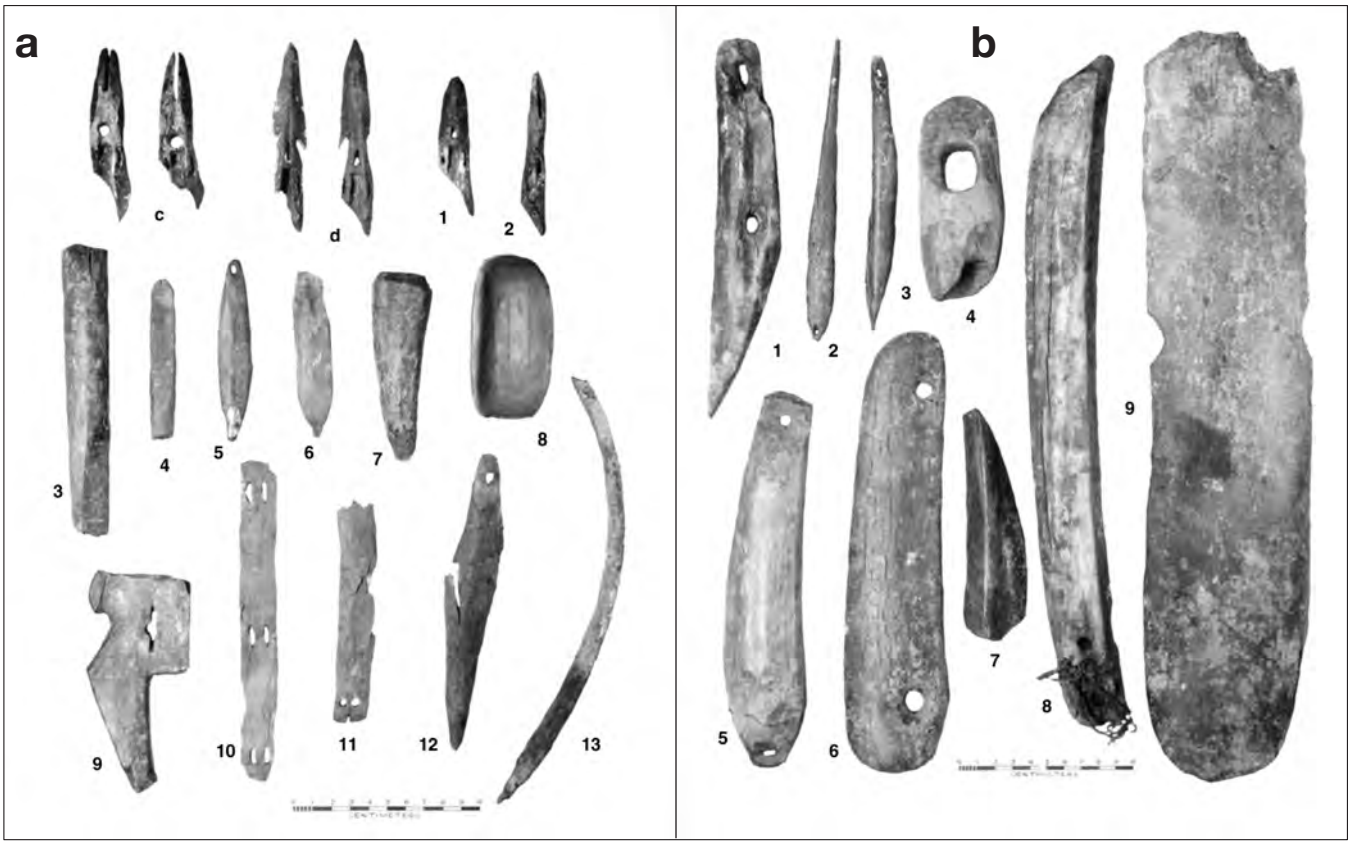

Figure 5.1. Selected artifacts from MC 35 as originally presented (Geist and Rainey 1936:Pl. 63-64).

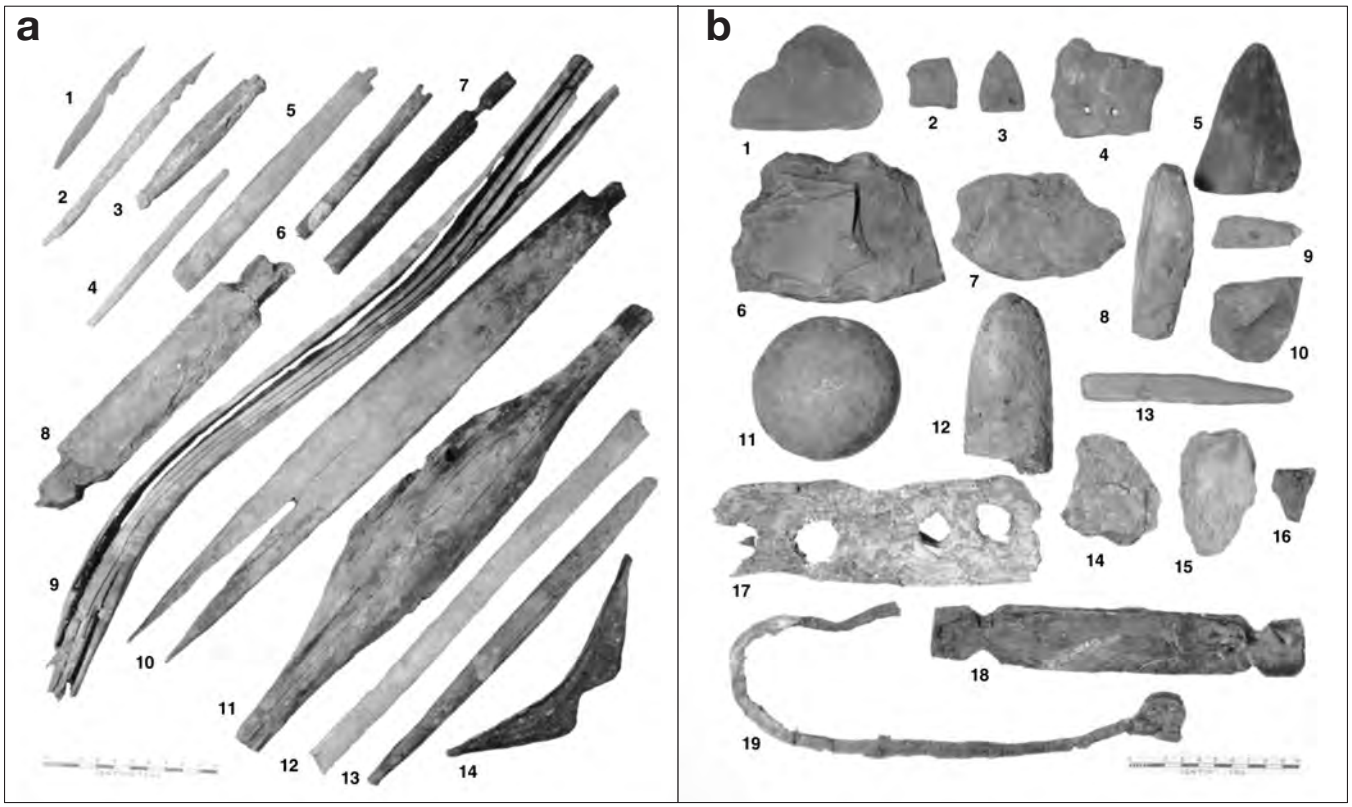

Figure 5.2. Selected artifacts from MC 35 as originally presented (Geist and Rainey 1936:Pl. 65-66).

the lines otherwise used for cultural chronology (Gerlach and Mason 1992; Lewis 1995; Murray et al. 2003; Potter 2008). Despite this, the stratigraphic analysis conducted by Rainey (in Geist and Rainey 1936) focused on harpoon heads; thus, analysis of the six harpoon heads from the MC 35 assemblage (Fig. 5.1) forms the remainder of the typological comparative analyses below.

The harpoon heads in the MC 35 assemblage are all in comparatively poor condition (Fig. 5.1). Of the six, two (Fig. 5.1a, pair c) resemble Thule 3 (Collins III(a)x, or "Sicco") despite the lack of the characteristic line decoration. Two others (Fig. 5.1a, pair d) are typical Thule type 2 in form: self-bladed with lateral barbs, a triangular line, single spur, and two lashing slots astride an open socket. A fifth specimen (Fig. 5.1a, artifact 1) was described by Geist and Rainey (1936:192) as a Thule type 1 variant and also resembles Collins' type V. It is self-bladed with a single spur, triangular line hole, open socket, and two slots rather than grooves for lashing. The final specimen (Fig. 5.1a, artifact 2) is unfinished and a type classification is debatable. It has a small, triangular line hole parallel to the incomplete blade slit and what appears to be the beginnings of a closed socket. Based solely on the harpoon heads described here, it is understandable why a Thule assignment was made for the cultural affiliation of the assemblage, because both the Thule 2 and 3 styles were definitive types in Mathiassen's (1927) original Thule definition. However, both types are also found in Collins' (1937a) definition of Punuk on St. Lawrence Island.

BEYOND TYPOLOGY

Clearly, comparative analyses are limited with a small assemblage of artifacts from a single, isolated feature. Indeed, this restriction was also addressed in the original interpretation by Geist and Rainey (1936:198). Yet the occurrence of the Thule type of harpoon head initially led Geist and Rainey (1936:198) to propose that this assemblage, as noted above, represented a "pure Thule" phase at Kukulik. Based on the Thule type 2 and 3 harpoon heads, this assessment may continue to be acceptable to many researchers, considering that the Sicco types are commonly found in both "early" and "developed" or "Western" Thule contexts across the Arctic (Ackerman 1984; Dumond 1977; Giddings and Anderson 1986; Mason and Bowers 2009; Schledermann and McCullough 1980). Conversely, fol-

lowing Collins (1939) and deLaguna (1939), the assemblage could be assigned to the Late Punuk, as much of the Kukulik collection exhibits Punuk characteristics.

In order to establish chronological control on the cultural context of artifact MC 35, two samples from wooden artifacts[1] were sent to Beta Analytic for AMS dating (Table 2) to assess the likely age of the assemblage as a whole and therefore the feature itself. The first sample, from a wooden bow fragment (3-1935-0040),[2] Fig. 6, A) dated to 290±40 BP (cal AD 1483–1665, 1784–1795, Beta-248284). The second, from a worked wood fragment (3-1935-0043, Fig. 6, B) described as a "drying rack frame piece" (Geist and Rainey 1936:196) dated to 560±40 BP (cal. AD 1301–1367, 1382–1434, Beta-248285). Two additional samples from harpoon heads were submitted to serve as a test of the "index fossil" assignments associated with the assemblage. The first of these two samples, from one of the two caribou antler Thule type 2 (Collins Punuk type IV) harpoon heads (3-1935-0003, Fig. 6, C), dated to 580±40 BP (cal. AD 1297–1373, 1377–1422, Beta-248282). The final sample (also caribou antler), taken from the Thule type 1 (similar to Collins type V) harpoon head (3-1935-0005, Fig. 6, D) dated to 660±40 BP (cal. AD 1274–1330, 1339–1397, Beta-248283).

Three of the four ages indicate that MC 35 was employed in the late thirteenth to fourteenth century AD, with the age on the bow fragment possibly an outlier—although its maximum age could fall within the late fifteenth century AD. The correspondence between the two antler and at least one of the wood ages is reassuring and the wood does not date older than the antler.

Unfortunately for resolving questions of culture history, the four calibrated dates do not support the view that MC 35 represents an early Thule feature, because the assays are apparently two to three hundred years too young for this attribution (Ackerman 1961; Blumer 2002; Dumond 1977; Mason and Bowers 2009; Morrison 1991; Stanford 1976). Certainly some of the types could fit into

Table 2: Radiocarbon dates from Kukulik.

UAMN Catalog Number	Beta Analytic Sample #	Artifact Description	Material	Depth Below Surface	Provenience	Measured ^{14}C Age BP	^{13}C/^{12}C Ratio	Converted Age	Calibration Used	Calibrated Calendar Yr BC/AD (2 sigma)
1-1933-8692	196352	Harpoon Head	Bone	11 ft. 7 in. 3.53 m	Test cut	1920±40	–21.1	1980±40	IntCal 04	87–78 BC, 55 BC–AD 91, AD 99–124
1-1935-0115	144990	Harpoon Head	Ivory	72 in 1.83 m	Beach slope	1500±40	–13.6	1680±40	Marine 04 ΔR737±20	1323–1468
1-1935-8676	144991	Harpoon Head	Ivory	23 in. 58.4 cm	East end	1050±40	–20.8	1110±40	IntCal 04	783–787, 817–843, 860–1018
1-1935-8992	144992	Harpoon Head	Ivory	?	Test cut?	1850±40	–9.5	2110±40	Marine 04 ΔR737±20	919–1152
3-1935-0003	248282	Harpoon Head	Antler	60 in 1.52 m	MC 35	470±40	–18.2	580±40	IntCal 04	1297–1373, 1377–1422
3-1935-0005	248283	Harpoon Head	Antler	60 in 1.52 m	MC 35	550±40	–18.2	660±40	IntCal 04	1274–1330, 1339–1397
3-1935-0040	248284	Bow Fragment	Wood	60 in 1.52 m	MC 35	250±40	–22.8	290±40	IntCal 04	1483–1665, 1784–1795
3-1935-0043	248285	Drying rack piece?	Wood	60 in 1.52 m	MC 35	560±40	–24.8	560±40	IntCal 04	1301–1367, 1382–1434

1. The problems with dating archaeological materials in the Arctic are extensively addressed elsewhere (e.g., Arundale 1981; Blumer 2002; Dumond and Griffin 2002; Gerlach and Mason 1992; Lewis 1995; McGhee 2000). While some archaeologists prefer caribou antler (cf. McGhee 2000), even that material is not without ambiguities. Short-lived plant species (e.g., grasses or willow) served as reliable material to Arundale (1981). Wood, in most cases driftwood, can be plagued by whole tree effects, but its residence time in the ocean is within the range of most ^{14}C ages. In addressing the marine reservoir effect, one of the complications in dating arctic materials, Dumond and Griffin (2002) have discussed the possible range in variation between marine and terrestrial samples from sites near Gambell, approximately 64 km west of Kukulik. They suggest using the Intcal Marine 04 calibration (Hughen et al. 2004) and adding a ΔR value of 735±20 to adjust for local variation (Dumond and Griffin 2002:84). For terrestrial samples the Intcal 04 calibration curve (Reimer et al. 2004) was used. All calibrations listed were performed using the Calib 5.0 calibration program (Stuiver et al. 2006).
2. This numbering scheme relates to the early University of Alaska Museum accession records; thus this particular specimen is catalog number -0040 in the third accession record from 1935.

Figure 6. Meat Cache 35 artifacts dated and described above.

a classic Thule assemblage (cf. Mathiassen 1927); however, others are more characteristically Punuk, which stands to reason given the prehistoric occupations on St. Lawrence Island following the Okvik/Old Bering Sea period were primarily Punuk affiliated (Ackerman 1962; Blumer 2002; Mason 2000b). These dates then may undermine the original interpretation of the assemblage and therefore those of the site. Thus, the more profound use of these data lie in their specific context, which can be used to establish a new baseline to reassess our understanding of Kukulik.

A TEMPORAL AND SPATIAL REASSESSMENT OF KUKULIK

The only other Thule occupation on St. Lawrence Island was briefly proposed by Giddings (1952) from a stone house at Kitnepaluk, south of Gambell, although this assemblage has yet to be fully described and, of course, remains undated—the collection is also in the UAMN and awaits study. Collins (1937b:377) states that Thule-associated traits "appear quite suddenly on St. Lawrence Island." The dates acquired from MC 35 fit well with Blumer's (2002) proposal that the "Thule" (or "late Punuk") horizon on St. Lawrence Island resulted from the interaction between Punuk and Birnirk[3] peoples sometime around AD 1200 to 1400. The question of Thule origins is a much broader question that cannot be adequately addressed in this paper (cf. Mason and Bowers 2009; Morrison 1991). However, given a more secure temporal understanding of the Kukulik mound, it will be possible to address the timing and persistence of different occupations. Following this, then, the various assemblages represented within Kukulik can be more securely compared to other Bering Strait chronometric datasets. Thus, the next step in this analysis involves considering the state of the chronology of Kukulik and its relationship to MC 35.

THE CHRONOLOGICAL ASSESSMENT OF THE KUKULIK MOUND

The initial attempts to establish a cultural chronology of the Kukulik mound were, as suggested above, based primarily on the sequential stratigraphic placement of typologically "diagnostic" artifacts. In their summary, Geist and Rainey (1936:224) state that "the objective in this report is a stratigraphic study of the deposit," in order to outline "six cultural phases, or periods of deposition… designated by the terms modern, recent-prehistoric, Thule, Punuk, Birnirk and Old Bering Sea" (Geist and Rainey 1936:224–225). This assessment was, and to some

3. There is limited, if any, concrete evidence for a Birnirk presence on St. Lawrence Island (cf. Mason 2000b), despite assessments to the contrary (Geist and Rainey 1936). The best documented occurrence is the Punuk-related occupation at the S'keliyuk site, which may exhibit strong influence of Birnirk (Ackerman 1961).

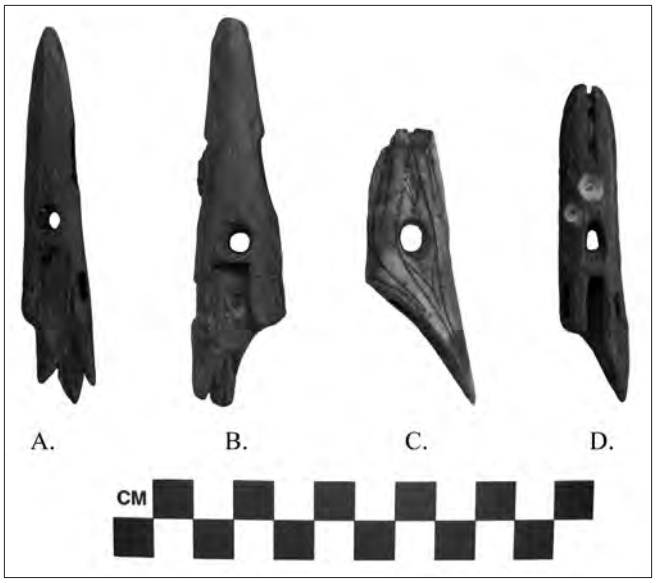

Figure 7. Harpoon heads dated by Mason in 2000 and 2004.

degree still is, accepted as a valid interpretation. While the stratigraphy-based progression that Rainey proposed generally coincides (despite the Thule dispute mentioned above) with the work by Collins (1937a, 1937b, 1939), more recent investigations have suggested that these relationships were not so clear (Blumer 2002). Likewise, the definition of a Birnirk presence on St. Lawrence Island has, over the years, fallen in and out of favor (Ackerman 1962, 1984; Gerlach and Mason 1992; Mason 2000b), while the possibility of a Thule presence there is generally disregarded (Ackerman 1984, Mason and Bowers 2009) and is only suggested in one other instance (Giddings 1952).

Aside from the assertion (Geist and Rainey 1936; Rainey 1936) that the site was abandoned sometime in the late 1880s due largely to a well-documented, island-wide famine (Crowell and Oozevaseuk 2006; Mudar and Speaker 2002) no other absolute dates could be securely assigned to the deposit. In his review of the preliminary report, Collins (1939:480) disagrees with a temporal assessment by Rainey of the "recent-prehistoric" stage at Kukulik as occurring "somewhat prior to [AD] 1649." Collins (1939:480) posits, instead, that an eighteenth-century date would be more appropriate. The only other pioneering attempt at a definitive chronology of Kukulik was that of Giddings in 1939. Following the dendrochronological analysis of structural members from a series of houses on the surface of the mound, Giddings (1942) constructed an occupational history from measurements on wooden artifacts from the Kukulik excavations. Using tree end rings as limiting dates, Giddings (1942:82) dated "the upper 3 to 4 feet [91 to 122 cm] of midden" between AD 1629 and 1873 and established that the last occupation occurred between AD 1709 and 1876 (Giddings 1942:81).

The next attempt to date Kukulik did not occur until over sixty years later. Between 2000 and 2004, Mason submitted four artifacts from Kukulik for radiocarbon dating. Keeping with the "index fossil" approach used by Geist and Rainey (1936) and others, the four dates acquired by Mason were all on harpoon heads illustrated in the report and considered representative of one of the cultures reported for the site (Fig. 7). The intention was to establish a more secure understanding of the stratigraphic and/or occupational details of the site by testing the previous interpretations through modern methods (Mason 2000a). While three of these artifacts have depth-specific provenience data associated with them, it remains difficult to tie these measurements to the site. Two of the harpoon heads were originally excavated from the test trench, although only one of them has provenience data. The first (1-1933-8692, Fig. 7, A) resembles a type IIy and is dated to 1980±40 BP (calibrated to 87–78 BC, 55 BC–AD 91, AD 99–124, Beta-196352). Similar types of harpoon heads found at Kukulik, all from the same general area and depth, are described as being "associated with the Birnirk type" (Geist and Rainey 1936:176). The second (1-1935-8992, Fig. 7, B) is described as having been "washed out on the beach" (UAMN accession catalog 1933). It is almost identical in style to the previously described item, with one notable difference: faint, incised curvilinear decoration known as Old Bering Sea. It is dated to 2110±40 BP (cal. AD 991–1152, Beta-144992). The third harpoon head (1-1935-0115, Fig. 7, C), is from the northeast beach slope trench. It is a closed socket type Vy with characteristic incised Punuk designs and is dated to 1680±40 BP (cal. AD 1323–1468, Beta-144990). The final harpoon head (1-1935-8676, Fig. 7, D), has provenience, yet its association is difficult to interpret. It resembles a type III(b)x, with a triangular line hole and lashing slots and is dated to 1110±40 BP (cal. AD 783–787, 817–843, 860–1018, Beta-144991).

The present study has produced the only other radiocarbon dates relating directly to the site of Kukulik; those are the four acquired from the MC 35 assemblage as discussed above (Table 2). Several other circumstances must be considered before attempting to construct a provisional chronology from the admittedly limited radiometric data—eight ^{14}C ages in total (see Fig. 8). Two

guide posts are available: working backwards, or from the top down, it is well established that the site was ultimately abandoned during the years AD 1878–1880, a result of the island-wide famine. The dendrochronology work on house timbers by Giddings (1942) supports this inference in that the youngest dates for house construction/modification fall around AD 1876 (Giddings 1942). That same effort provided a lower limit of AD 1709 for the upper levels of the mound, which contained the "recent-prehistoric" and "modern" phases of occupation.

In discussing the relationship of the MC 35 artifacts to the rest of the site, Geist and Rainey (1936:191–192) propose that it was used before the occupation of the third house, the floor of which was 2.7 m below the surface of the mound. In analyzing the artifacts collected from the various structures discovered in the test trench, Geist and Rainey (1936) noted a corresponding separation between the "modern" material culture represented in the first house and the "recent-prehistoric" material found in the second and third houses. When averaged, the four MC 35 dates produce a radiocarbon age of 522±20 BP (calibrated cal. AD 1333–1336, 1397–1438). This supports Geist and Rainey's (1936) suggestion, and places construction, and therefore occupation, of the third house after the mid-to-late fourteenth century AD.

If the occupational history that Giddings established from artifacts is considered, the lower age limit for the upper 1 m of midden (including artifacts from the first and second houses in the test cut[4]) is AD 1629, suggesting an approximate two-hundred-year time span between occupations related to MC 35 and the second house.

As discussed previously, Rainey (in Geist and Rainey (1936:86–87) proposed a cultural chronology for Kukulik based on the stratigraphic position of various artifact types, predominantly harpoon heads. As a test of Rainey's initial assessment a tentative comparison can be offered, linking the radiometric data with the stratigraphic charts of Geist and Rainey (1936:185, 199). Rainey's first chart (from p. 185) shows depth below surface with only specimens in the lower levels of the test cut. One of the dated specimens, the undecorated IIy harpoon head (1-1933-8692), was found with a bone slat armor fragment "at a depth of 11 feet 7 inches [3.53 m]" (Geist and Rainey 1936:183). Based solely on this single artifact, this layer may date as early as the last century BC or ca. AD 1. As mentioned above, the second ivory harpoon head was from the test cut (1-1935-8992) but it had no precise provenience, making it difficult to assess; its ^{14}C age, while greater than 2000 BP, required old carbon corrections that placed its age nearly a millennium younger, ca. AD 1000. Building on the tentative chronology proposed here, and focusing primarily on evidence relating to the test trench, the site was likely occupied sometime prior to ca. AD 1.

Turning to the second chart, labeled Map 7 by Geist and Rainey (1936:199) which presents the dated specimens, the decorated, closed-socket Vy harpoon head (1-1935-0115) was found in the wall of the northeast beach slope trench 1.22 m "above clay" (according to the UAMN accession record 1935). Based on the age of this artifact, this layer would date to the late fourteenth or the early fifteenth century AD, broadly contemporaneous with the occupation that produced MC 35. The provenience for the fourth specimen, a Late Punuk III(b)x harpoon head (1-1935-8676) is described as "23 in [58.4 cm] deep 52' E.T. 15' N" (UAMN accession record 1935). Using only the depth information associated with this artifact, this part of the upper levels of the deposit should date between the late seventh century AD and ca. AD 1025—minimally, hundreds of years earlier than even the earliest AD 1629 dendrochronological assessment for the same level. Clearly, without more secure control over the spatial and stratigraphic relationships between artifacts within the mound, there remain considerable ambiguities with the extant radiometric data.

TOWARDS A SPATIAL RECONSTRUCTION OF THE KUKULIK MOUND

One of the unstated issues in relating artifacts from Kukulik to each other (as in the example above) is the complex stratigraphy and the sheer size of the mound. Simply stating that an artifact was excavated "x" number of feet or inches below the surface is grossly insufficient for comparative purposes. Without greater control over the horizontal placement of artifacts within the mound, individual artifacts are of limited use in establishing its chronology. Dating an "index fossil" is inherently problematic, even without considering issues related to artifact curation or taphonomy. The question of dating features, however, is potentially another matter. Aside from the

4. During excavation of the initial test trench, a series of houses were discovered stratigraphically superimposed upon one another (see Fig. 10). Unfortunately no construction-related wood was collected, thus restricting the dendrochronology efforts to wooden artifacts collected from them (Giddings 1942:82).

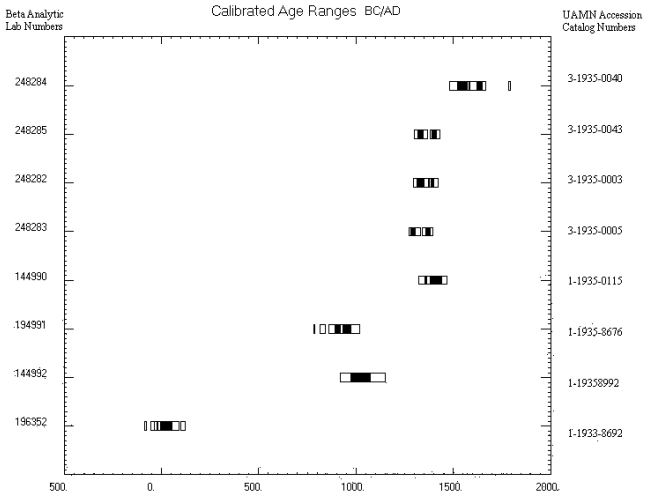

Figure 8. Calibrated radiocarbon dates from Kukulik.

limited stratigraphic discussions by Geist and Rainey (1936), few attempts have addressed the mound in terms of spatial context of features and/or individual artifacts (Houlette 2008; Lewis 1995). In fact, most researchers have assumed that the spatial data from the excavations is either insufficient for such investigations or simply nonexistent (Blumer 2002; Gerlach and Mason 1992; Lewis 1995). In an extreme, negative assessment of the collection, Smith et al. (1978:22) stated that "in many instances the data retrieval methods employed were inadequately organized and much valuable information has been lost or neglected, rendering a great deal of the collection useless for anything more than gross comparative studies." Statements such as this—which analysis shows to be a gross overstatement—have inspired the final aspect of the current study.

During the UAMN rehousing effort, all the relevant documentation concerning the Kukulik excavations and collections was reviewed and reorganized to explore and develop any future research potential. As a result, considerable spatial data were located primarily in the Alaska and Polar Regions Department at Rasmuson Library, University of Alaska Fairbanks. The foremost discovery is a series of hand-drawn charts compiled from transit measurements taken during the original excavations. One of these charts (Fig. 9) was created in 1935 by Olavi Kukkola (1935a), the surveyor during the 1935 excavations, and served as the template used for producing the less-detailed plan view map (e.g., Fig. 2) of the site included in the preliminary report (Geist and Rainey 1936:54). This chart provides in a two-dimensional plan view details such as topographic relief of the mound and the locations of each of the features encountered and excavated at the site (Fig. 9). Also, the chart provides elevation, bearing, and distance measurements for each of the survey stations and the location of the Bering Sea shoreline at sea level.

Another important discovery was the field notebooks of the two surveyors who recorded the measurements used to construct the chart. These notebooks were previously known; however, without the chart for reference, these data seemed extraneous. One of the most useful aspects of these data is the location of the survey station(s) from the various features originally measured. Equally important are the detailed measurements relating each of the survey stations to one another across the site. Throughout the excavation, the locations of each of the survey stations were pedestalled and preserved as datum points for continued measurements (e.g., see Geist and Rainey 1936:248). Much of the data in the notebooks concerning the locations of the various features relates to the datum points and can be used to securely link each one. As mentioned above, the description of MC 35 suggests that it was discovered 1.52 m below the surface underlying meat caches 20 and 21 (Geist and Rainey 1936:191). Examining the site map, caches 20 and 21 were located on the southern slope of the mound ca. 19 m northeast of the test trench. This location can be further refined from the bearing, distance, and elevation data recorded in the field notebooks of Olavi Kukkola (1935b:14). In combination with the chart mentioned above, the precise location of the MC 35 feature was identified and is plotted on a copy of the chart (see Fig. 2).

A second chart located during the rehousing effort is the original version of the test trench profiles (Fig. 10). This chart was compiled in 1933 by H. R. Linck and J. E. Walsh from field notes and measurements recorded during excavation. In addition to a standard vertical profile, it includes a plan view of the excavation and the recent house, as well as a three-dimensional perspective sketch. Like the site map, sections of this chart were presented in considerably less detail in the preliminary report (Geist and Rainey 1936:40). Some of the more salient details included on the original describe the placement and description of the framework used to support the wire grid, as briefly related in the report and presumably used for provenience measurements (Geist and Rainey 1936). To date, little work has been done with this information, but it seems to have the potential to unlock some of the questions relating to the precise provenience of the features and artifacts found in the test trench.

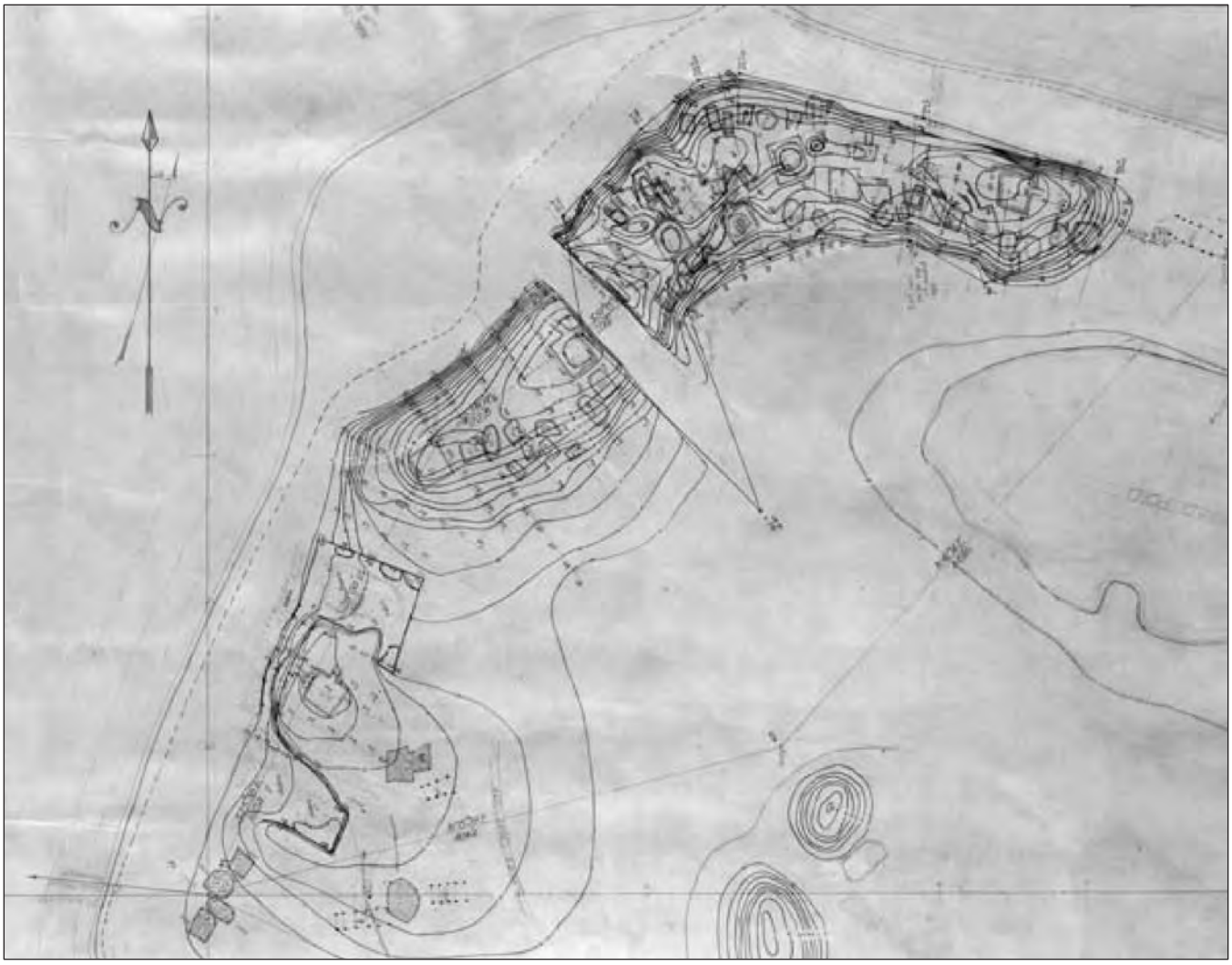

Figure 9. Detail of the original survey chart (Kukkola 1935a).

CONCLUSIONS

What is the possibility of a Thule presence at Kukulik? This paper focused on one of the initial justifications for such an assessment, the Meat Cache 35 assemblage. Despite opposition from his contemporaries, Rainey (1936:361–362) maintained not only that there was such a presence, but that this was the initial stage "in the development of a 'Thule Culture Complex'." This hypothesis, however, was not solely based on the MC 35 materials but also noted the "presence, in three different sections of the mound, of 'Thule type' harpoons in strata below Recent-Prehistoric" (Rainey 1936:360). The reanalysis described here does not support Rainey's claims, at least in considering the existing very limited radiometric data. However, these data should assist in establishing an improved understanding of the nature and timing of the various occupations at Kukulik. Further, an important lesson from the study is that much can be learned from analyses of archived "legacy" collections. Needless to say, more archival research and chronometric dating of museum samples needs to be done, for as discussed, the interpretations regarding the cultural occupations and interactions of the Bering Strait regions are still being debated, despite nearly a century of investigations. Museums remain the best hope for archaeological inferences about Kukulik, since the depredations of subsistence diggers (Staley 1993) limit the potential for additional research at the mound. Investigations such as this reanalysis, aimed at distinct sections or features of the collection and using more current methods, will certainly increase our understanding not only of Kukulik, but of Bering Strait prehistory.

During Geist's excavations, approximately 50,000 artifacts were collected from Kukulik and are currently

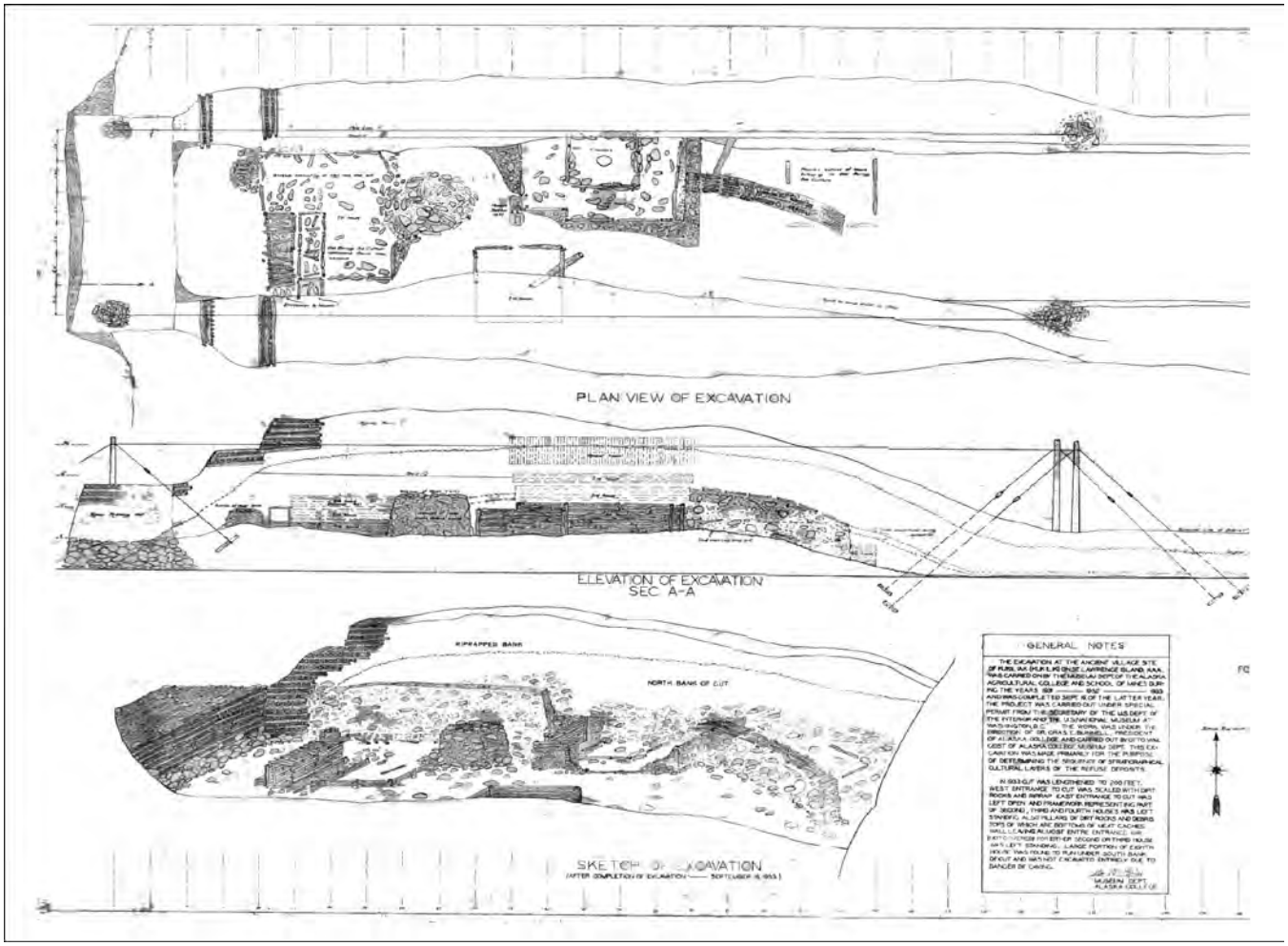

Figure 10. Detail of the original test trench chart (H. R. Linck and J. E. Walsh 1933).

housed at the UAMN. These collections are one of the largest accumulations of archaeological materials from a single site in the Bering Strait region. Yet the importance of this site to Bering Strait prehistory lies not in the number of collected artifacts but in the potential to trace the sequence of development of Eskimo culture. Kukulik was described by Collins (1939:479) as "the former center of population on St. Lawrence Island, where prehistoric Eskimo culture was marked by extreme complexity and mutability." Despite this widely proclaimed importance, it is notable how few researchers have even examined the collection. Ultimately, Kukulik is far from fully analyzed. Numerous artifacts remain unclassified at the most basic levels such as type or material. Aside from the single *preliminary* report—an admission few archaeologists remember (Geist and Rainey 1936), and an unpublished Ph.D. dissertation (Lewis 1995) the site is typically mentioned in passing, without full consideration. Certainly, many problems remain with the collection, especially where detailed contextual data are concerned, yet the collections may not be as limited as is usually assumed.

This paper describes the recent effort to address some of the more obvious pitfalls in using the Kukulik collection, including its reorganization and in arranging the associated documentation. With these collections rehoused and reorganized it is now possible to examine the materials in a more efficient manner than ever before. The rediscovery and reanalysis of the MC 35 assemblage was possible only as a result of these efforts. This study has doubled the radiocarbon data for the site, and in conjunction with a review of the existing spatial and chronometric data, I proposed a few guide posts for the last 2,000 years of occupation at Kukulik. The initial settlement at Kukulik might date from the last centuries BC; the strongest evidence for occupation is from the fourteenth to nineteenth centuries AD. For a massive site the size of Kukulik, the result remains unsatisfying to fully understand the complexity of the mound. This project is best

considered as a pilot study, one aimed at outlining the potential value of and in inspiring renewed investigation into the voluminous Kukulik collections.

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A NOTE ON LABRET USE AROUND THE BERING AND CHUKCHI SEAS

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ABSTRACT

In the earliest contacts with the widely spread speakers of Eskimoan languages, European observers noted an obvious contrast in the wearing of lip ornaments or labrets, with the practice spread over what is now the coast of Alaska but absent in most of Canada and in Greenland as well as on the northeast coast of Asia. In addition, archaeological studies have provided indications of differences in the history of labret use between those American areas to the north and to the south of the Bering Strait, and although some scattered and ancient uses are in evidence for north Asia, the northeastern Asian coast has apparently been labret-free for the past three to four millennia. Some archaeologists have attempted to use the prehistoric presence or absence of labrets as markers of people specifically of western American or of Asian heritage. Examination suggests that these attempts have been only partially successful—some reasonably compelling, others less so, in part because of conclusions drawn on the basis of insufficient evidence.

KEYWORDS: labrets, northwest Alaska, northeast Asia, arctic prehistory

At the time of early European contacts with Native people of arctic North America, one of the major if superficial contrasts among Eskimoan peoples was in "labretifery," to use the coinage of William H. Dall (1884). That is, on the one hand, the wearing of lip ornaments or labrets by people of Alaska, especially men, and on the other hand, the general absence of such ornamentation throughout arctic Canada and Greenland—and, as emphasized here, in northeast Asia. Indeed, from the beginning of such contacts, Europeans reported friction between the people of far northwestern America, who wore labrets, and their linguistic relatives of Asia, who wore none. At times this contrast in the west has been taken to provide identification of Americans or of Asians not only in historic times, but in still earlier contexts. The aim of this paper is to address this usage, and in order to do so it is necessary to summarize relevant historical and prehistoric data from this broad area (Fig. 1).

An earlier survey of labret use by Keddie (1981) is certainly still current, as are his illustrations of labret form, the most common range of which for present purposes is indicated by the first three examples in Fig. 2. In brief, the ornaments more nearly round in cross-section were commonly inserted in pairs, each one near and slightly below the corner of the mouth; more elongated labrets were worn in a horizontal slit below the lower lip. Here I provide a few additional sources. I also note that my view is from a little farther north than Keddie's, which for all its geographic spread was rooted on the Northwest Coast.

HISTORY AND PREHISTORY

NORTH ALASKA

In the earliest known contact, as of about 1648, the Russian cossack Semen Dezhnev (1985 [1655]:323) reported that

> when one goes by sea from the Kolyma River to the Anadyr River, one passes a cape which juts far out into the sea [i.e., East Cape]. . . . Opposite this cape there are two islands [the Diomedes] inhabited by Chukchi [sic]. They wear tooth ornaments made

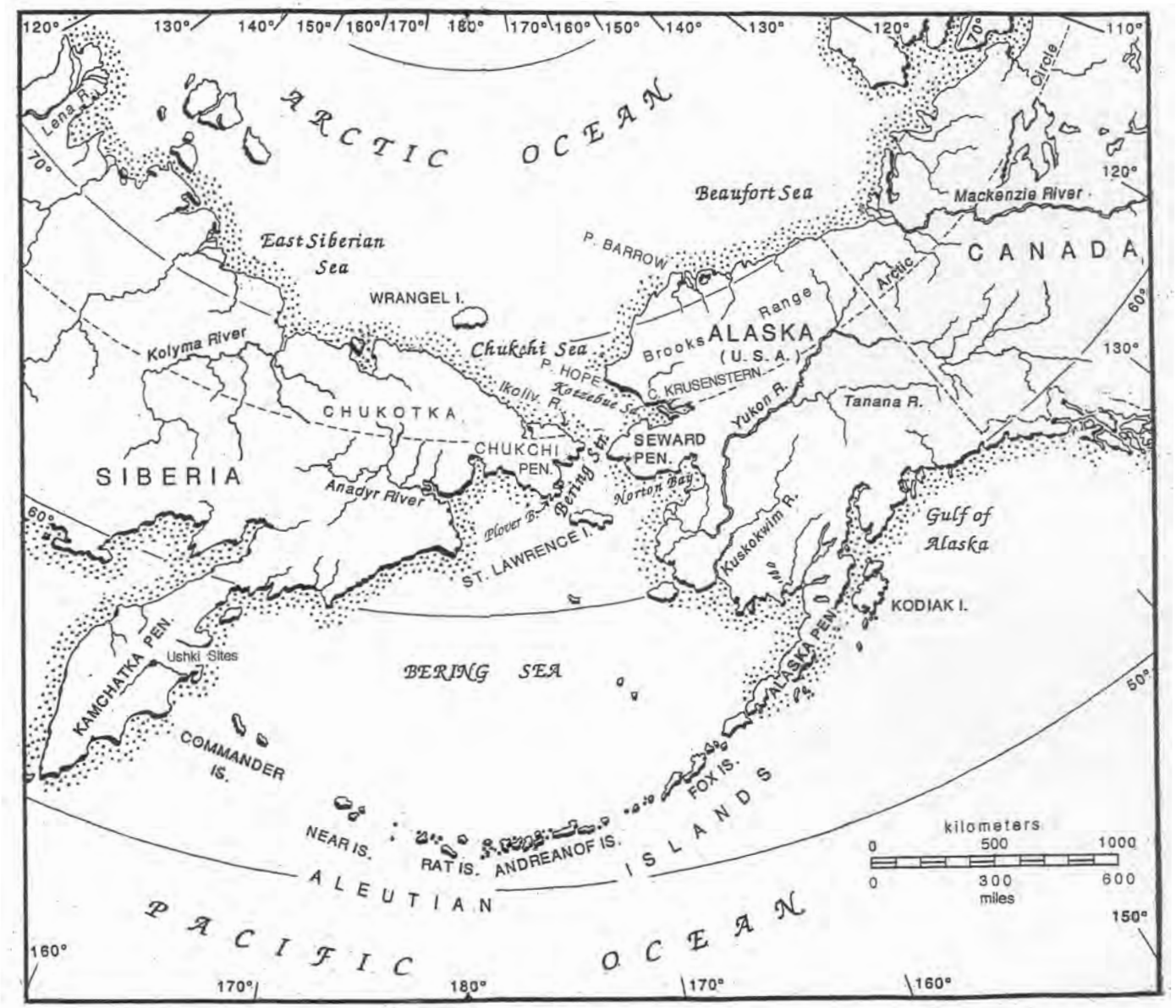

Figure 1. The Bering and Chukchi Seas, with some locations mentioned in the text. "Ikoliv. R." indicates the site at the mouth of the Ikolivrunveem River, as reported by Dikov (2003 and elsewhere).

> of ivory which protrude through holes which they pierce through their lips.

This practice of Diomede islanders and people of the American mainland was confirmed by slightly later travelers, as in information cited for example by Dall (1870:375) and also Dikova (1980). Still more recently, within the late nineteenth century, the wearing of labrets by either men or women[1] was still apparent in parts of western Alaska, in a practice that extended from the Bering Sea northward around Alaska and then eastward to the region around the Mackenzie River mouth (Murdoch 1892:145; Nelson 1899:44–45). By this time active hostilities between labret-wearing Americans and their Asian neighbors had evidently ceased, although endemic warfare was within traditional memory. As Dall (1870:375) related:

> At Plover Bay [on the southern Chukchi Peninsula] I was informed . . . that the inhabitants of the country were of two kinds,—"deer men" (i.e., true Chúkchees [herdsmen]) and "bowhead men" [coastal Eskimos]. The "deer men" were the original inhabitants, and the "bowhead men," to which

1. Evidently identifying symbols of social groups, special status, genders, etc., the usages commonly varied between the sexes. No attempt is made to discuss intrasocial aspects of labretifery here, where the focus is on to the presence or absence of labret use as a clue specifically to prehistoric ethnic identities.

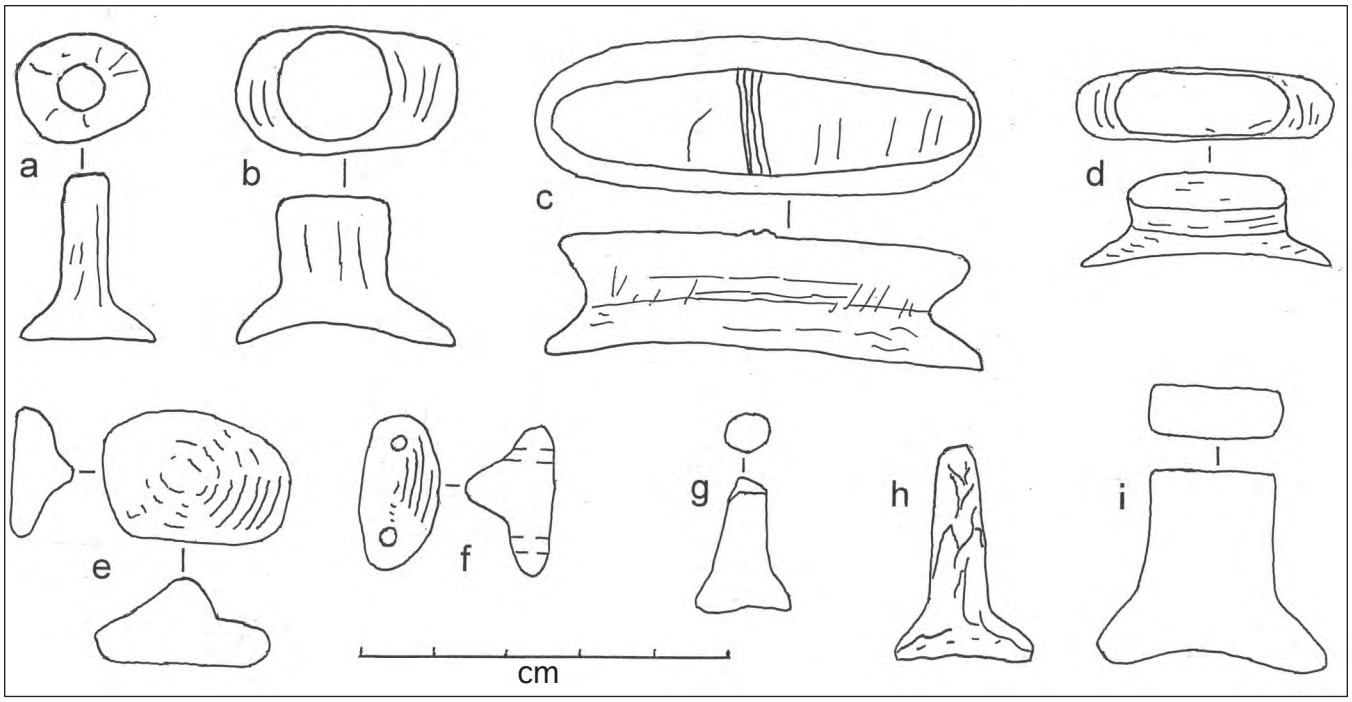

Figure 2. Labrets and putative labrets: (a–c) Barrow area, Utkiavik site (redrawn from Ford 1959:Figure 108a, c, e); (d) Ikolivrunveem River site, northeast Chukotka (redrawn from Dikov 2003:Plate 166:12); (e, f) Ushki 1 site, Level VI (redrawn from Dikov 1983:Figure 6); (g–i), Tar'in culture, Kamchatka (redrawn from Dikova 1980:Figure 1:3, 5, Figure 2:7).

> class he [the informant] belonged, had come, long ago, from the islands (the Diomedes) to the northeast. He said that the reason they came was because there was war between them and the people who wore labrets. The latter proved the stronger, and the former were obliged to come to the country of the "deer men." The latter allowed the "bowhead men" to settle on the barren rocky coast, and formed an offensive and defensive alliance with them against the invaders from the eastward. On interrogating one of the "deer men" . . . , he confirmed the above, as identical with the Chukchee traditions.

Again according to Dall (1870:376), a visitor to the Asian side of Bering Strait in 1711 found among the coastal people "ten of the islanders wearing labrets, who had been taken prisoners of war." At this point it seems clear both that people of America and of Asia were in conflict and that labret-wearing marked the Americans.

But as I have summarized elsewhere (Dumond 2009), the wearing of labrets in portions of the American coast of Alaska was not consistent throughout more ancient times. In the coastal region north of Bering Strait, for instance, Ford (1959:221–222) reports labrets only from his latest archaeological component in the Barrow vicinity, representing a period after about AD 1700 (Figure 2a–c), while he notes that from the somewhat more refined seven-hundred-year tree-ring-derived chronology for the lower Kobuk River, Giddings (1952:87–89) reported the earliest appearance of lip ornaments at around AD 1400, with their popularity expanding only after 1700. This is concordant with results from the Mackenzie Inuit territory of the lower Mackenzie River region, where McGhee (1974:73) reports occurrences after AD 1400, although he apparently sampled no earlier components there. Indeed, the most easterly specimen clearly identified is a "top-hat shaped limestone labret" from the Rita-Claire site on the west side of Cape Bathurst, at the far eastern edge of that same ethnic territory (Morrison 1997:20). Labrets are not reported historically or archaeologically from regions farther to the east, save for two excavated objects regarding which the authors of the reports have expressed reservations, with which I wholeheartedly agree.[2]

For parts of the northwest Alaska coast information appears less clear, chiefly because of small samples from crucial periods. At Point Hope, where the major Ipiutak

2. These are so-called "composite labrets" from the Clachan site near Cape Hearne in western Coronation Gulf (Morrison 1983:161; Morrison personal comm. Sept. 8, 2009) and from Skraeling Island, off Ellesmere Island in northeastern Canada (McCullough 1989:200).

site was the real focus of interest by Larsen and Rainey (1948), samples from the post-Ipiutak period (i.e., after AD 900 or so) do not include lip ornaments but are too meager to be definitive. On the Choris Peninsula a labret is reported from a fifteenth-century AD house (Giddings and Anderson 1986:53). From Cape Krusenstern at the northern corner of Kotzebue Sound the only possibly related item is one from a Birnirk site that is labeled a possible chipped "labret blank" of bitumen—the identification admittedly uncertain in the absence of reports of lip ornamentation from any known Birnirk site elsewhere (Giddings and Anderson 1986:97).

More promising is evidence from the immediate vicinity of Wales at the west extreme of the Seward Peninsula, where labrets were absent in a Birnirk-related site (Dumond 2000a:112), while appearing in the post-Birnirk sequence—at a time beginning not earlier than the period of the late Punuk culture of St. Lawrence Island (Dumond 2000a:67, 94–96). A date after about AD 1400 for labrets at Wales would seem reasonable. Thus it appears that a situation similar to that in the Barrow region existed also on the Bering Strait coast of America for the centuries after about AD 800 or 1000.

This was not the case still earlier in northwest Alaska, however. At Point Hope labrets were recovered from Ipiutak deposits (predating AD 800 or 900), and although the number of actual specimens was limited, graphic representations of humans were so frequently specific with indications of lip ornamentation that Larsen and Rainey (1948:114–116) concluded that the wearing of labrets was common. Still earlier in the part of the west coast of Alaska north of Bering Strait, Ipiutak was preceded by a Norton-culture occupation that began as early as 500 BC, although in terms of reported samples it must have been scattered and of relatively short duration. Nevertheless, in the closely related, widespread, and plentiful Norton evidence around the Bering Sea coast south of the Seward Peninsula, the use of labrets by all Norton people was consistently heavy (e.g., Dumond 1982, 2000b, both with references), and the same must have been the case in north Alaska as well. Still earlier there is evidence of labret use—by 700 BC—in a house of the Choris culture from the type site on the Choris Peninsula near the mouth of Kotzebue Sound (Giddings and Anderson 1986:205). That this labret-producing site is located near the southern terminus of the northwest Alaska coast is presumably related to the fact that the source of labret practice in Alaska lay to the south, as will be seen. Although the fact that Choris people represent the first Alaska users of pottery clearly suggests at least indirect intercourse with Asia, much in the Choris inventory—stone lamps and certain harpoon types, for instance, as well as the presence of labrets—bears the specific mark of connections to the south.

SOUTH ALASKA

That is, labret use in Alaska is especially southern. In the region south of Bering Strait, evolving aspects of the Norton culture endured from a beginning several centuries BC until sometime close to AD 1000, with later Norton people contemporary with those of Ipiutak farther north. Norton assemblages, primarily otherwise of chipped stone, consistently include evidence of lip ornaments of polished stone or bitumen. Further, unlike the post-Ipiutak period in the north, at the replacement of Norton south of Bering Strait with slate-polishing forerunners of historic Eskimoan peoples, there was no cessation in the heavy use of labrets, although the most common forms of the ornaments clearly changed. This conjunction of events around the eastern Bering Sea is indicated in the north by the collections from the Nukleet site in Norton Bay (Giddings 1964) and in the south by collections from the Alaska Peninsula (Dumond 1981). Thus, labret use continued in the south without a break.

It must be also pointed out, however, that before the first millennium BC both this region and north Alaska had been free of labret use. In this earlier period, the first consistent occupants of the coastal hinterlands from the Alaska Peninsula north to Point Barrow and even beyond to the east were people referred to collectively as participants in the Arctic Small Tool tradition. Small Tool collections everywhere in Alaska, Canada, and Greenland are consistent in a lack of evidence for the use of any lip ornamentation, a lack that in the eastern Arctic continued unabated through the evolution of aspects of Dorset culture and into the period of the nonlabretiferous Thule immigrants after AD 1000—although the lack of labrets among these late immigrants had come to them by a somewhat different route from that of their Dorset predecessors, as will be indicated.

Rather, evidence presently available is that the earliest signs of the consistent use of labrets in what is now Alaska—that is, signs earlier than the Choris and Norton periods—are to be found even farther to the south. Around the northern Gulf of Alaska, including the Kodiak

Archipelago, labrets were in use by 1500 BC and continued thereafter (Steffian and Saltonstall 2001), and by the same time—if not even earlier—were to be found in the eastern Aleutian Islands (Aigner 1966, 1978; Knecht et al. 2001). Still farther southward, labret use is in evidence on the Northwest Coast as far south as the Strait of Georgia and Puget Sound (Donald 2003; Shantry 2008), with evidence of the earliest use of all found on islands off the central coast of British Columbia as early as 2000 BC and possibly a millennium earlier (e.g., Cybulski 1991:5–11, 1992:67–73; Dahm 1994).[3]

In a cursory summary for Alaska, then, it seems that the use of lip ornaments of one shape or another had its origin somewhere to the south on the Northwest Coast. After the introduction around the Bering Sea around 500 BC, labrets were to be found consistently in the region from the Alaska Peninsula north to northernmost Alaska until about AD 800. Thereafter, whereas labret use continued without a break in the Bering Sea region until European contact, the evidence available from the region between Wales and Barrow suggests that no labrets were worn there between AD 800 and 1400. As is to be pointed out, this was the time when aspects of the Birnirk culture appeared in the region, followed by at least scattered elements of the Punuk culture. It is presumably no accident that both of these were derived from Asia.

This leads us to a brief consideration of features of the northeastern portion of that continent.

NORTHEAST ASIA

That there was at least scattered use of lip ornamentation in Siberia before 2000 BC is made clear by the report of examples (largely T-shaped) in a Neolithic culture from the far north Taymyr Peninsula, presented with a brief discussion of a very small number of other examples (Khlobystin 2005 [1998]). The north Asian examples that could be cited are few and far between, however. Approaching the northeast Asian coast, the evidence continues uneven, although less so for at least one period.

At the most ancient end, archaeologist N. N. Dikov reported the presence of labrets from level VI of the Ushki sites on the Kamchatka River, in a component representing the later Kamchatka Paleolithic and dated around 10,000 BC. He has said specifically that in those level VI deposits "three completely finished labrets were found . . . in 1978" (Dikov 2004:99). Unfortunately, the specimens have been only poorly illustrated (e.g., Dikov 1979:109; 1983:Figure 6), and in one case the caption is "labret like" (Dikov 2004:Fig. 21). (See Fig. 2e–f.) Dikova (1980:57) describes these as "tiny artifacts of steatite, round in plan. On the outer side a prominence is carved into a kind of lug, and two holes drilled through for sewing something on, possibly with sinew."[4] Nevertheless, that the button-like objects illustrated were in fact lip ornaments seems subject to question on morphological grounds, with the question much intensified by the absence of any labret specimens reported from any comparable deposits that, like Ushki level VI, represent the northeast Asian Late Paleolithic with its healthy and widespread microblade technology. On the other hand, a specimen reported to be of a much later Neolithic level at one of the Kamchatka Ushki sites is more clearly formed as a labret (Dikov 1969:Fig. 114, upper)—and this is of a period for which there is additional evidence from the south Kamchatka coast.

Such latter evidence is presented by the Tar'in culture of southeastern Kamchatka, where more than a score of labrets are described and illustrated by Dikova (1980; see Fig. 2g–i), dating specifically to a period between about 3000 and 2000 BC. Following this, after the first millennium BC, any wearing of labrets in Kamchatka or northeast Asia as a whole was generally eschewed, although Dikov (1969:208) refers to two examples dating from only the last few centuries, one from the northern Kurile Islands south of Kamchatka (presumably from an Okhotsk culture context), the other from the mouth of the Ikolivrunveem River, one of several relatively insignificant streams on the north shore of Chukotka not far west of East Cape. This will be mentioned again below. Otherwise, the same absence of labret use is indicated throughout the known developmental sequence of the Eskimo-related occupations of western Bering Strait, which began early in the first millennium AD.

This western Bering Strait sequence was first set out in the work of Henry B. Collins (1937) on St. Lawrence Island. The original description of the cultural sequence now accepted as that of the northeasternmost Asian coast, is concerned with a stylistically developing culture that

3. The earlier date is apparently based on collogen from a single remains from the Pender Canal site, the individual with what is concluded to be labret wear on the teeth (Cybulski 1991:7).

4. I am indebted to Richard L. Bland for this translation.

had first been identified by Diamond Jenness (1928), and which Collins (e.g., 1937) later dubbed Old Bering Sea. In the 1930s, on the basis of stylistic and spatial distinctions in the area near the St. Lawrence Island community of Gambell, Collins defined three stages. These he termed Old Bering Sea styles I, II, and III, which he presumed at least in large part to represent temporal stages. Old Bering Sea as a whole was followed by Collins's Punuk culture of people especially notable for whaling, while somewhere between the Old Bering Sea and Punuk units appeared less plentiful artifacts with elements of a style related to the Birnirk culture that had come to attention before AD 1900 from scattered work in the Barrow region of north Alaska. All of these so-called cultures were defined according to styles of decorative engravings related to toggling harpoon heads of varying morphology, a practice that at times may have resulted in archaeological units too narrowly defined to reflect actual whole societies.

In any event, not long after the publication of the Collins results (1937), Froelich Rainey (1941) described collections excavated from an islet off the east coast of St. Lawrence and defined the Okvik culture—a stylistic entity both he and Collins recognized as closely related to the latter's Old Bering Sea style I. This new terminology Collins finally accepted, in effect using Old Bering Sea style I and Okvik as synonyms. That is, Okvik was regarded by both Collins and Rainey, and also by later American archaeologists (e.g., Ford 1959), as the earliest stage of Old Bering Sea. None of these St. Lawrence Island assemblages, it should be remarked, included lip ornaments.

In the 1960s, when excavations of cemetery sites on the Bering Strait coast of Chukotka began to be reported, the distributions of stylistic elements within burial offerings led some influential Russian archaeologists to reject the sequential positioning of Okvik and Old Bering Sea as well as the complete integration of Okvik into the development of the Old Bering Sea culture. Rather, Okvik was taken to be a style defining a separable social division related to, but distinct from, Old Bering Sea, and one with its origin significantly later than the earliest appearance of Old Bering Sea in its style I (e.g., Arutiunov et al. 1964). This involved the separation of two decorative and morphological styles that Collins and Rainey had both included in their Okvik-Old Bering Sea I unit, creating thereby two separate units—Okvik on one hand, and Old Bering Sea I on the other (e.g., Bronshtein 2006). This conclusion was to some extent supported by conflicting radiocarbon determinations published in the late 1950s and early 1960s (Rainey and Ralph 1959; Ralph and Ackerman 1961), and the view of Okvik as something other than the initial stage of an Old Bering Sea continuum was at least provisionally accepted by a number of other researchers (e.g., Ackerman 1984:109; Dumond 1977:119). At the same time it was recognized that the known distribution of Okvik, as reported by both Americans and Russians to be confined to St. Lawrence Island and the east coast of the Chukchi Peninsula, was significantly more restricted than that of various Old Bering Sea manifestations, which were also found on both the north and south Chukotkan coasts (e.g., Ackerman 1984:109).

Through some of the Russian research, it was pointed out that collections apparently related to the Birnirk culture, first reported from north Alaska, were widely spread along the north Chukotkan coast—as far west as the mouth of the Kolyma River—whereas there was a partial separation in distribution between the Birnirk and the slightly later Punuk, with the latter most heavily distributed farther to the south and clustered along the ocean pathways taken by migrating whales (Ackerman 1984:110, with references). Further, Birnirk assemblages were associated with faunal remains most commonly of small seals, whereas Punuk people were clearly whalers (e.g., Arutiunov and Sergeev 2006b:191–193). Later discussions based on cemetery materials modify this view somewhat, with certain Birnirk people practicing some whaling alongside their reliance on seals, as attested by out-sized harpoon heads in burials characterized especially by Birnirk-style artifacts (Bronshtein and Dneprovsky 2002). Both Birnirk and Punuk sites are significant in this regard, inasmuch as both have been implicated in the origins of the Thule culture that is noted for its fairly rapid trek (or treks) after AD 1000 across northern Canada from Alaska toward Greenland.

As concluded by Ford (1959:238–242) on the basis of trait comparisons and with reference also to Collins (1937), the culture of these Thule people who moved across arctic Canada to Greenland was heavily derived from earlier Birnirk as represented near Barrow, which in turn had experienced contributions from Okvik, Old Bering Sea, and early Punuk (as known from St. Lawrence Island), plus some from Ipiutak, the local Birnirk predecessor in northwest Alaska. At about the time of the eastward Thule expansion there was also in evidence a certain amount of proto-Thule contact with late Punuk people of Asia. Thereafter, according to both Ford (1959:241) and Collins (1937:364–372), there appeared in northernmost Alaska some innovative traits they concluded to be de-

rived from the east, from the developing Thule culture that was by then in place in Canada. Disregarding this presumed return of traits, their presumption was evidently that the Thule expansion to the east had been predominantly a single movement.

Later research and reevaluations have complicated the discussions regarding a Birnirk-to-Thule transition (e.g., Gerlach and Mason 1992; Mason 1998; Morrison 1989; Stanford 1976; Taylor 1963; Yamaura 1979), a subject that in any event is largely outside the scope of the present paper. Nevertheless, traits that in Alaska are considered to be late Birnirk or early Thule appear as far east in the Arctic as Ellesmere Island and northwestern Greenland (e.g., Schledermann and McCullough 1980), but there have been suggestions of other such movements including one even somewhat earlier from the Birnirk settlements in the Barrow region (Morrison 1999). That is, some recent researchers have conceived of the "Thule migration" as more complex—as more than a unitary event (but see Friesen and Arnold 2008).

Finally, and concordant with at least portions of the archaeological evidence cited, physical anthropologists have concluded that Birnirk burial samples from the Barrow region reveal the Birnirk people to have been morphologically close to the early Thule inhabitants of the eastern Arctic (see Utermohle 1988 for a recent statement). Although such suggestions may also lead somewhat outside the intended scope of this paper, related findings first iterated by Stewart (1959) are to the effect that the remains of more recent (i.e., "Late Thule" and historic) people of the Barrow region indicate them to be morphologically distinct from Birnirk, with some researchers finding them closer to Ipiutak people of the Point Hope area and to some of more southerly Alaska (e.g., Turner 1988). This suggests a late population replacement in the Barrow vicinity, or at least a significant measure of influx from outside. After a survey of relevant literature as well as additional multivariate analyses of cranial measurements, these conclusions have been reaffirmed by researchers of the Repatriation Office of the National Museum of Natural History:

> Biologically the historic inhabitants of the Point Barrow area were a very different people from those that inhabited the region during the Birnirk Culture times. Many studies have also shown that the Birnirk populations are most similar to later populations of Greenland, specifically western Greenland. The biological evidence indicates the Birnirk population is genetically affiliated to the Thule and historic Inupiat populations of eastern Canada and western Greenland. (Hollinger et al. 2004:34)

Finally, one may observe that these last suggestions based on both archaeology and physical anthropological assessments appear in line with the reported occurrence of labrets in north Alaska. That is, people of the Birnirk and Punuk cultures of St. Lawrence Island, like those of earlier Old Bering Sea, were not users of labrets. These people apparently intruded into northwest Alaska from northeast Asia sometime in the second half of the first millennium AD, and were instrumental in the development of the culture of the early Thule people who after AD 1000—perhaps as late as AD 1200 (Friesen and Arnold 2008)—moved eastward across northern Canada. After AD 1400 or so, Alaska remnants of these people were replaced by, or amalgamated with, those who owed more of their heritage to Ipiutak and even more southerly Alaska folk—who, of course, had been longtime wearers of lip ornaments.

Does this fit with other evidence? Not entirely: that of the language distribution seems most immediately at variance. The eastern division of the Eskimoan languages, the heterogeneous language Iñupiaq-Inuit or Iñupiaq-Inuktitut, historically has included Native people resident from northern Alaska to eastern Greenland and has been thought to represent a heritage from the (labret-less) Thule expansion. The westernmost major dialect of this language, Iñupiaq, extended from the southern coast of the Seward Peninsula and adjacent Norton Sound around north Alaska and into territory of the Mackenzie Inuit around the delta of the Mackenzie River (Woodbury 1984; see also McGhee 1974). In the nineteenth century the extremes of this distribution were evidently being expanded especially by Iñupiaq traders (e.g., McGhee 1974:92–93; Oswalt 1967:136–137; Ray 1975:chapt. 11, esp. 135–139). Probably significantly, the coastal region from Wales to the Mackenzie River delta embraced the Alaska region of productive whaling, with major whaling villages tending to attract some immigration from hinterlands.

Can these physical and linguistic differences be reconciled? Probably, although evidence beyond that presently available would be highly desirable. The major divisions of the Eskimoan language family have included five separate languages of the western or Yupik division (three in Asia, one on the Bering Sea coast, one on the Gulf of Alaska), and the single heterogeneous language of the eastern or Iñupiaq-Inuit division, dialects of which are variant

enough at the distributional extremes (in north Alaska and Greenland) to be classified as separate languages, but they are held together as one simply by the clearly intergrading dialects in between (Woodbury 1984). As suggested elsewhere (e.g., Dumond 1988, 2009), it seems most reasonable to suppose that the linguistic radiation within Eskimoan that accounts for both the Alaska Yupik languages and Iñupiaq-Inuit occurred in the late first millennium AD—in short, coinciding with the appearance of the pre-Thule and non-labret-wearing Birnirk (and possibly elements of Punuk) people in north Alaska and also with the heightened appearance of some Thule-like characteristics around the Bering Sea (Dumond 2009). In the north, however, there then proceeded a period of Iñupiaq expansiveness, coupled with cultural consolidation with predecessor people—including labret-wearers to the south, and probably those of the interior, some of whom may have been remnant Ipiutak folk. The reappearance of labrets in the north, then, can be considered a measure of this consolidlation. The questions raised by the present suggestion, of course, call for empirical answers well beyond the scope of this treatment and definitive answers that very likely cannot be presented in any concrete way at the present time.

With all of this said, it is well to take note finally of what has been proposed as an exception of the labret-less character of the Birnirk or Punuk occupations. This involves one of those recent examples of labrets from northeast Asia, cited by Dikov and referred to above—specifically the object from the mouth of the Ikolivrunveem River on the eastern segment of the north coast of the Chukchi Peninsula. Dikov (2004:172) discusses this in his section on sites of Birnirk culture, but earlier had reported it as follows:

> On the left of the stream mouth, on a 4 to 5 m high rocky bank, was a cultural layer 2 m thick. . . . Profiling the bank over an extent of 15 m, two broken Punuk toggling harpoon heads, two foreshafts for them, a small labret of walrus tusk, an adze, an arrow point and pieces of knives of argillaceous slate, and three picks, three punches, and a bead blank of walrus tusk, were found . . . , as were a paddle (ceramic stamp) of the same material decorated with concentric circles. (Dikov 2003:176–177)

The labret could not well be anything else (see Figure 2d). The archaeological context, however, may leave something to be desired. Was the object Birnirk? Possibly the decoration on the pottery paddle was crucial in leading Dikov to this conclusion, although it is well known that identical concentric circle impressions were used in north Alaska after the Birnirk and into the so-called Western Thule period. Could this deposit represent a post-Birnirk period, when labrets were again in use in north Alaska? Related to this, and as in the historic example from the eighteenth century referred to by Dall (1870) and cited near the beginning of this paper, could this be the trace of an American prisoner? Or, perhaps more basic—are associations in this profiled deposit really clear?

LABRETS AS ETHNIC BADGES AGAIN

On some points, the Russian investigator N. N. Dikov disagreed strongly with his colleagues on the placement of the Okvik culture, and as part of his argument he invoked the apparent American-Asian contrast in the use of lip ornamentation as permitting the identification of populations. Specifically, Dikov (2004:135–146) rejected the argument that the Okvik assemblages were more recent than early Old Bering Sea especially on the basis of the forms of artifacts such as the well-known "winged objects," with the specific Okvik forms he saw as significantly more archaic than those of Old Bering Sea. He did not, however, reject the Russian idea that Okvik was socially separable from Old Bering Sea. That is, he saw Okvik as appearing earlier but thereafter coexisting with Old Bering Sea for a substantial time.

A strong indicator of a distinction from Old Bering Sea, according to Dikov, is evidence for the use of labrets in Okvik—which in turn, given the distribution of labretifery around the Bering and Chukchi seas, he saw as marking Okvik as more heavily Americanized than was Old Bering Sea. Unfortunately, no graphic evidence for Okvik labret use is provided in Dikov's publications, and his descriptions include no citations of specific examples. Rather, Dikov says,

> Often labrets are very definitely depicted on . . . bone images from mixed Okvik-Old Bering Sea burials [on the Chukchi Peninsula]. The fact that there are no similar images with labrets in pure Old Bering Sea burials or in Old Bering Sea sites permits concluding that these images are associated with Okvik (Dikov 2004:137).

That is, he goes on to say, the origin of Okvik is heavily, although not exclusively, American (Dikov 2004:141–143). On the other hand, the affinities of Old Bering Sea are much more heavily Asian (Dikov 2004:161–167), al-

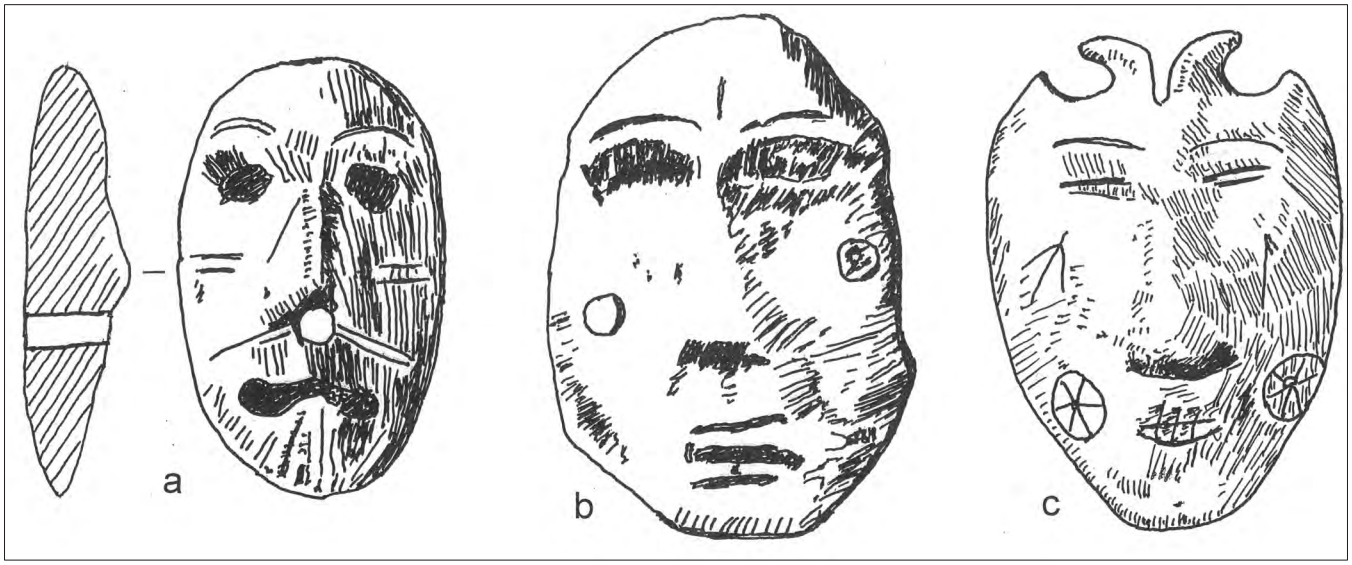

Figure 3. Images of faces in bone and ivory, Chukchi Peninsula burials (although all are apparently small, no scales are provided in the sources): (a) Uelen cemetery, burial 22 (58) (redrawn from Arutiunov and Sergeev 2006a:Fig. 99:1); (b) Uelen cemetery, burial 7 (59) (redrawn from Arutiunov and Sergeev 2006a:Fig. 98:9); (c) Ekven cemetery, burial 15 (redrawn from Arutiunov and Sergeev 2006b:Fig. 80:8).

though he states that both drew from the Norton culture of Alaska as well as from groups known in northeast Asian prehistory.

What is the evidence for Okvik labrets? Although implicating human representations from burials in Chukotkan coastal sites (Uelen and Ekven) that contain mixtures of Okvik and Old Bering Sea styles in artifacts, as indicated, Dikov does not specify particular burials. A review of reports by Arutiunov and Sergeev (2006a, 2006b) reveals only a few images that might be those Dikov was referring to. Specifically, there are only three cases in which the possibility is raised by Arutiunov and Sergeev that labrets may be indicated: two from Uelen, in burials 7 (59) and 22 (58) and one from Ekven burial 15. These are illustrated in Fig. 3.

The most provocative comment pertains to an object from Uelen burial 22 (58), a grave set that Bronshtein (2006:171) lists among twelve Uelen burials accompanied predominantly by Okvik objects. Representing a human face, Arutiunov and Sergeev (2006a:Fig. 99:1) regard the object as an amulet: "Two holes, not drilled through, represent eyes. A hole drilled through the center of the face served for attaching the amulet. At the corners of the mouth there are two more holes, not drilled through, which evidently represented labrets" (Arutiunov and Sergeev 2006a:194). See Fig. 3a.

With regard to a second human face, this one a portion of a decorated walrus tusk from Uelen burial 7 (59) (Arutiunov and Sergeev 2006a:Fig. 98:9), they say only that "decorative circles on the cheeks may illustrate a tattoo but perhaps represent labrets" (Arutiunov and Sergeev 2006a:195). They also compare this to a second tusk with a face carved on it that is from Ekven burial 15 (Arutiunov and Sergeev 2006b:Fig. 80:8). In the first published reference to this latter image (Arutiunov et al. 1964:339–342), the authors remarked that it "has tattoo marks on the cheekbones in the shape of bird tracks and also shows cheek labrets," but in the more recent compendium (Arutiunov and Sergeev 2006b:18) it is simply called "a medallion with the image of a tattooed human face." Neither of these grave lots, from Uelen burial 7 (59) or Ekven burial 15, is listed by Bronshtein (2006:171) as containing any carvings he recognized as Okvik—classing the first lot as equivalent to Old Bering Sea II, the second as showing a mixture of Old Bering Sea II and III.

Of these three images, the face in present Fig. 3a may represent labrets at the corner of the mouth, although the drill marks may also be no more than a drill technique to render that mouth; probable tattoos seem indicated by grooves on the cheekbones, and either a mustache or additional tattoos extend outward from the drilled hole below the nose (compare Murdoch 1892:Fig. 87). With regard to the two other images, the cheek marks appear much more convincing as tattoos than as labrets, especially as those in Fig. 3c are almost exactly duplicated in the sketch of a nineteenth-century man from the Chukchi

Peninsula coast provided by Nelson (1899:Fig. 15). Given that no lip ornaments themselves are reported in collections from sites on St. Lawrence Island or from the Okvik site, in addition to their absence from graveyard collections made on the Chukchi Peninsula, the present evidence of the Okvik use of lip ornaments appears too weak to be acceptable.

With reference to an American association of Okvik, it may be noted that Collins (1959) referred to an "Okvik artifact" as originating in southwestern Alaska, a situation that could be taken as confirmation of a clearly American connection. This was an object collected northwest of Kuskokwim Bay by E. W. Nelson in the nineteenth century, with Collins's characterization of it written after he had adopted the use of Okvik as synonymous with Old Bering Sea style I. The artifact he figures (Collins 1959:Fig. 1), as well as his description, suggests that it would be classed by Russian archaeologists (including Dikov, apparently) not as Okvik but as Old Bering Sea. If there is an especially strong American strain to be seen anywhere in the Okvik collections—strong and in opposition to affiliations of collections classed by the Russians as Old Bering Sea—it must needs rest on evidence in addition to imputations of Okvik labret use. Again, such a further consideration is outside the scope of the present essay.

CONCLUSIONS

The evidence for a recent prehistoric contrast between western Alaska and northeastern Asia in the customary use of lip ornaments or labrets appears compelling. The time depth of this contrast would appear to be at least as early as sometime in the first millennium BC. At this time labrets appear in western mainland Alaska with the Choris culture, and by the same time have evidently disappeared in northeastern Asia. Thereafter the contrast between America and Asia evidently holds until a time around AD 800 or 900, with the demise of the Ipiutak culture, at which point labret use disappears in America north of Bering Strait, while continuing unabated farther south. Given the gestation of the Thule culture in northern Alaska at this time, it is reasonable to conclude that the decline of labretifery is related to an influx of actual people from the Asian side of the Bering Strait, with skeletal characteristics apparently supporting such a conclusion. Following the Thule movement or movements eastward, labret use is resumed in north Alaska, this at a time in which characteristics of skeletal morphology suggest a closer tie of north Alaska population to the considerably earlier Ipiutak people. All in all, to the extent that the available samples permit a conclusion, it appears that the absence of labret use is a reasonable shorthand identifier of northeast Asian proto-Eskimo peoples, that the presence of labret use characterizes people of principally (northwestern) American descent, and that this circumstance probably held true since 1000 BC. Near the end of the first millennium AD, labret-less Asians apparently took over northern coastal Alaska, with the spread of labret use in the region thereafter indicating infiltration of the Iñupiaq-speaking people by remnant populations of the earlier Alaskans. One may note that population movements to the major coastal centers continued into the twentieth century, when formerly inland people moved into the Barrow region after the coastal population was decimated by disease (e.g., Oswalt 1967:234–235; Stewart 1959:246).

Beyond this, in the absence of empirical information it appears not possible to proceed. So far as other facts indicate, although the presence of lip ornaments in the ten-millennia-old deposits from the Ushki sites on the Kamchatka River seems doubtful—or, at least, much less than demonstrated—the use of labrets on the southeastern Kamchatkan coast before 2000 BC is evidently undeniable. With regard to other suggestions made by researchers—that labrets were in use on the northeastern Chukotkan coast in the Birnirk period, or that labret use characterizes people recognized as Okvik and marks their culture as significantly American, in contrast to that of the contemporary, if not integrally related, Old Bering Sea people, the samples available are simply insufficient to support such conclusions.

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ENTANGLED LIVELIHOODS: ECONOMIC INTEGRATION AND DIVERSITY IN THE WESTERN ARCTIC

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ABSTRACT

No arctic society can live today without a source of cash income, nor do they want to. Many people sell fish, skins, and carvings, among other items, within and beyond their local communities either for profit or for redistribution, or engage directly in commercial fishing. Yet many of the most accessible anthropological depictions of Native peoples in the western Arctic minimize their participation in the modern economy no matter how small or large the scale, preferring instead to document more "authentic" human-animal-environment relationships. These depictions are at odds with those in other parts of the Arctic and indeed the world. Problematizing the role of the anthropologist, this article pulls together the scant references on modern articulations of indigenous peoples in the western Arctic, highlighting their entangled livelihoods in the commercial and subsistence worlds.

KEYWORDS: commercial economies, subsistence, tradition, modernity

INTRODUCTION

During my fieldwork on the Alaska Peninsula, a couple sold me three bags of homemade salmon strips and a pair of beaded earrings made with porcupine quills. The salmon had been caught while the husband was crewing on a cousin's commercial fishing boat, prepared by him, and smoked in his brother's smokehouse. The quills came from a porcupine that the husband clubbed, his wife plucked, and the family ate. The money from this sale went to buy beer and some fishing line for the husband's rod and reel.

This rather mundane series of events can actually be quite sensitive in that there is a commercial activity (fishing), there are subsistence fish (salmon) taken from commercial catches (a legal practice), a purely unregulated subsistence activity (porcupine clubbing), products (smoked strips and quill earrings) from these activities sold to an outsider (me), and the money used to purchase alcohol and supplies for subsistence gear, which he will use for future catches and perhaps sell portions of them. Similar events involving commodification of subsistence harvests occur every day and yet are only barely documented around the Western Arctic. Why?

When I first began fieldwork in the eastern Aleutian region, I was immediately faced with contrasts. The eastern Aleut seemed barely comparable to the other descriptions of Alaska Native people I had read as a student. The Aleut, in fact, seemed bent on breaking every mold that I understood the rest of Native Alaska to be formed with, particularly in the realm of economics. As I have gradually expanded my fieldwork range in Alaska, these differences have begun to blur. Similar kinds of sales and exchanges occur everywhere. During a trip to Nome for the Kawerak Regional Conference, for example, ivory carvings, fur-lined gloves, bundles of dried salmon, and polar bear fur-covered jewelry boxes were all for sale. A brief trip to Bethel yielded opportunities to buy some dried pike and fur-trimmed kuspuks. Many people also participate in commercial fishing, guiding, trapping, and other "traditional" activities that earn dollars.

Placing Native peoples in the real world, where people need clothing, medicine, toilet paper, heating oil, and gasoline, for instance, and may want snowmobiles, televisions, iPods, and beer, for example, has not often been discussed by many western anthropologists. Many anthropological depictions of Native peoples deliberately omit or downplay their participation in the modern economy, preferring instead to document more "authentic" human-animal-environment relationships. Many chapters in Langdon's (1986) edited volume on contemporary Alaska Native economies, for example, have anthropologists insisting on continuities of subsistence production and exchange in the face of new economic developments. These threads continue in more recent examples as well (Fienup-Riordan 2000; Hensel 1996). Others have considered the commercial developments of fishing and hunting (VanStone 1960; Wolfe 1984) but mostly for how they complement or contradict subsistence practices. Likewise, many arctic societies define themselves by subsistence in speech and practice, and anthropologists follow their lead and undervalue trapping, guiding, commercial fishing, and other practices that Native people choose to engage in that actually bring wages and allow for living in the modern world (e.g., Hensel 1996).

This article considers reasons behind the influence of subsistence in shaping ethnographic work and contemplates some potential consequences of the perpetuation of commercial-subsistence divisions. I then consider a selection of grey-literature examples of ethnographic works that are more economically inclusive but are rarely consumed outside of the Western Arctic, thereby contributing to traditional understandings and expectations for how arctic peoples behave. These works indicate that commercial and subsistence practices are mutually supporting and should not be separated in our analyses, situating Native peoples squarely within the modern world.

MODERN PEOPLES / TRADITIONAL ETHNOGRAPHIES

It is the interplay between political and economic institutions and processes, the political economy, that sets many anthropological parameters in Alaska. The history of subsistence legal protections reveals contentions between state, federal, rural, urban, commercial, sport, Native, and non-Native interests (Thornton 1998). A subsistence priority over other consumptive uses in both state and federal law, for example, can appear threatening to some commercial interests (Thornton 1998). However, boundaries between user groups are fuzzy, and those trying to protect one interest may find it difficult to acknowledge their other practices in the process.

Given the legal matrix surrounding subsistence, fear that more inclusive descriptions of contemporary people might be detrimental is not unfounded. Certainly we must take care in our depictions of people, but perhaps there is too much social editing. Native peoples' actual activities continue discreetly, perhaps even under a guise of illegality, but if they are not documented as Native practices, then they are seen as beyond the behavior of Native peoples and no protection for the practices can ever be attained.

One consideration surrounding the role of the anthropologist is that most funding for ethnographic work is responsive to state and federal subsistence programs, ostensibly with the goal of informing managers about subsistence pursuits and justifying future subsistence rights. These rights must be closely guarded, yet validating political claims at the expense of a range of richer behaviors may do greater damage in the long run. Furthermore, these studies are influenced by narrow definitions of subsistence put forth by state and federal regulators. The Division of Subsistence of the Alaska Department of Fish and Game certainly has documented "mixed economies" for several decades, but it is the notion of the "mixed economy" itself that seems no longer relevant. Informants who are asked about subsistence may conform their answers to meet these limited subsistence definitions. Anthropologists conducting interviews about subsistence may be narrowing the scope of inquiry by using limiting terms.

The illegality of many of these mercantile practices that involve subsistence-caught foods could be a reason they are left out of so many stories. If sale and exchange of subsistence foods approaches the realm of commerce, that is, if high dollar amounts exchange hands, then the illegality question is heightened because only Alaska residents can engage in subsistence harvesting, and the state cannot provide a commercial opportunity solely for its residents (Magdanz 2007:125). All activities must be "customary and traditional, limited, and noncommercial" to meet the definition of customary trade and be acceptable (Magdanz 2007:124). These activities appear to occur at low levels, and thus acknowledging practices is not likely to lead to village raids by law enforcement. Wild foods and goods that are sold and bartered in Alaska certainly gain "value-added processing" in peoples' kitchens and homes, however, and dollar values are negotiated between producer and

buyer. Langdon noted that subsistence itself is not taxed or recognized as income, thus making it "invisible or of little or no consequence" to state agents and resource development corporations (1991:287). I am not suggesting that subsistence should be treated as income, but with no record of the full range of economic practices that truly sustain families and villages, these practices cannot be guarded.

While these concerns explain the needed caution when working in the regulatory realm, many Alaska anthropologists work outside of it; they are not employed or funded by state or federal regulatory agencies. It is possible that the ideas about indigenous peoples promoted by Murphy and Steward (1956) still underpin notions of purity, that money has no place in hunter-gatherer hands (see also Bohannan 1967). These characterizations have long been debated for hunter-gatherers in general (e.g., Leacock and Lee 1982), and are generally discarded today (e.g., Schweitzer et al. 2000). In the Arctic, the added dimension of "tradition as inertia" that Riches warned us about two decades ago (1990:73) is still with us, where "a new 'trend' in monographic writing" still finds that "the dictates of subsistence, the encounter with the environment and the predicament of the isolated community are the predominant foci" (1990:78). Riches noted that the Arctic, and the Eskimo in particular, are upheld in anthropology as "beyond the pale" regarding social anthropological debates because of the predominantly static theoretical treatment of arctic traditions (1990:72).

In Alaska, there are dominant paradigms about "being Native" that have become authoritative, eclipsing any attempt to shake them. Endless descriptions of the "subsistence way of life" tell the same story again and again. For example, "for most Natives, subsistence is synonymous with culture, identity, and self-determination" (Thornton 1998:31). "The values associated with subsistence have become key symbols of Yup'ik ethnic, social, and spiritual identity, particularly as traditional subsistence practices and Yup'ik identity are challenged and threatened in what is effectively a postcolonial setting" (Hensel 1996:3–4). Here, identity is subsistence, and it is being threatened by non-Natives. Hensel carried these divisions further, saying that the prevalence of cash and non-Natives in Alaska force a stronger hold on these hallmarks of being Native. "The symbolic importance of subsistence as an ethnic marker has been heightened most obviously for those Yupiit heavily involved in the cash economy and in continuous contact with Euro-Americans" (Hensel 1996:4). For Hensel, engagement in the wage economy is seen as mimicking Euro-Americans and cannot be a Yup'ik practice, even though most Yupiit do this. Many Alaska Natives echo this rhetoric, essentializing themselves with the aim of protecting rights to resources. Across the Arctic as well, "'tradition' exists because of its potency as a symbol of opposition to the political and economic activities of governments/Europeans in the north" (Riches 1990:72).

Another facet is that contemporary realities of arctic life can be difficult, and describing these difficulties can create vulnerabilities for the anthropologist. Living in or near one's field site, such as in Anchorage or Fairbanks, engenders a sensitive editing process in one's writing. Safe topics like human-animal relationships or sharing patterns preserve the anthropologist's relationship to the people and ensure future access. However, anthropologists who validate desired images of people may only mask problems, thereby contributing to their perpetuation. This was certainly an issue for filmmaker Catherine Mullins. Regarding her recent film *Being Innu* (2007) about youth substance abuse, sexual abuse, suicide, and despair in Labrador, she stated that film is a powerful tool to reflect the community back onto itself and that the people did not want "just another film made about them" but for her to film "what it's like to be here." The leaders told her, "for once, someone has understood us" (C. Mullins, pers. comm.). I was unsettled by the film, but primarily because I knew that it could never be made in Alaska, even though the problems are similar. The story could not be told because of backlash to the filmmaker and researcher. If a nonsubsistence economy produces such research difficulties, how can other social problems be investigated?

Instead of featuring in popular (and more easily available) ethnographic texts of the contemporary Native peoples of Alaska (such as Chance 1990), descriptions of varied economic practices are tucked away in technical reports (e.g., Wolfe and Ellanna 1983), unpublished theses and dissertations (e.g., Wheeler 1998), presented papers that have yet to be published (e.g., Bodenhorn 2000), or documented primarily to inform potential changes in regulations (e.g., Moncrieff 2007). As an Alaska anthropologist who does not live in Alaska, and who is trying to teach students that no one lives in igloos, this is a concern. Moreover, it remains that most anthropological work consumed outside of Alaska is in the form of ethnographies—books. Many key Alaska ethnographies, while fascinating reads, leave me with large burning questions such as "how do they make a living?" If the only arctic treatise you read was Mishler and Simeone's *Han: People*

of the River (2004), by all accounts an excellent historical and cultural volume, one might be left with the conclusion that fish wheels were and are purely for subsistence fishing instead of part of long commercial traditions as well. Or if the only book you studied was Jolles's *Faith, Food, Family in a Yupik Whaling Community* (2002), another excellent but stylized ethnography, one might wonder how the people of St. Lawrence Island make a living altogether. She mentions their dependency on cash, but is unclear about its sources. Certainly these volumes are not mainly about economy, but a few textual additions could provide a modern context.

Nevertheless, the scant references on modern economic articulations of indigenous peoples tell quite another story of entangled livelihoods in the commercial and subsistence worlds. Certainly, there is tremendous diversity in these economic practices; local capacities, population density, location, and resources available are just a few of the dimensions affecting this diversity. In the following sections, I consider particular contemporary instances across the Western Arctic in which commercial and subsistence practices occur jointly and are difficult to separate conceptually or practically and which should point towards fresh standards in anthropological research of Western Arctic Native economies.

CUSTOMARY TRADE IN THE NORTON SOUND AND PORT CLARENCE REGION

Customary trade (defined by the state as the exchange of subsistence fish for cash) and barter (the exchange of subsistence fish for items other than cash) (Alaska Statute 6.05.940) has been a widespread practice in the Western Arctic as part of a range of reciprocal exchanges. "Trade fairs" in the Kotzebue Sound region were described in the early nineteenth century, reflecting a redistribution of fish, furs, sea mammal products, and even some minerals (Beechey 1968:290–292). Long-term trading partnerships between individuals were also common (Burch 2006). Skins and sea mammal products were also traded across Bering Strait, including trade for money, since different species and materials were available on either side (Bogoras 1904–9:56). Intensive commercialization of sea mammals and fish in the late nineteenth century diminished overall resource availability, and by Alaska statehood in 1959, in an ironic twist, commercial fishing was allowed and even encouraged while a small-scale individual selling of fish and game was banned for resource protection (Wolfe and Magdanz 1993). This began to change with the Marine Mammal Protection Act of 1972, the Alaska state subsistence law of 1978, and the Alaska National Interest Lands Conservation Act (ANILCA) of 1980, which all included the role of cash in exchanges of subsistence products (Magdanz et al. 2007).

Wolfe and Magdanz (1993) described these exchanges of subsistence foods for small amounts of cash as occurring long before Alaska statehood and even before European contact. It appears that these practices have remained in play as a way to distribute subsistence fish and game to people outside sharing networks, to those who may not be able to fish or hunt for themselves, and to distribute specialty products that are not commercially available (Magdanz et al. 2007). A joint study conducted by the Alaska Department of Fish and Game and Kawerak, Inc. (Magdanz et al. 2007), documented customary trade practices throughout this history and showed how they remain vibrant parts of life on the Seward Peninsula. This study, and studies by Moncrieff (2007) in the Yukon Delta and Kreig et al. (2007) in Bristol Bay, were responses to a research need that arose out of a 2003 Federal Subsistence Board meeting. Customary trade is also provided for under Title VIII of ANILCA, providing for limited sale of subsistence items, but allowable levels were never defined nor does it allow for regional variation. The board called for research projects to provide descriptive information on the nature and extent of customary trade across Alaska, which were then funded through the Federal Fisheries Resource Monitoring Program.

Customary trade practices bring food to houses that might not otherwise have access, they redistribute products such as seal oil and muktuk that are hard to obtain, and they maintain social relationships. "This trade does not appear to be conducted for profit, nor is it conducted in isolation from other subsistence activities" (Magdanz et al. 2007:5). Rates of purchase are determined based upon need or the rarity of the item, but also on an intense awareness of the costs to harvest and process the item as well as the seller's circumstances. As one Shaktoolik man said, "You are always conscious of the cost. Even if muktuk is given to you, you are always aware of how much it cost to get" (Magdanz et al. 2007:40–41).

At the 2007 Arctic-Yukon-Kuskokwim Alaska Board of Fisheries meeting in Anchorage, divisions between commercial and subsistence were blurred by people from the region. Testifiers from western Alaska described subsistence and commercial users as similar or the same people who

have similar problems. They need to replace nets and motors, repair boats, feed and clothe their families, heat their homes, and care for extended relations. A proposal to adopt regulations recognizing customary trade was made in order to "make what is currently in existence legal," stated a woman from Nome, who says her father regularly bought bundles of red salmon from Teller. The proposal writer, also from Nome, described the long history of small-scale customary trade and barter; for example, turning in dried salmon to stores for credit whose owners then sold the salmon to dog-team mail carriers. "Trade for cash" was described as an entrenched part of life, alongside other practices such as barter, a legal practice that includes trading subsistence fish for other fish, food, or nonedible items excluding cash.

While the Board of Fisheries has recognized customary trade in a few cases because of litigation, it is otherwise a Class A misdemeanor, punishable by up to a $10,000 fine or one year in prison. A board member also noted that simply because a practice is widespread does not mean that they should provide a regulation for it. Magdanz et al. (2007) found that some people were reluctant to participate in their study, knowing that most of their customary trade occurred with species harvested on state land. Often, respondents were vague about details or reported that they only did it one time, but then went on to recount other instances (2007:60). Large producers of chinook salmon strips, although well known, did not participate in the study because of the legalities. Despite these widespread practices, law enforcement does not seem to see these as a priority and only became involved in a few egregious cases, preferring "bureaucratic cognitive dissonance" (Magdanz et al. 2007:72). The report's customary trade and barter maps illustrate large networks of traders and buyers, even though the study experienced limited participation and limited revelations about their practices.

The pervasiveness of these practices came to light during discussion sessions at the meeting and when preliminary findings from Magdanz et al.'s (2007) study were presented. Fish are sold at basketball games as a "concession," dried salmon bundles are advertised on grocery store and post office bulletin boards, fish are sold over the phone and air freighted to other villages or to Anchorage, short-term sales are made for money to buy items immediately needed (milk, diapers), and products are sold publicly at the Alaska Federation of Natives annual convention. Products include caribou meat, berries, seal oil, walrus meat, muktuk, whitefish, crab, salmon, moose, halibut, and even some plant species, among many other products.

At the end of the March 2007 meeting, the Alaska Board of Fisheries adopted a new regulation allowing customary trade in the Norton Sound–Port Clarence area, amending the original proposal. The regulation was created July 1, 2007, and requires a permit to sell subsistence-caught fish. Sales cannot exceed $200 in a calendar year, the details of the transactions must be recorded on the permit, all transactions must begin and end in the Norton Sound–Port Clarence area, and no purchased fish can be resold (Magdanz et al. 2007:73).

YUKON-KUSKOKWIM DELTA CUSTOMARY TRADE

A study on the practice of selling subsistence fish in three Yukon River communities (Moncrieff 2007) was also responsive to the Federal Subsistence Board's need for more regional information on the nature of customary trade. Part of Moncrieff's study considered a new rule for fish that is sold to meet health safety standards under the Alaska Department of Environmental Conservation. Moncrieff describes how this rule limits the sale to only whole unfrozen salmon, which is "the customary trade activity that they least consider is a part of their traditional and present trade practices" (2007:3). Nevertheless, Moncrieff documents the nature and extent of customary trade in Alakanuk (Yup'ik), Holy Cross (Yup'ik and Athabascan), and Tanana (Koyukon Athabascan), describing a fluid system with reference to cash and fish. All three communities reported a long history of sale and trade, and these practices continue.

Alakanuk reported the least amount of selling; it is more of an "opportunistic" activity that occurs when someone needs fish and someone is willing to sell it. Customary trade of fish is reportedly more prevalent in Holy Cross, with a greater demand for fish products reported. People reported the same buyers year to year with popular products such as half-dried bellies and smoked strips. Fish are not just sold within the community to family and friends; they are also sold to travelers passing through Holy Cross and to relations in Anchorage. Cash received in Anchorage for the fish is used to cover travel expenses, groceries, and school clothes. Cash from the sale of subsistence fish is also poured back into subsistence gear, gas, and other supplies, making subsistence practices possible. Tanana's customary trade practices are also alive and well, with most people selling within their home or neighboring communities. Many reported that elders and others depend upon them for their fish and they had regular customers. The money

here too was put towards maintaining fish camps as well as other living expenses.

Langdon (1991) conducted a comprehensive study on the role of cash in two Yup'ik communities, still with the guiding notion that subsistence is intact despite expanding economic ties to the larger society. He characterized cash as a major way of supporting the "high degree of subsistence activity and commitment" (1991:270) and considered the sources and quantities of cash for their roles in subsistence, but ultimately found that cash had no significant effect on people's subsistence. Those who were the large subsistence producers were also the largest commodity producers. For those in wage employment, a system of substitute employees filled in during subsistence harvesting time. Langdon found that "the pursuit of cash as end in itself either as a store of value or in order to pursue primarily personal desires is relatively undeveloped" (1991:288), but the situation could be quite different today. Instead, cash is "merely a means to certain specified cultural ends" (1991:288).

In other Yup'ik studies, exchange and sale practices are referenced, but not highlighted. The nature of urban-rural subsistence exchange is introduced as a "cooler ring," in which an urban Native woman takes her cooler filled with, in this case, doughnuts on her journeys to Yup'ik villages and gives them to people who replace them in the cooler with ducks, caribou and seal meat, fish, and berries (Lee 2002). While the costs of this travel, harvesting, freight, and time are implied (as well as dimensions of consumption and social class due to travel and harvesting costs, citing Fienup-Riordan 2000:279), we are left to imagine the keen awareness of these costs that this woman and her sharing network must possess. Days-old doughnuts for seal meat seems like a lopsided exchange. But Lee's article also brings the new Norton Sound–Port Clarence customary trade rule into a more problematic arena. Exchange networks between urban and rural people (see also Fogel-Chance 1993) are allowed if no money is involved under state law, but not allowed if money is exchanged as well. This is not true under federal regulations, further complicating matters for the people in the networks.

Money matters nonetheless. Fienup-Riordan says, "Yupiit in Anchorage with the highest-paying jobs are also those best supplied with Native foods. Rather than spend their money on steaks at the store or dinners out, they save for four-hundred-dollar plane tickets for hunting trips and berry-picking expeditions," and these foods are shared across Anchorage (2000:162). Villagers also go to Anchorage to "'harvest' what they need for multivillage exchange dances, spring seal-party giveaways, and Russian Orthodox Christmas feasts. During a long weekend in town a couple may spend money earned fishing commercially or cash annual Alaska Permanent Fund Dividend checks to buy and ship cases of everything from Pampers to pilot bread back to the village" (2000:162).

There is time depth to these trade, sale, and exchange practices as well. In the Yukon and Kuskokwim Delta, Wolfe (1984) provides a good treatise of resource commercialization as it relates to subsistence practices, even though he starts with the premise that Yup'ik society was integrating a "new economic enterprise" into its subsistence-based economy and that a transformative power of the commercial arena places these systems in opposition. Still Wolfe does identify local trade of dried salmon (to feed dog teams), sea mammal oils and skins, and reindeer skins among other products at the time of contact, although with an indeterminate volume (Wolfe 1979, 1984).

FISHING AND SHARING IN AREA M

The scale at which the Aleut combine commercial and subsistence practices makes them a very interesting case. In the eastern Aleutian region, known by its state Board of Fisheries designation as Area M, the Aleut engage in intensive commercial fisheries for salmon, crab, halibut, cod, pollock, and herring. Commercial fishing is more than an economic base that allows people to afford to harvest subsistence resources, it is a cultural foundation encompassing family, politics, education, material culture, diet, and economy. The majority of fish enters the villages on commercial boats, captured using commercial gear, during commercial openings, and is delivered to the cannery dock using cannery personnel and equipment such as bags and bins (Reedy-Maschner 2010). This is a legal practice, and canneries help facilitate the movement of fish from boat to household. While the Aleut are limited to 250 subsistence salmon using subsistence gear, no limit exists for subsistence fish taken using commercial gear, although quantity is determined by need and rarely exceeds the subsistence limit.

The villages are located in areas that are perfect for canneries but are not particularly good locations for subsistence harvesting. When out on their boats, fishermen and crewmen often use time between fishing openings to harvest other species from nearby beaches and uplands. Bags of bidarkis (black katy chitons), cuttlefish (small octopus), clams, and numerous other resources are frequently handed over on the docks along with salmon after the

end of a commercial opening. Fishermen may also set nets near shore with skiffs, but only in good weather.

Fishermen also sell fish and shellfish (especially crab) to cannery workers. These are not conceived of as "side businesses," but the workers want the food and the fishermen are in a position to supply them. Rates are variable depending upon the species and the need. Mass quantities of salmon, crab, and halibut, for example, also travel in coolers out to Anchorage and to a sizeable Aleut population in the Pacific Northwest for both sharing and sale. All of these activities are mixed seamlessly and with banality; it is simply what you do.

Historical dimensions contribute to the modern scale of commercialization. The Aleut were well versed in trade before Russian contact in 1741. They were complex foragers who traded fish, sea mammals, raw materials, women, and slaves to create alliances between villages and for chiefly self-aggrandizement (Jochelson 2002; Maschner and Reedy-Maschner 2005; Veniaminov 1984). Initial contact between Russians and Aleuts involved conscripting Aleut men as hunters and producers for the Russian Crown. Russians married Aleut women and produced several "Creole" generations; these descendants also became ship's captains and merchants within the Russian-American Company. The American period also began with Aleut and Creole participation in commercial fisheries and fur seal industries. Salmon were a commercial commodity for the complex foragers of the North Pacific Rim for millennia, and the market-driven global salmon economy began in the 1890s as a byproduct of the Sea of Okhotsk/North Pacific cod and halibut fisheries.

In contrast to the Yupiit and Iñupiat, the Aleut are not commodifying subsistence foods; rather the people, gear, fish, and other subsistence foods are so intertwined that disentangling the commercial and subsistence as two separate systems is difficult (and unnecessary).

YUKON RIVER ATHABASCAN ECONOMIES

Priscilla Wheeler (1998) gives the most thorough example of a single economic system comprising fish, game, and cash in four Deg Hi'tan and Doy Hi'tan Athabascan villages of the lower Yukon River. For Wheeler, cash is derived from sources such as limited wage employment, craft sales, commercial sale of fish and furs, and state and federal transfers. Game is hunted in season and fish are harvested when running up the rivers. Thus all resources, including cash, are seasonally and variously available. "Once in the system (regardless of how it got there), cash is a resource like any other resource" (Wheeler 1998:35).

By documenting resource and land use for these four communities alongside the costs and the sources of cash, Wheeler is able to show that cash and capitalism have not corrupted or dominated a pure subsistence economy; rather, they are simply another facet of the economy. Cash value is not strictly monetary, nor is it fixed.

> When cash is limited, expenditures are minimized; and other resources are maximized. Similarly, when cash is commonly available, for example, after a 'good' fire fighting season or when Alaska Permanent Fund dividend cheques are received, expenditures tend to be high; and the force on other resources may not be as intense. In a sense, when cash is available, investment in the necessary equipment required for efficient subsistence utilization effectively banks or caches a resource (cash) for future use. Similarly, when moose or fish is in large supply, the meat is banked for future use by being made into dry meat or dried fish. The resource form is changed (fresh meat to dry meat; cash to boats, snow machine, etc.) to accommodate future use. Viewed within a common framework, household monetary income and subsistence yield (resources harvested) are complementary aspects of a single system; i.e., the total economy of the communities. (Wheeler 1998:142–143)

In contrast, Phyllis Fast (2002) characterizes participation in a cash economy as a form of "addiction" on par with substance abuse for the Koyukon Athabascans. The dollar, she argues, both erodes and replaces trade partnership and alliances. However, she places her study communities squarely within a world where one must have money for housing, transportation, freight charges, clothing, and fishing licenses, listing actual costs and the sources of cash. She describes how wooden houses have replaced skin tents and must now be electrified, plumbed, filled with "mainstream furniture" (2002:116), heated, and maintained, but all of this must come at great expense and drives their need for cash. Initially people may have been moved into more modern homes by the government against their will, but I suspect it is the desirable thing today. Still, for Fast, the use of cash is assimilating, and she argues that Athabascans themselves do not fully understand what they are participating in, which leads to other negative behaviors such as bootlegging and gambling. While I do not doubt that there are social struggles occurring in these communities, cash as the corrupting element seems too simplistic an explanation.

THE PRICE OF WHALING

In the Alaska Arctic, Bodenhorn provides a fine example of the "costs of sharing" (2000) in which she describes how "whaling wealth," previously earned through selling whaling products, now must be earned elsewhere. Any financial returns from whaling cannot be used to fund whaling expeditions. Whaling is expensive and risky, since a positive outcome is not guaranteed. Bodenhorn lists the commitments of time and energy required for men and women, such as maintaining a boat or sewing skin clothing. She also lists the actual items that need to be purchased in order to whale, such as coffee, tarpaulins, outboard motors, fuel, camp stoves, and ammunition. The different seasons and ecological conditions demand different preparations and equipment.

> Just as it is impossible to separate fully "cash" and "subsistence" economic spheres in social life, it is virtually impossible to separate fully "whaling" and "other" subsistence costs. Tools, rifles, trucks, snow-machines and the like are certainly used for activities that are not necessarily in support of whaling. But whaling could not happen without them and so, at some level, need to be taken into account. (Bodenhorn 2000:6–7)

While Bodenhorn resists listing the actual costs in dollar amounts, she emphasizes the large organizational efforts requiring people and things. On the other hand, these whaling communities are long distances from regional centers, and most equipment is air freighted from Fairbanks to the villages at high costs. I suspect there is a keen awareness of the dollar value of these items.

WESTERN CANADIAN CASES

In the western Canadian Arctic, the Inuvialuit Harvest Study (IHS) defines subsistence in a cooperative document called the Inuvialuit Final Agreement (IFA) between federal and local bodies as "the taking of wildlife by Inuvialuit for their personal use for food and clothing and includes the taking of wildlife for the purpose of trade, barter and sale among Inuvialuit and trade, barter and sale to any person of the nonedible byproducts of wildlife that are incidental to the taking of wildlife for their personal use" (IFA section 2, IHS 2003:7). For the purposes of the study, hunters were asked to keep a daily record of their harvests. The hunters were not asked to report small or large-scale commercial harvests of fish and game such as caribou and musk oxen, nor were they asked to report the disposition of the harvest (for personal or family consumption, gifts, barter, or commercial sale) but they did anyway. Separation "on the ground" was difficult for the hunters, so they reported what they did.

Richard Condon (1996) described the transformations of the Northern Copper Inuit in the community of Holman as rapidly moving from an "isolated trapping and trading outpost" to modernized with television, telephone, and daily air service in a thirty-year period (1996:159). Snowmobiles replaced dog teams, large plumbed and electrified housing units were constructed, and Holman was incorporated as a hamlet. Their economy has also experienced changes, but the before and after picture painted by Condon is one of scale, not necessarily transformation. Before these changes in the community, "Holman residents supported themselves by subsistence hunting, trapping, limited arts and crafts production, and modest amounts of social assistance" (1996:172–173). After the community "modernization" he describes, these practices became more secure and were supplemented with employment in housing, health care, local government, and education.

As Condon et al. (1995) describe,

> Holman Inuit use the term subsistence in everyday conversation, but are less likely to engage in the hairsplitting that is characteristic of subsistence researchers, government administrators, and wildlife regulators, all of whom often distinguish between hunting for domestic consumption (thus subsistence) and harvesting that ultimately involves selling animal products for cash (therefore commodity production). While this may at times be a useful conceptual distinction, we documented many cases in which hunters were involved simultaneously in both activities. (1995:44)

Thus, sale of "country food" is common across the Canadian Arctic (Condon et al. 1995). In Nunavik, the moral imperative to share foods is tempered by an institution that buys country foods and then gives them away (Gombay 2005).

ECONOMIES

"Mixed economy" has been used to describe contemporary Alaska Native subsistence and commercial practices, since they often go hand-in-hand (e.g., Dinero 2004; Langdon 1986; Wolfe and Ellanna 1983), but in ethnographic description, monetary/commercial is still often separated

from subsistence/noncommercial. Wheeler challenges the treatment of subsistence and cash sectors of the economy as separate in these ethnographies, saying that "the relationship between the two is typically characterized as a fragile balance and a transitory state" (1998:259). She aptly roots this dichotomy in the "transformative powers" (citing Bohannan 1967) that cash is assumed to have, arguing that it is the ethnographers that bring the "western cultural baggage" attached to cash (1998:259).

> On the other hand, assuming cash enters the local system absent its associated western values/understandings, then the transformative powers would, in fact, be negligible. It is not the cash per se, but its associated meaning and values, which potentially undermine local economies. If western values are not attached to cash, and cash is instead imbued even partly with local values, then it logically follows that the use of cash in and of itself would not spell demise of the local economy; but could, in fact, support it. (Wheeler 1998:259–260)

Echoing Wheeler in Alaska and arctic anthropologists outside of Alaska (especially Dahl 1989), I am suggesting that this division need not be made at all, because it obscures a range of critical socioeconomic behaviors. The Aleut present the clearest case of these economic amalgamations, but the grey and dissertation literature shows how many other societies in the Western Arctic merge these practices with equal ordinariness.

Another consideration for why Alaska anthropologists omit large dimensions of the stories from their field sites has to do with how the Arctic, and Alaska specifically, might still hold a special significance for anthropologists (Riches 1990). During Fienup-Riordan's 2006 American Anthropological Association presentation on traditional landscapes as viewed by the Yup'ik of Nelson Island, she set the scene by describing the communities and people on the island and how most homes have satellite televisions and computers with internet access. A wave of incredulity spread across the room.

If we step outside the Western Arctic, these economic distinctions are not made (Caulfield 1993, 1997; Dahl 1989, 2000; Gombay 2005; Wenzel 1991; Ziker 2002), practices that Magdanz et al. (2007) were keenly aware of. They had been seeing, and perhaps answering, local advertisements in the Norton Sound area stores selling dried salmon bundles for many years.

> We knew that small quantities of subsistence foods often were sold person-to-person throughout Alaska. We knew that in Inuit communities in Canada and Greenland, "country food" sales were permitted and routine. We knew that in Alaska, such sales had been prohibited by state regulation for decades. Nonetheless, people kept buying and selling: a bundle of salmon, a sack of frozen cod, a jar of seal oil, or a bucket of berries. Rarely was anyone cited, even when products were sold at public venues like the annual Alaska Federation of Natives convention. (2007:72)

Maintaining low levels of sale is necessary because the state cannot legally provide a commercial opportunity to a select group of people. Legal issues notwithstanding, customary trade still strikes me as a technical guise for commercial practices; the term allows anthropologists to document the practices without using the "commercial" word, and the people themselves can still do commercial things they can call "customary and traditional."

Many arctic peoples have faced difficulties in the commercial world. For example, many indigenous Canadians who were part of a local subsistence-commercial economy in which the furs were sold and the meat was consumed were negatively affected when the European Economic Community boycotted the sale of furs and the fur markets plummeted in the 1980s (Wenzel 1991). Today, there has been an acceleration in development involving oil, natural gas, and minerals in the Arctic, and Native peoples are sorting out their roles relative to these changes (e.g., Dinero 2005; Stern 2006).

In Alaska, Native identity is sometimes used to promote the sale of wild fish. At the corporate end of the spectrum, for example at the Boston International Seafood Show, Kwik'pak Fisheries and Aleutia, Inc., were among several Alaska local value-added processing companies who are breaking into upscale seafood markets (Lee 2008). Aleutia was created, managed, and is supplied by Aleut fishermen of the North Pacific/Southern Bering Sea. It is marketed with statements such as "Aleut fishing families from the remote coastal villages . . . share with you their most treasured resource" (www.aleutia.org). Kwik'pak fish are also caught by Yup'ik Eskimo fishermen in the Yukon River Delta and marketed as rich in oils, delicious, and coming from the "cradle of Eskimo civilization" (kwikpakfisheries.com).

CONCLUSION

Among Native peoples of the Arctic, wild resources are foundations for multiple societies that are variously managed,

harvested, processed, consumed, gifted, traded, and sold. In the Western Arctic, Inuit, Yup'ik, Iñupiaq, Athabascan, Alutiiq, and Aleut peoples each harvest, consume, trade, share, and sell mass quantities of the five species of salmon (Langdon 1986; Reedy-Maschner 2010; Wolfe 1984). Non-Native peoples also engage in the commercial, subsistence, and sport salmon fisheries in diverse ways and variously fish alongside and in opposition to Native people. Rather than begin with the assumption that cash has been integrated into local economies, and then evaluate whether it enhances or destroys local culture, it is more useful to start with one economy and explore its operation, meaning, and value.

The subsistence-commercial division in Alaska is partially a product of state and federal management and has been criticized by anthropologists for the way subsistence is defined. But when "righting" the problem, anthropologists further "authenticate" the people and swing too far towards the perceived "traditional" to document sharing, well-being, mental health, community, and ideology. When money is involved, the practice gets categorized as nontraditional, further removing Native people from the modern world. Anthropologists perhaps bend over backwards to insist that traditions are alive and well, but step over other key practices to get there.

Biased portrayals can harm those societies that do not market their representations in particular ways, since others expect them to mirror "timeless peoples" and are disappointed to find them watching American Idol, eating tacos, and using GPS on hunting trips. The Aleut have certainly faced difficulties for not behaving as expected in negotiating access to fisheries (Reedy-Maschner 2010). Further, during the 1997 autumn whale hunt in Barrow, for example, Bodenhorn (2000/2001) photographed a bowhead whale being transported from the shore to the butchering site with a front-end loader. This scene disappointed outside spectators, and it should not have. Hopefully Bodenhorn's descriptions of Iñupiaq tradition as "the customary practice of change—of the constant modification of the things people do when whaling and of the technology they incorporate to do it" (2000/2001:25) will reach wider audiences.

In the Aleutians, if you ask someone to talk about their "subsistence lifestyle," the description you get is very limited, and I suspect this is the case across Alaska. Leaving the question more open-ended by asking about daily routines, activities, where things come from, how they acquired certain possessions, for example, leads to richer responses. Economies surrounding harvested wild foods have variously and necessarily involved barter and sale that can be related to, or outside of, sharing practices: these practices redistribute goods, solidify relationships across and between communities, and provide needed income, among many other purposes. If we can get beyond the subsistence-commercial dichotomy and start thinking about whole systems, then, like Mullins (2007), we can better address some of the other sociocultural and behavioral issues.

The discussion here is far from exhaustive, but the works cited represent some of the rare published and grey literature examples of western arctic peoples embedded in broad economic activities in which the people, relationships, hunting and fishing equipment, money, and food are all intertwined. These challenge many key and even "definitive" ethnographies and disarticulate the Alaska arctic anthropological notion of the "traditional."

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