10 THE MICROBLADE COMPLEXES OF ALASKA AND THE YUKON: EARLY INTERIOR AND COASTAL ADAPTATIONS

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INTRODUCTION

In his 1999 survey of microblade sites in Alaska, Cook (1999) noted that there were over 650 sites that contained microblades. His site listing, derived from the Alaska Historical Resources Survey, did not extend to sites in the Yukon Territory, British Columbia, or Siberia (Cook 1999). While only about 10% of the reported Alaskan sites with microblades or microblade cores had been dated, Cook (1999) noted that there was a wide range of dates with the earliest occurrence of microblades around 12,000 BP and the most recent at 300–400 BP. Some of the late dates for microblades, however, appeared to be questionable due to site disturbance, non-cultural (wildfires) charcoal samples, problems with sample selection, and undetermined factors.

THE CAMPUS SITE AS A LATE DENALI OCCUPATION

A good example of a reportedly questionable late occupation with microblades is the Campus site (Figure 10.1:1) in Fairbanks (Mobley 1991, 1996). Dates for the site were discordant, with the lower 20–30 cm of the site dating to 2725 ± 125 BP (Beta–7075), 40 ± 110 BP (Beta–10878), 240 ± 120 BP (Beta–7224), and 3500 ± 140 BP (Beta–6829) (Mobley 1991, 1996). The younger dates were discarded resulting in an age estimate of 2700 BP to 3500 BP for the microblade component, or roughly around 3000 BP (Mobley 1991, 1996). The assemblage contained side-notched points and tabular cores of the Northern Archaic tradition as well as tool forms typical of the Denali complex (West 1967), i.e., wedge-shaped, frontally fluted microblade cores, microblades, Donnelly burins, flat topped scrapers, and lanceolate bifaces (Mobley 1996) prompting Mobley (Mobley 1991, 1996) to consider that the Campus site had been occupied "around 3000 years ago by people who practiced several lithic technologies, including microblade technology" (Mobley 1996:301). In my review of Mobley's 1991 Campus site monograph (Ackerman 1992a), I found difficulties with this interpretation as the author suggested that the Denali complex type of microblade core (a frontally fluted, wedge-shaped core with a pronounced keel and core rejuvenation by platform tablet removal) was in use as late as 3000 years ago when elsewhere in Alaska Denali type microblade cores had been replaced by tabular, prismatic, conical to cylindrical, and blocky types of microblade cores associated with the Late Tundra (c. 8000–6000 BP), Northern Archaic (c. 6000–4000 BP), and Arctic Small Tool (c. 4000–3000 BP) traditions (Ackerman 2001a; Anderson 1988; Campbell 1962; Irving 1962). Subsequent re-excavation of the Campus site resulted in a new date of 6850 ± 70 BP (Beta–97212) (Pearson and Powers 2001) and a re-evaluation of the site assemblage. As the investigators noted, "the Campus site contained either early to mid-Holocene occupations of the Denali complex and Northern Archaic tradition, or one or more early Northern Archaic occupation(s) that included microblades from wedge-shaped cores" (Pearson and Powers 2001:100). While the c. 6800 BP date

increased the age of the Campus site by several thousand years (Pearson and Powers 2001), the investigation did not clarify the association of Denali and Northern Archaic tradition tool forms. Did the hallmark of the Denali complex, the wedge-shaped, frontally fluted microblade core whose platform was rejuvenated by the removal of platform tablets, persist into the middle and perhaps into the Late Holocene (Dixon 1985), at a time when other microblade core types belonging to later cultural traditions were present? Also troubling are the relationships between microblade and non-microblade cultural complexes/traditions, but more of this later.

ASIAN ORIGINS

While there are questions regarding the initial dating of microblade technology in Alaska and the adjacent Yukon Territory, there is general agree-

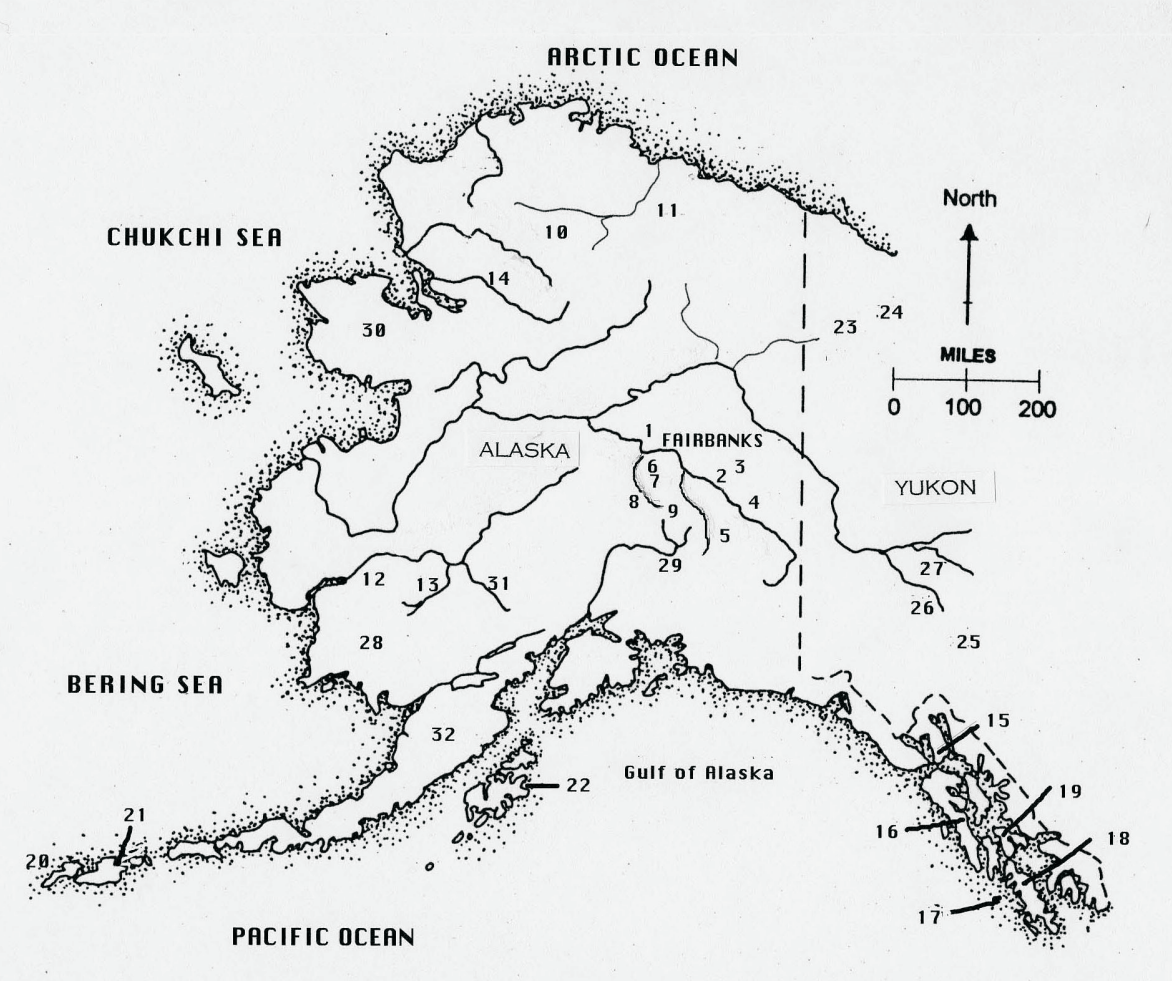

Figure 10.1: Alaskan and Yukon sites mentioned in text.
(1) Campus, (2) Broken Mammoth, (3) Swan Point, (4) Healy Lake, (5) Donnelly Ridge, (6) Moose Creek, (7) Walker Road, (8) Little Panguingue Creek and Panguingue Creek, (9) Dry Creek, (10) Mesa, (11) Putu-Bedwell, (12) Spein Mountain, (13) Ilnuk, (14) Onion Portage, (15) Ground Hog Bay 2, (16) Hidden Falls, (17) Chuck Lake, (18) Thorne River, (19) Irish Creek, (20) Anangula, (21) Hog Island, (22) Rice Creek and Zaimka Mound, (23) Bluefish Caves, (24) Rock River, (25) Annie Lake, (26) Kelly Creek, (27) Otter Falls, (28) Kagati Lake, (29) Whitmore Ridge, (30) Trail Creek Caves, (31) Lime Hills Cave 1, (32) Naknek and Ugashik River sites.

ment that the technology has Asian origins. What is open to question is whether the microblade complex, known as Dyuktai in Siberia (Mochanov and Fedoseeva 1996) and the American Paleoarctic (Anderson 1970a) or Denali (West 1967) in Alaska, represents the tool kit brought in by the entry population or whether it is an addition to a core and blade technology utilized by already established occupants (Müller-Beck 1982).

Nelson (1937) was the first to note similarities between the microblade cores from the Campus site (Figure 10.1:1) and those microblade cores that he recovered from undated contexts in Mongolia. Investigations conducted in the Aldan River region of Yakutia (Dyuktai culture; Figure 10.2:1–8) (Mochanov and Fedoseeva 1996) and in the lower Amur River region of the Russian Far East (Selemdga sites; Figure 10.2:9) (Derevianko 1996) have revealed the presence of frontally fluted, wedge-shaped microblade cores with the platform rejuvenated by the removal of platform tablets (the hallmark of Dyuktai and Denali complexes) by at least 20,000 BP. Archaeological sites with Dyuktai-like microblade cores in Chukotka (Dikov 1985, 1988, 1996, 1997; Figure 10.2) indicate an eastward expansion of the Dyuktai complex, but, unfortunately, none of these sites have been dated. Dikov (1997), through morphological comparisons, equated the Chukotka microblade complexes with the Late Ushki Palaeolithic culture (level 6 of the Ushki sites) of Kamchatka (Figure 10.2:10). Level 6 has been dated at 10,360 ± 220 BP (MAG–401) and 10,760 ± 110 BP (MAG–219) (Dikov 1996; Dolukhanov *et al.* 2002; Kuzmin 1994; Vasil'ev *et al.* 2002). A recent date average of 10,350 ± 30 BP (Goebel *et al.* 2003) for level 6 of the Ushki site complex supports the earlier assessment. Given that the microblade component in the Swan Point site in central Alaska dates prior to c. 12,000 BP (Holmes *et al.* 1996), it would seem that the Late Ushki Palaeolithic culture of Kamchatka represents a side branch off the main route of cultural transmission. It would appear that an early group of people with a Dyuktai based tool kit initially bypassed Kamchatka in their move eastward onto the Beringian platform and thence into Alaska by before 12,000 BP. This script ignores the enigmatic level 7 of the Ushki 1 site (Figure 10.2:10) with its stemmed points and proposed dates of 14,300 ± 200 BP (GIN–167) and 14,200 ± 700 BP (MAG–550) (Dikov 1996) and the lack of fit of the level 7 inventory within either the Siberian or Alaskan chronological sequences.

THE PROBLEM OF EARLY CONTEMPORARY CULTURAL COMPLEXES IN ALASKA

The arrival time of the earliest Asian immigrants in Alaska and what they brought with them is then a continuing research problem that seems to be redefined as each new site is uncovered. At present, there are three Alaskan cultural complexes (Denali, Nenana, and Mesa) whose advocates vie for cultural priority, setting forth hypotheses regarding the early settlement of Alaska. The first hypothesis is that the entering or founder populations of Upper Palaeolithic folk brought with them a tool kit containing bifaces as well as microblades (Denali complex sites, Figure 10.1: 1–6, 8–9, 13–16, 19, 30–32, Figure 10.3) (Ackerman 1996d; Anderson 1988; Dumond 1981; Henn 1978; Larsen 1968; West 1967, 1975, 1981, 1996a). Advocates of the second hypothesis postulate that Alaska was first occupied by Upper Palaeolithic hunter-gatherers with a complex distinguished by small triangular or ovate bifacial points (Chindadn points) and tools made on blades (Nenana complex sites, Figure 10.1: 2–4, 6, 7, 9, Figure 10.4) (Cook 1969, 1996; Goebel *et al.* 1991, 1996; Goebel and Slobodin 1999; Hoffecker *et al.* 1993, 1996; Powers *et al.* 1983, 1990; Powers and Hoffecker 1989; Yesner 2001; Yesner *et al.* 1992). No microblades were found in Nenana complex assemblages. The third hypothesis for an early settlement of Alaska sharply diverges from the other two. Rather than focusing on movements out of Asia, investigators working in the central Brooks Range of northern Alaska (Mesa complex sites, Figure 10.1:10–11, Figure 10.5) and southwestern Alaska (Spein Mountain site, Figure 10.1:12, Figure 10.6) have stressed the importance of an early in-place Paleoindian type of adaptation (Mesa complex with a cluster of dates between c. 10,300 BP and c. 9700 BP, but with two early outliers at c. 11,700 BP and c. 11,200 BP) (Ackerman 1996b, 2001b; Bever

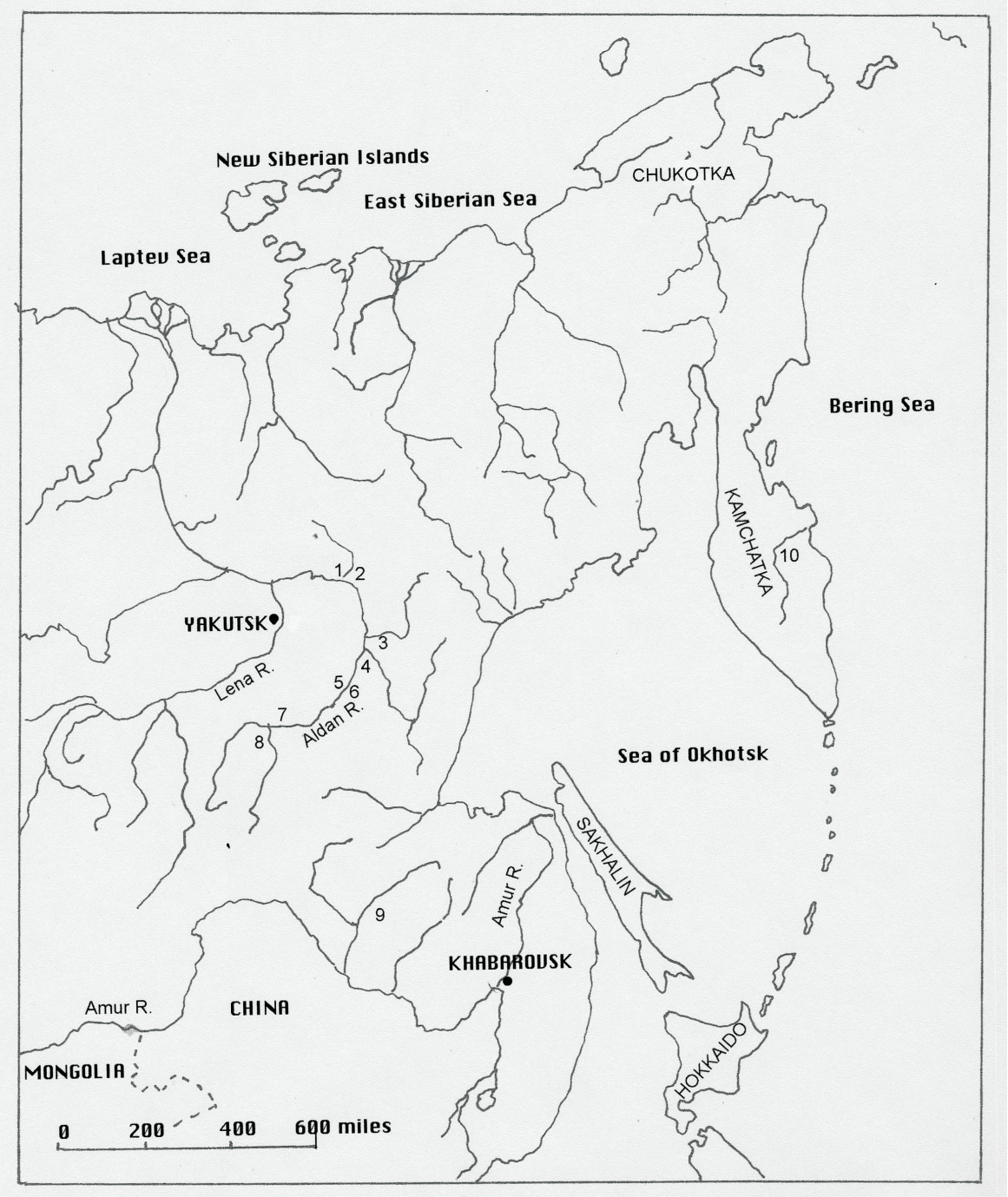

Figure 10.2: Siberian sites mentioned in text.
Dyuktai sites: (1) Ikhine 2, (2) Ikhine 1, (3) Ezhantsy, (4) Verkhne-Troitskaya, (5) Ust-Mil 2, (6) Dyuktai Cave, (7) Tumulur, (8) Ust-Timpton.
Selemdzha sites: (9) Ust-Ul'ma 1 and 2.
Ushki sites: (10) Ushki sites: Ushki 1–5.

2000; Kunz *et al.* 2003; Kunz 1982; Kunz and Reanier 1996; Reanier 1995, 1996; Reanier and Kunz 1994). The Mesa complex is characterized by an emphasis on lanceolate bifacial projectile points, bifacial knives, scrapers, gravers, burins, and notches (Ackerman 1996b, 2001b; Bever 1999, 2000, 2001; Kunz *et al.* 1999, 2003; Figures 10.5 and 10.6), and does not appear to have any apparent links to either the Denali or Nenana cultural complexes. The Mesa complex is seen as a Paleoindian cultural expression based on similarities with the techno-complex of late Paleoindian sites to the south and reflects adaptations made during the terminal Pleistocene (Bever 1999, 2000, 2001). The relatively short temporal interval of the Mesa complex occupation from c. 10,300–9700 BP (aside from the c. 11,000 year old outliers) as opposed to the longer duration of the Denali complex, is regarded as evidence of a very transitional cultural complex occasioned by the movement of Paleoindians from the south (Bever 2001) or by the movement of Alaskan Paleoindians to the south (Kunz *et al.* 2003). Whatever the source or trajectory of the Mesa complex, suffice it to say that during the period from 12,000/11,000 BP to 9000 BP in Alaska there were three rather distinctive technological traditions whose cultural relationships have yet to be determined. West (1996b) included the Denali, Nenana, and Mesa complexes in his Beringian tradition, while Holmes (2001) grouped all three within his Beringian period, both schemes thus avoiding the question of cultural relationships. Kunz (Kunz *et al.* 2003) made Denali a part of the Nenana complex, but left the Mesa complex as a separate entity.

INTERIOR ALASKAN MICROBLADE COMPLEXES

While consideration of these three contemporaneous cultural complexes at the end of the Pleistocene is certainly worthy of further exploration, I now turn to the specifics of microblade complexes and their place in the early prehistory of Alaska. Recognizably, the Denali complex (West 1967, 1975, 1981, 1996a) is the most widespread of the early cultural complexes with sites found throughout Alaska and into adjacent Yukon Territory. Regional differences in the site assemblages as well as placement within the temporal sequence are evident. At the Onion Portage site in northwestern Alaska (Figure 10.1:14), for example, wedge-shaped microblade cores and microblades were associated with face-faceted blade cores and blades in the Akmak component dating to 9570 ± 150 BP (K–1583) (Anderson 1970a, 1988; Figure 10.7:g–l). The association of microblades with blades from epi-Levallois-like cores led Anderson (1970a) to create the American Paleoarctic tradition. Microblade technology without the associated blade industry continued into the later Kobuk component (c. 8200–8000 BP) of the American Paleoarctic tradition (Anderson 1988; Figure 10.7:a–f). Anderson's (1970a) concept of the American Paleoarctic tradition proved to be too broad to fit the site assemblages discovered in the Tangle Lakes area of south-central Alaska (Figure 10.1:5). Here there were sites with microblades and bifaces, but without an associated blade industry prompting West (1967, 1975, 1981, 1984, 1987, 1996a, 1996b) to create a new archaeological complex, the Denali complex dating to between about 9500 BP and about 10,000 BP. Somewhat earlier dates were recovered from level 2 of the Dry Creek site (Figure 10.1:9, Figure 10.3) in the Nenana River valley of central Alaska, extending the age range to 10,690 ± 250 BP (SI–1561) (Hoffecker *et al.* 1993, 1996; Hoffecker 2001; Powers *et al.* 1983; Powers and Hamilton 1978). The basal dates for the Denali complex covered between c. 10,600 BP and c. 10,500 BP until charcoal samples from the lowest level of the Swan Point site (Figure 10.1:3, Figure 10.8) on Shaw Creek in the Tanana River valley of central Alaska provided new ^{14}C age estimates (Holmes 1998, 2001; Holmes *et al.* 1996). Recent investigations in the lowest cultural level, zone IV (Denali complex), resulted in the recovery of wedge-shaped, frontally fluted microblade cores, ridge flakes, platform tablets, transverse and dihedral burins (Figure 10.3:l–o), hammerstones, and cobble choppers/scrapers (not illustrated in Figure 10.3) with dates in excess of c. 12,000 BP (Holmes 1998, 2001; Holmes *et al.* 1996; C.E. Holmes personal communication 2003). A clear stratigraphic interval separates

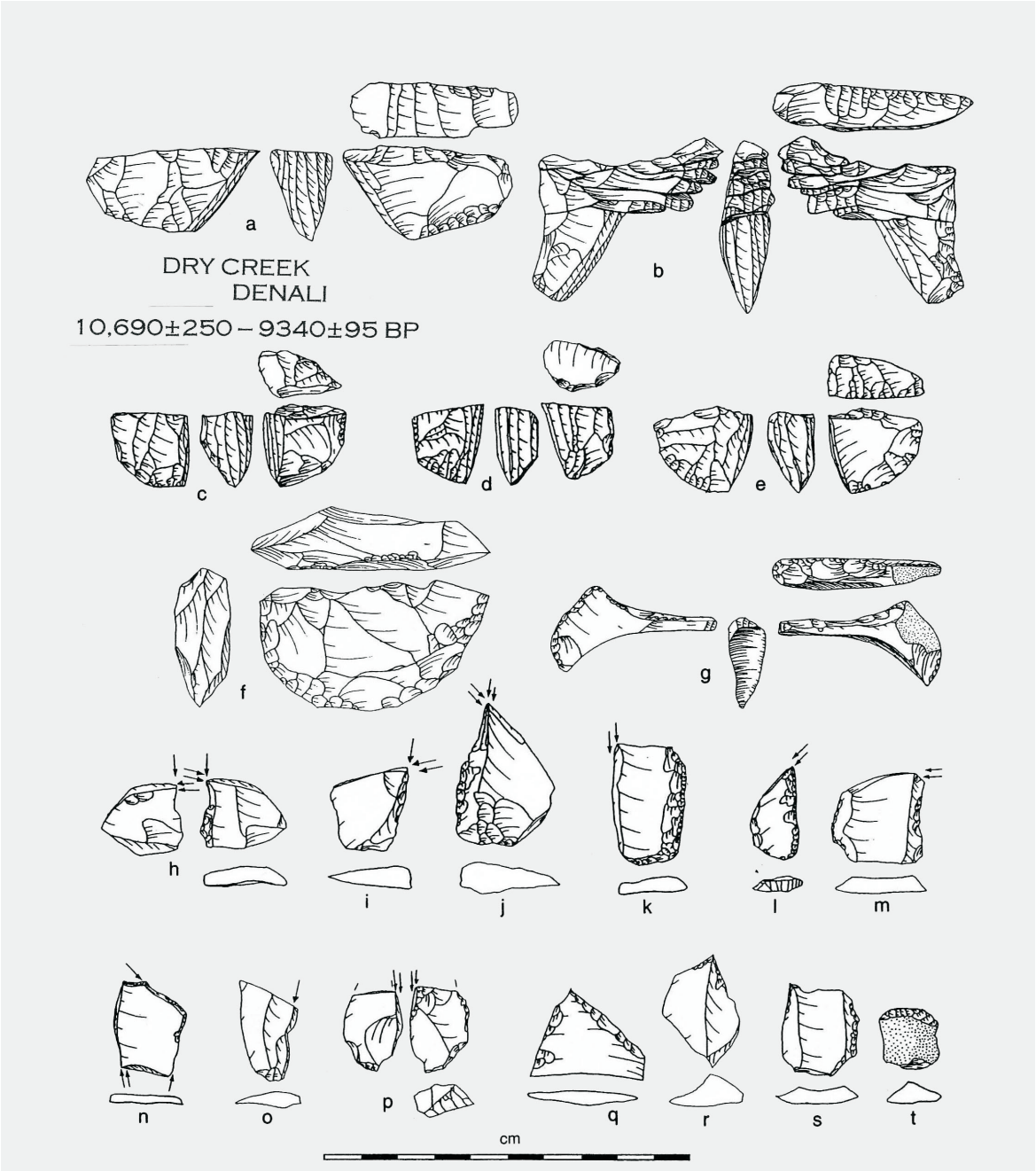

Figure 10.3: Denali component of the Dry Creek site.
Wedge-shaped microblade cores (a-e, b with attached core tablets), wedge-shaped core preform (f), core tablet (g), burins (h-p), retouched flakes (q-s), end scraper (t) (after Hoffecker *et al.* 1996).

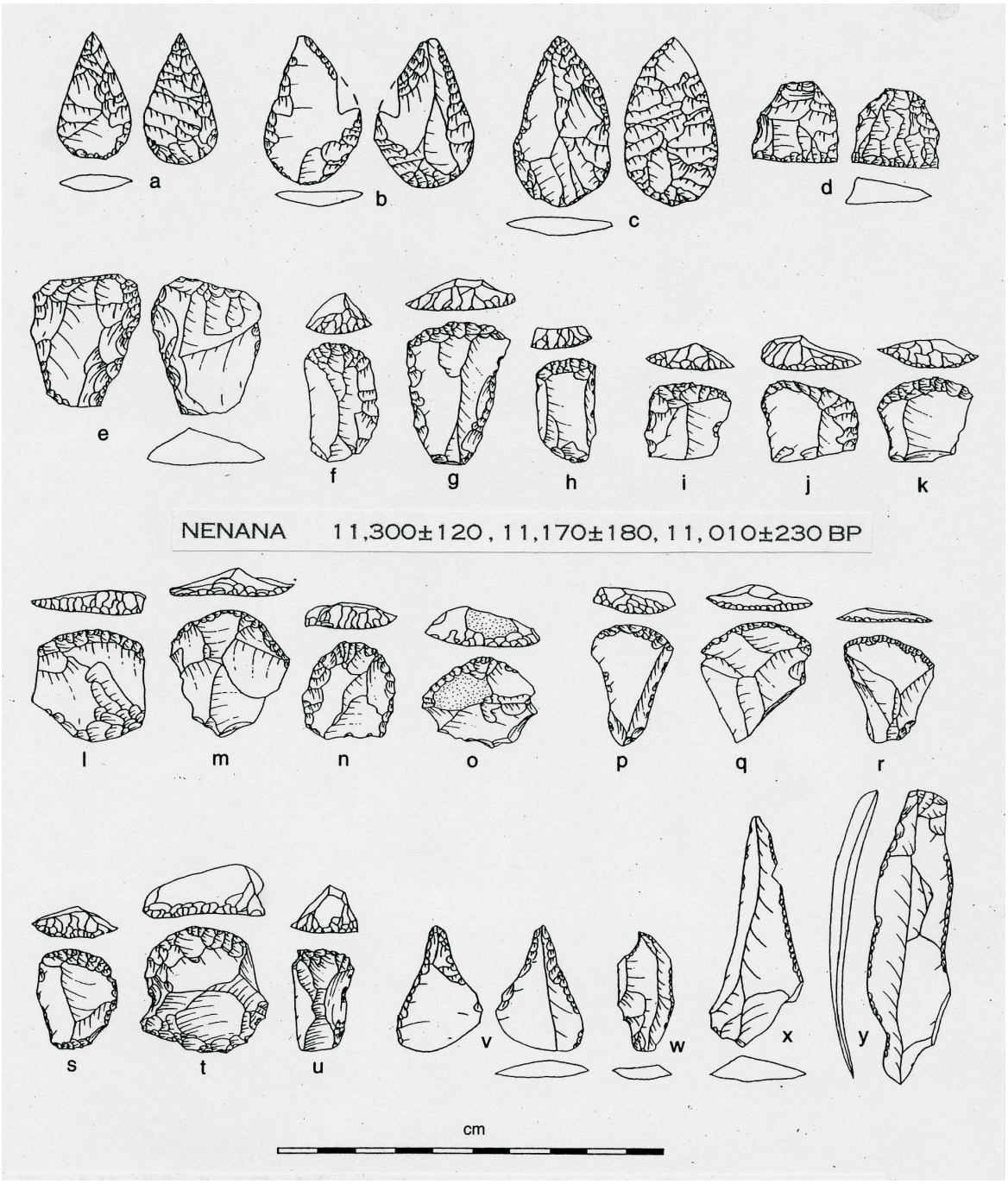

Figure 10.4: Nenana complex at the Walker Road site.
Chindadn projectile points (a-c), wedges (d and e), end scrapers on blades (f-k), end scrapers on flakes (l-u), perforators (v and w), retouched blades (x and y) (after Goebel *et al.* 1996).

cultural zone IV from cultural zone III where a Nenana complex (Figure 10.8:d–k) with small triangular to ovate bifacial points, basal fragments of lanceolate to concave based projectile points, and large bifacial scrapers or choppers, has been dated at 10,280±80 BP (Beta–56666) (Holmes 1998, 2001; Holmes *et al.* 1996:322).

The Swan Point sequence, however, appears to differ from those of other sites where Nenana underlies Denali. The Broken Mammoth site (Figure 10.1:2), also on Shaw Creek and downstream from the Swan Point site, contained a Nenana complex (Figure 10.9:m–q) in level III that dated to between 10,270±110 BP (WSU–4263) and 10,790±230 BP (WSU–4019). Level IV, dating to between 11,040±80 BP (CAMS–7203) and 11,770±210 BP (WSU–4351), contained, besides chipping debris, a core/scraper, a

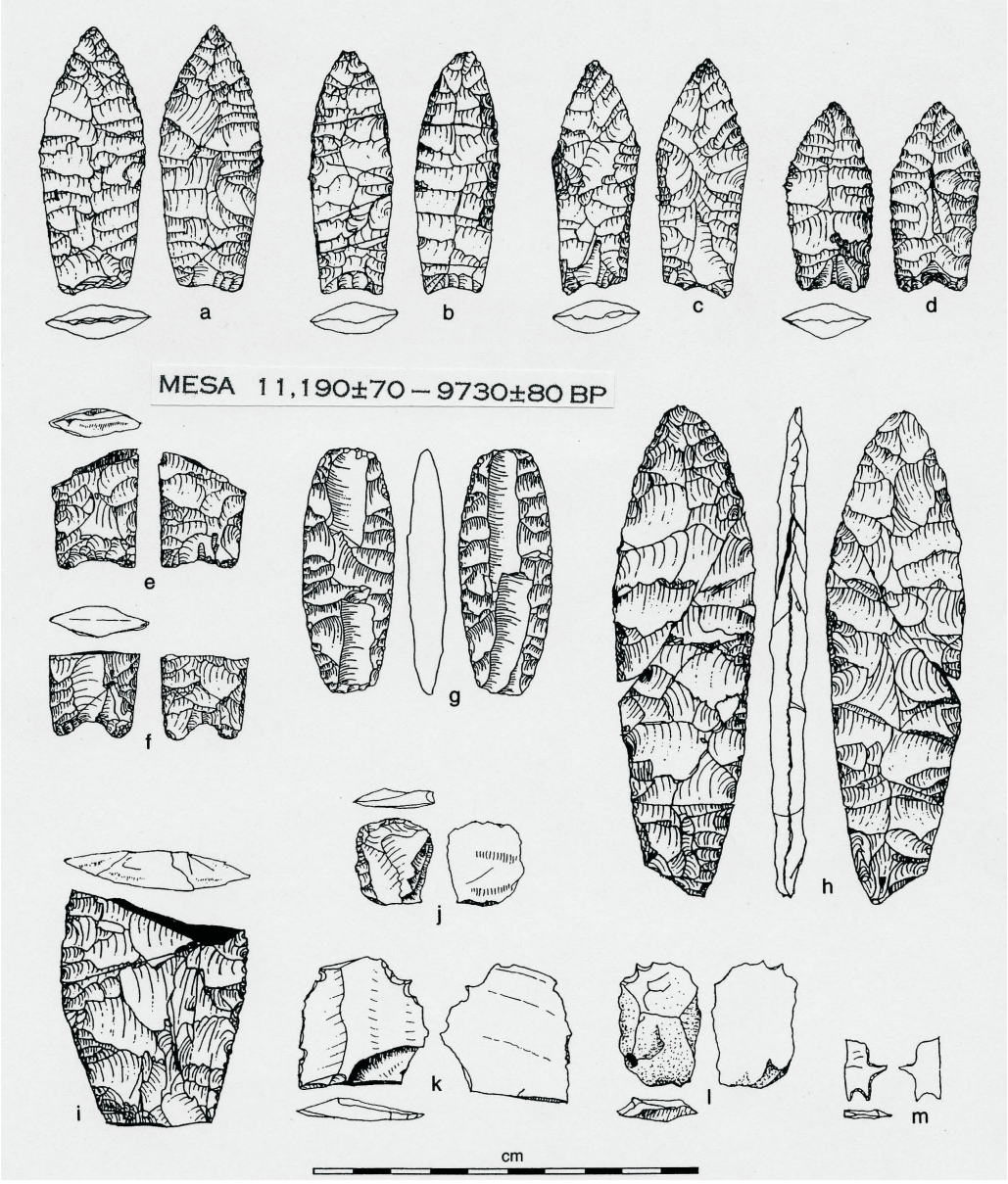

Figure 10.5: Mesa site complex.
Projectile points (a-f), biface with bipolar fluting (g), large bifaces (h and i), end scraper (j), gravers (k-m) (after Kunz and Reanier 1996).

modified flake, and three shaped mammoth ivory rods or points (Holmes 1996). Level IV has not been assigned to a cultural complex as yet (Figure 10.9), and it remains to be determined if that level should be assigned to the Nenana complex. The component with wedge-shaped microblade cores and microblades together with lanceolate points (Figure 10.9:a–l), instead of being an early cultural complex at the Broken Mammoth site, turned out to be rather late, possibly found only in level II (c. 7700–7200 BP) and in the upper cultural horizons, levels IA and IB (c. 4600 BP and c. 2000 BP; Hoffecker 2001; Holmes 1996; Yesner and Pearson 2002). This late occurrence has been interpreted as support for the Late Holocene persistence of

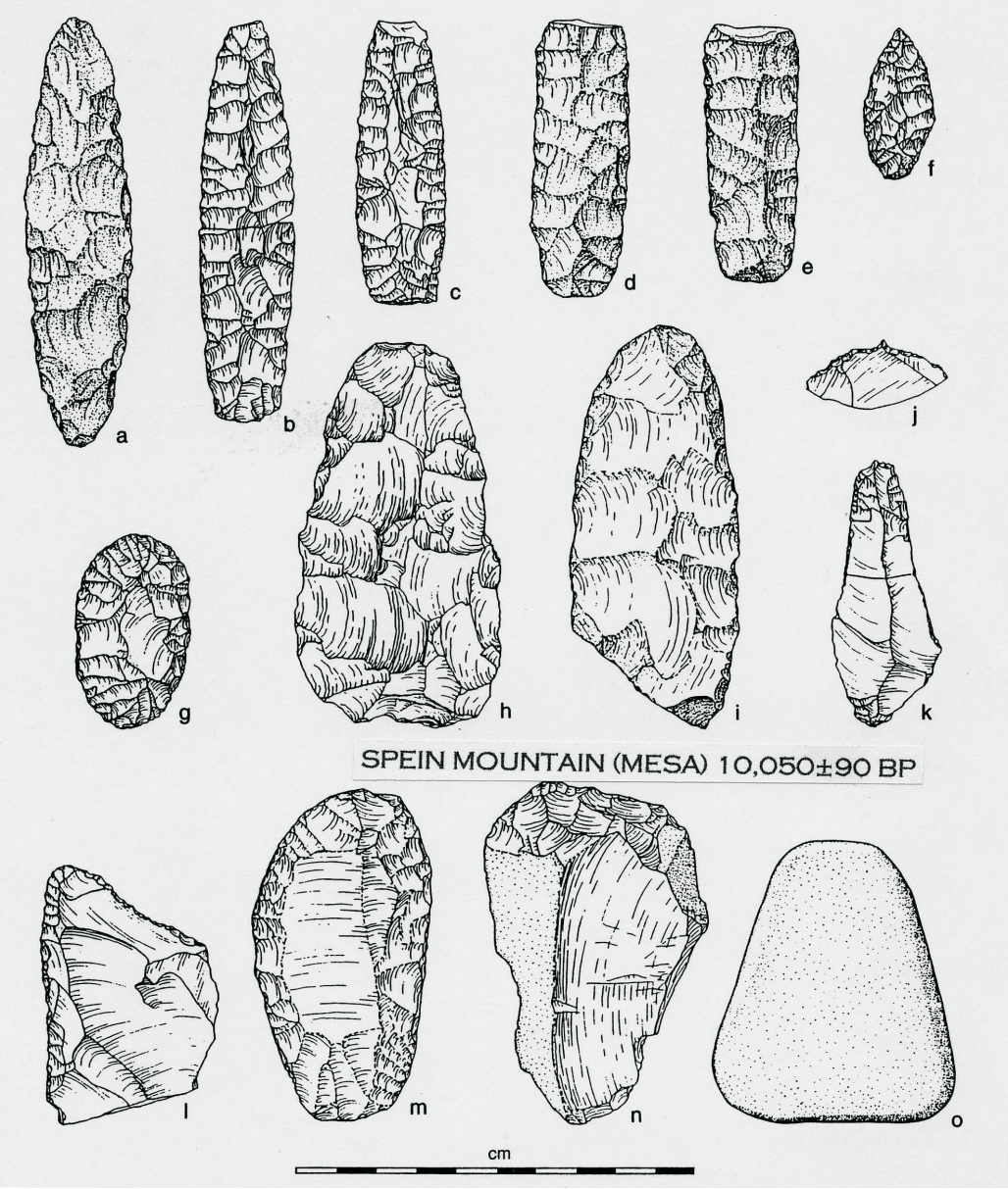

Figure 10.6: Spein Mountain site (Mesa complex).
Projectile points (a-f), bifacial adze blade insert (g), biface preforms (h and i), gravers (j and k), flake knife (l), end scrapers (m and n), whetstone (o) (after Ackerman 1996b).

the Denali complex (Dixon 1985; Yesner and Pearson 2002). The age assignment of between c. 4500 BP and c. 2000 BP for wedge-shaped, frontally fluted microblade cores at the Broken Mammoth site is admittedly puzzling for by 7400 ± 80 BP (WSU–4426) at the Swan Point site there were sub-conical to tabular microblade cores (Holmes *et al.* 1996; Figure 10.8: a–c) demonstrating that new core forms were already in use prior to the time of the hypothesized Late Holocene Denali component at Broken Mammoth. The tabular microblade cores at the Swan Point site (Figure 10.8:a) are likely associated with a side-notched projectile point complex. The conical microblade cores (Figure 10.8:b) are similar to those found in the Late Tundra tradition (Figure 10.17:a–c) (Ackerman 1985, 1987, 2001a; West *et al.* 1996).

As an aside, I should note that there are often problems with dating the upper levels of the rela-

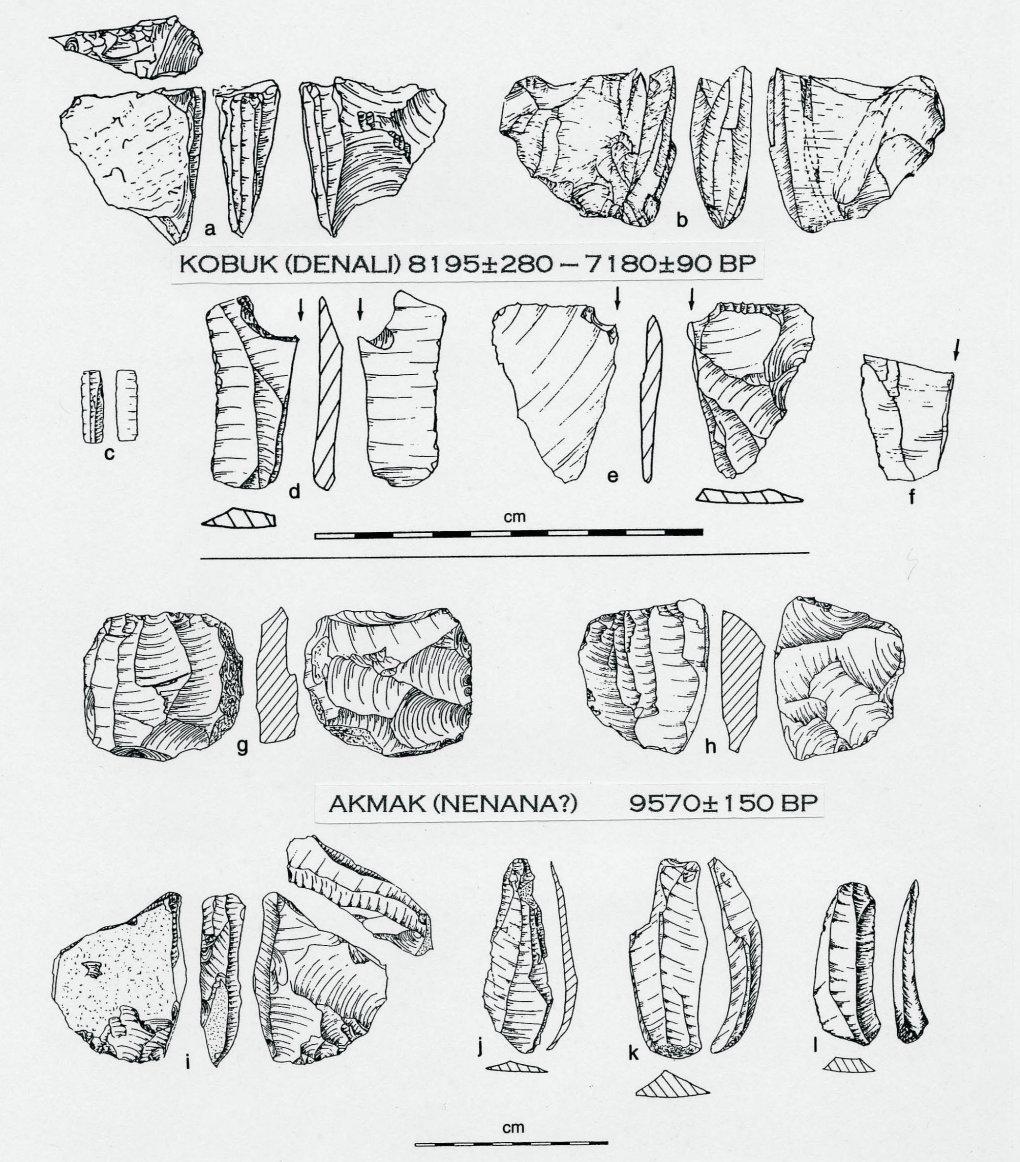

Figure 10.7: Onion Portage site, Akmak (a, c–e, g–l) and Kobuk (b, f) components. Wedge-shaped microblade cores (a and b), microblade (c), burins (d–f), face-faceted blade cores (g and h), edge-faceted blade core (i), large blades (j–l) (after West 1996c).

tively shallow, loess-capped archaeological sites in Alaska. During the last 4000 years there has been a dramatic increase in wildfires across Alaska (Thorson and Hamilton 1977). Charcoal is often plentiful in the upper deposits of ridge-topped sites and such samples are open to question unless there is clear evidence of a human agency. My own experience at the Ilnuk site, a Denali camp and workshop on a ridge overlooking the Holitna River in southwestern Alaska (Figure 10.1:13), is a case in point (Ackerman 1996e). All of our samples of charcoal, even those that we thought were associated with calcined bone and hence a hearth, dated to less than 4000 BP, much to our disappointment. All samples came from sediments above a tephra layer derived from the c. 4000 BP eruption of the Aniakchuk Volcano (Riehle *et al.* 1987). It turned out that we had dated charcoal left behind by a series of wildfires. To add to the confusion, we found that cryoturbation had moved artifacts from beneath the ash layer into the covering aeolian sediments. Fortunately, much of the Denali component was recovered from beneath the ash layer, but as yet remains undated.

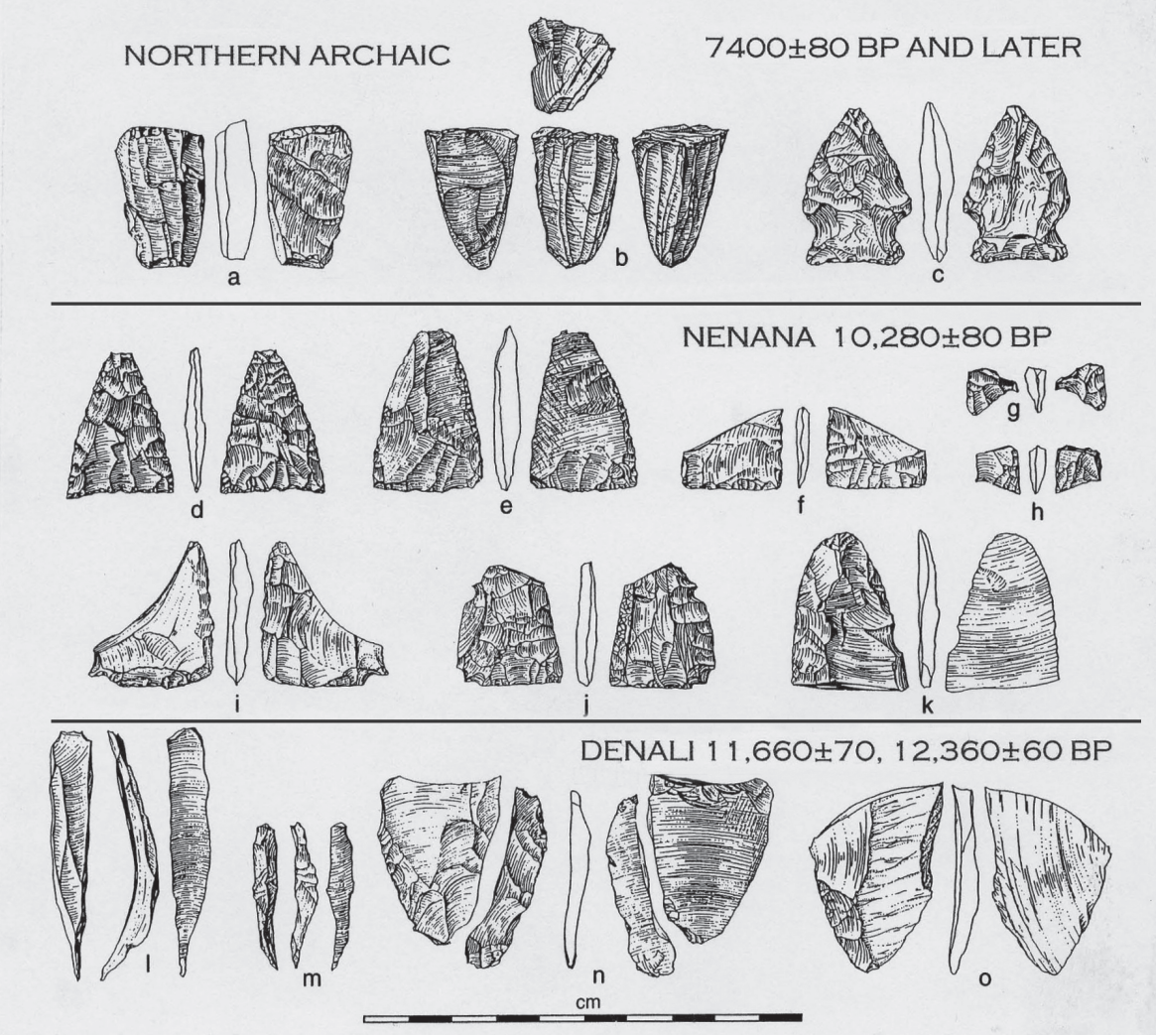

Figure 10.8: Swan Point site, upper (a–c), middle (d–j), and lower (k–o) components. Microblade cores (a and b), projectile points (c–h), perforators on projectile point fragments (i and j), large blade (k), microblade core preparation flakes (l and m), burins (n and o) (after Holmes *et al.* 1996).

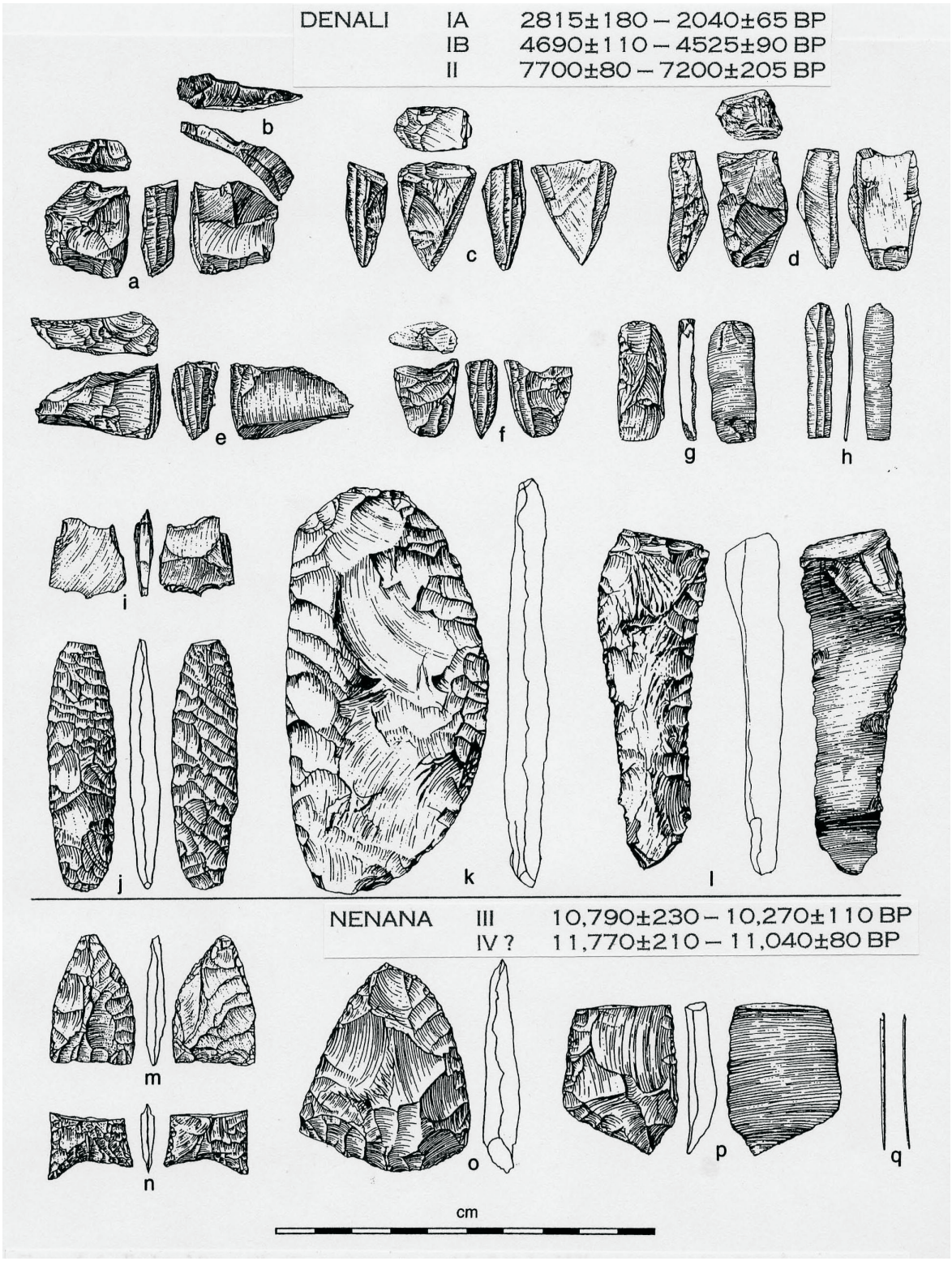

Figure 10.9: Broken Mammoth site, upper (a–l) and middle (m–q) components. Wedge-shaped microblade cores (a, c–f), microblade core tablets (b and g), microblade (h), burin (i), projectile points (j, m, n), bifaces (k and o), modified blades (l and p), eyed bone needle (q) (after Holmes 1996).

COASTAL ALASKAN MICROBLADE COMPLEXES

Leaving interior Alaska for the moment, the presence of Denali type microblade cores and microblades in coastal sites in southeastern Alaska demonstrate that the technological complex was not restricted to interior big game hunters. The sites in southeastern Alaska would have required the use of watercraft and the focus would have been on marine resources. One of the sites, Ground Hog Bay 2 (Figure 10.1:15), was found on an elevated marine terrace back of a small embayment that opened into Icy Strait (Ackerman 1980, 1990,

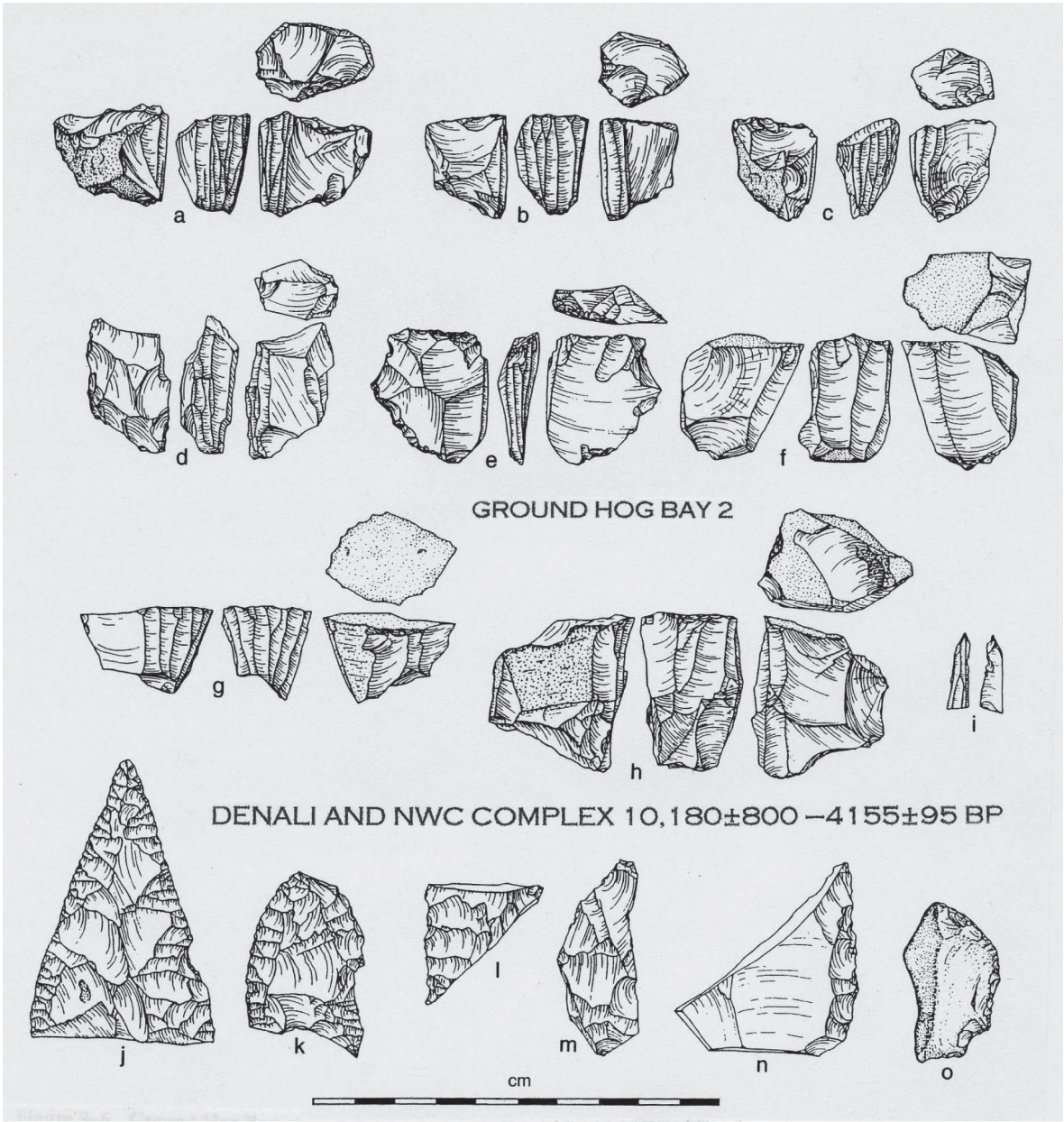

Figure 10.10: Ground Hog Bay, site 2, lower component.
Wedge-shaped microblade cores (a–d), Donnelly type burin (e), blocky to cuboid cores (f–h), microblade with graver tip (i), biface fragments (j–m), side scrapers (n and o) (after Ackerman 1996d). (NWC = Northwest Coast)

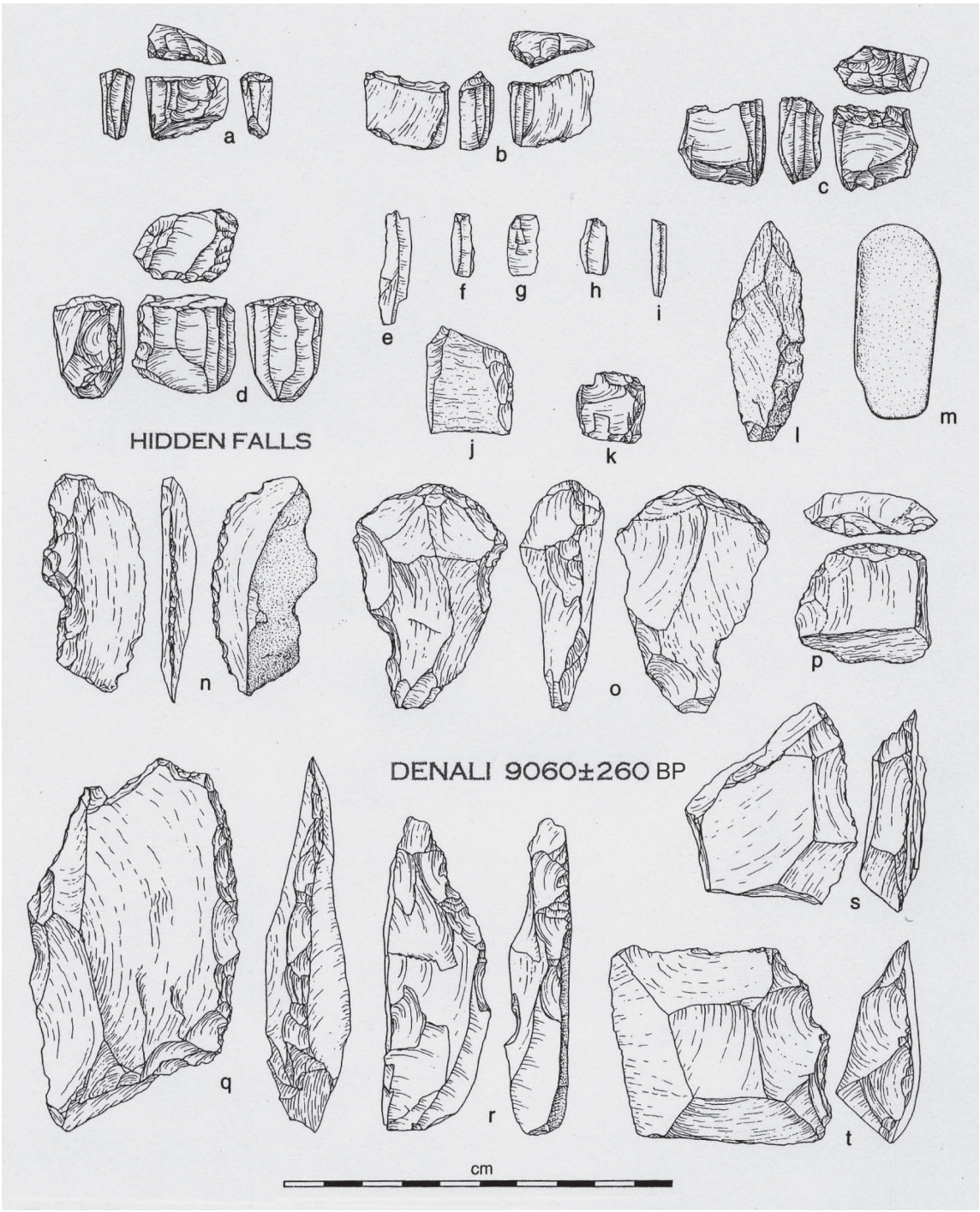

Figure 10.11: Hidden Falls site, lower component.
Microblade cores (a–d), microblades (e–i), burins (j and k), unifacial blade or point (l), abrader (m), notched scrapers (n and o), end scraper (p), side scrapers (q and r), core scrapers (s and t) (after Davis 1996).

1992b, 1996c, 1996d; Ackerman *et al.* 1979). Another site, the Hidden Falls site on Baranof Island (Figure 10.1:16), was positioned on an elevated terrace that overlooked Kasnyku Bay and Chatham Strait (Davis 1989, 1990, 1996). Both sites contained basal components with frontally fluted, wedge-shaped microblade cores of obsidian and dated to between c. 10,000 BP and c. 8000 BP (Figures 10.10 and 10.11). Microblade production continued at the Ground Hog Bay 2 site to perhaps as late as 4200 BP, but during the later part of the interval the frontally fluted, wedge-shaped microblade cores of obsidian (Figure 10.10:a–d) were replaced by blocky to cuboid cores of chert or argillite (Figure 10.10: f–h; Ackerman 1996d). At the Hidden Falls site there was a temporal hiatus of several thousand years after the c. 9500–9000 BP dated microblade component (Davis 1989, 1990, 1996). By about 4600 BP shell middens and ground stone tools became an integral part of the cultural sequence (Lightfoot 1989).

The Chuck Lake site (Figure 10.1:17, Figure 10.12) on Heceta Island provided new data on the modifications in microblade core technology that occurred as new sources of raw materials were utilized (Ackerman 1990, 1992b, 1996c; Ackerman *et al.* 1985). Instead of using obsidian as a raw material as had the early occupants of the Ground Hog Bay 2 and Hidden Falls sites, a resource that had to be obtained from quarries on Sumez Island (Moss and Erlandson 2001) or from Mount Edziza on the Stikine River (Fladmark 1985), occupants of the Chuck Lake site by c. 8200 BP had turned to the use of local raw materials, such as argillite, with the result that the core

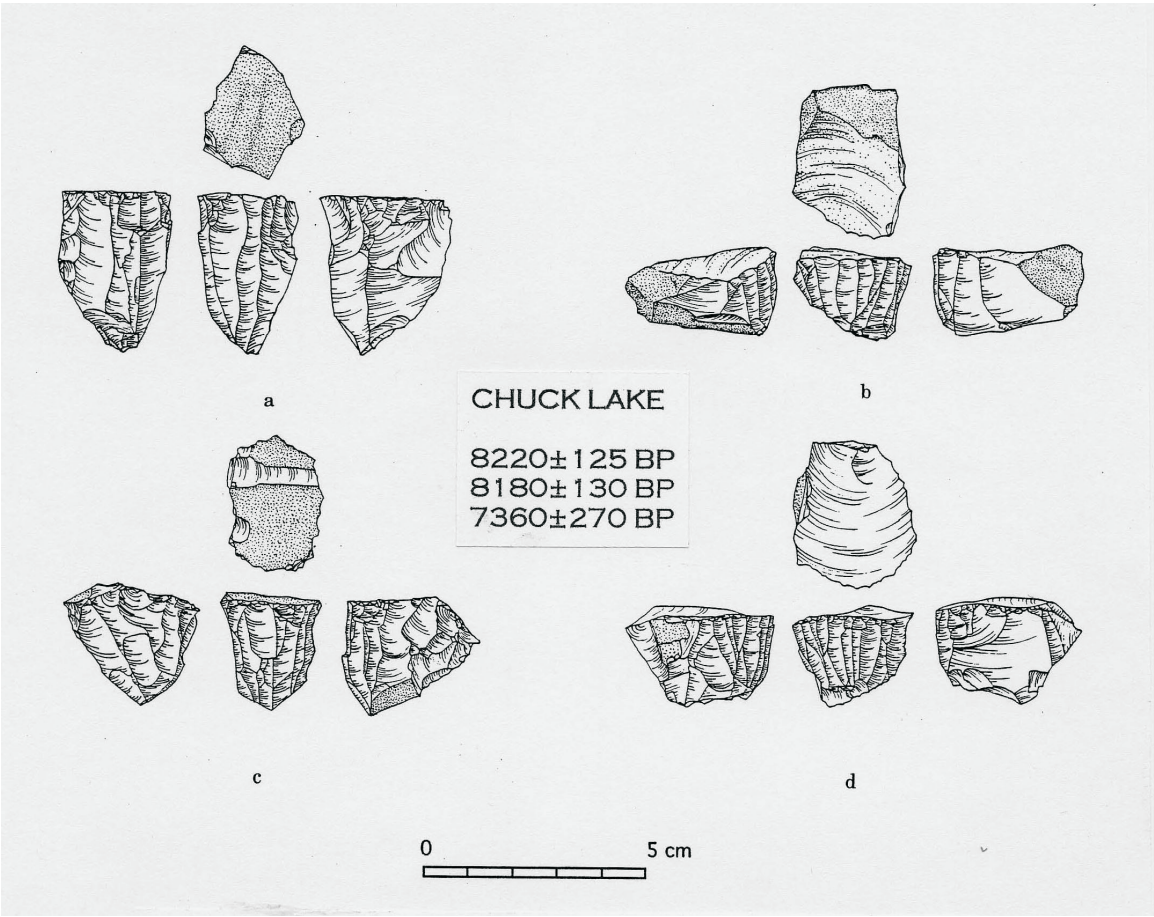

Figure 10.12: Chuck Lake site.
Cuboid to cylindrical microblade cores (a-d) (after Ackerman 1996c).

forms were prismatic rather than wedge-shaped and microblades were detached from around the circumference of the core rather than being restricted to a narrow frontal flute face (Ackerman 1996c; Ackerman *et al.* 1985; Figure 10.12). Platforms were either natural or flattened by the removal of flakes struck from the margins (Ackerman 1996c; Ackerman *et al.* 1985). Similar cores had been found in later levels of the Ground Hog Bay 2 site (Ackerman 1996d; Figure 10.10:f–h). Both wedge-shaped and prismatic microblade cores were recovered from the c. 7600 year old

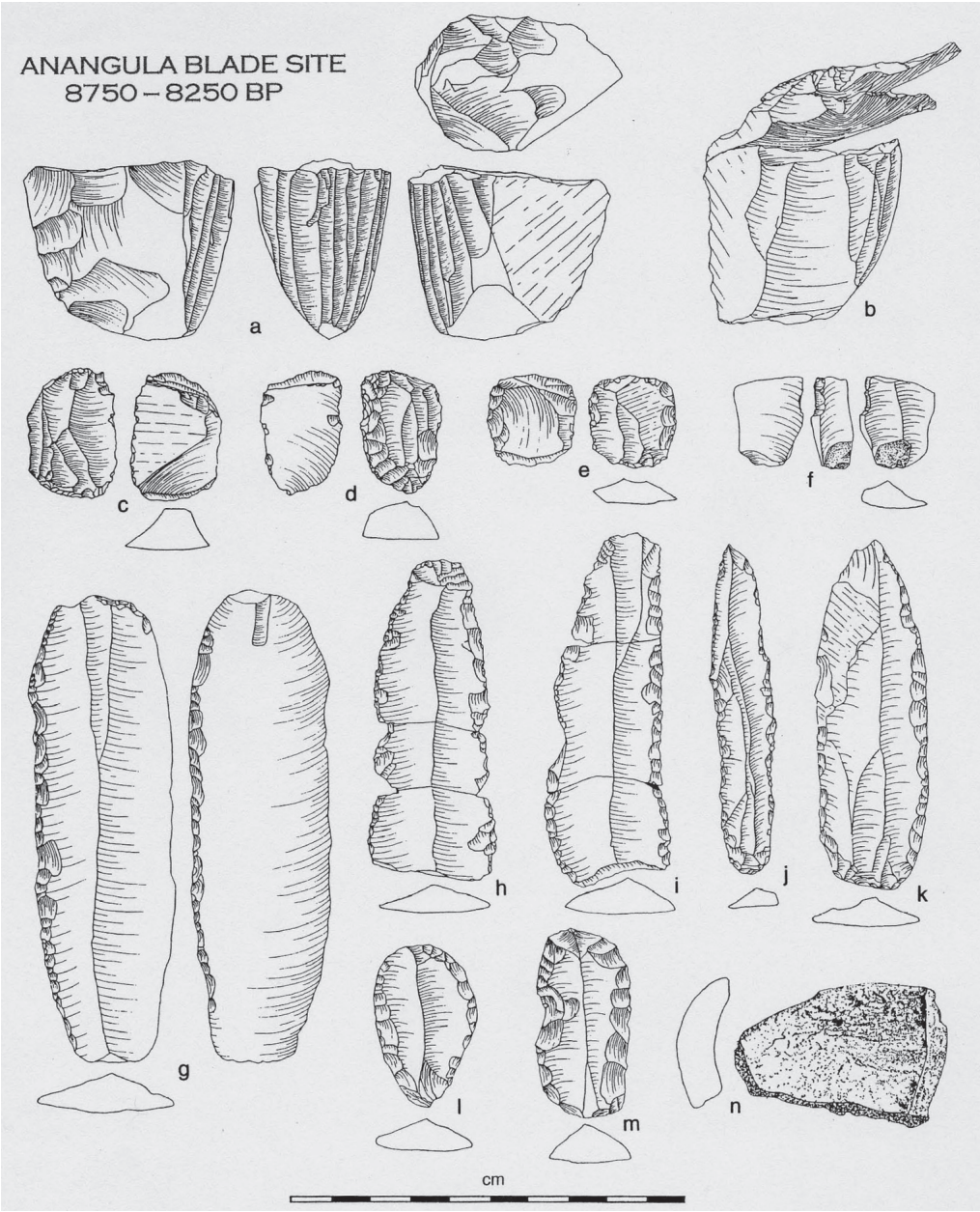

Figure 10.13: Anangula Blade site.
Blade cores (a and b), transverse burins (c-e), blades with marginal retouch (g-k), end/side scrapers (l and m), stone bowl fragment (n), angle burin (f) (after McCartney and Veltre 1996).

Thorne River site (Figure 10.1:18) on Prince of Wales Island (Dale *et al.* 1989), and only prismatic to cuboid cores at the c. 5000 year old Irish Creek site (Moss *et al.* 1996; Figure 10.1:19).

The southeastern Alaskan site data revealed that people with a Denali type microblade technology initially occupied the mainland and nearby islands by at least 10,000–9500 BP, employed the use of watercraft, used marine resources, and probably reached the area via a coastal route during a time of rising sea levels at the close of the Pleistocene (Ackerman 2003). In Alaska, this is the earliest evidence of a maritime adaptation.

The occupation of the Aleutian Islands and Kodiak Island would come somewhat later as a Sumnagin-related cultural complex in the c. 9000–7000 BP time range (Ackerman 1992b; Knecht and Davis 2001). Initial occupations on Anangula

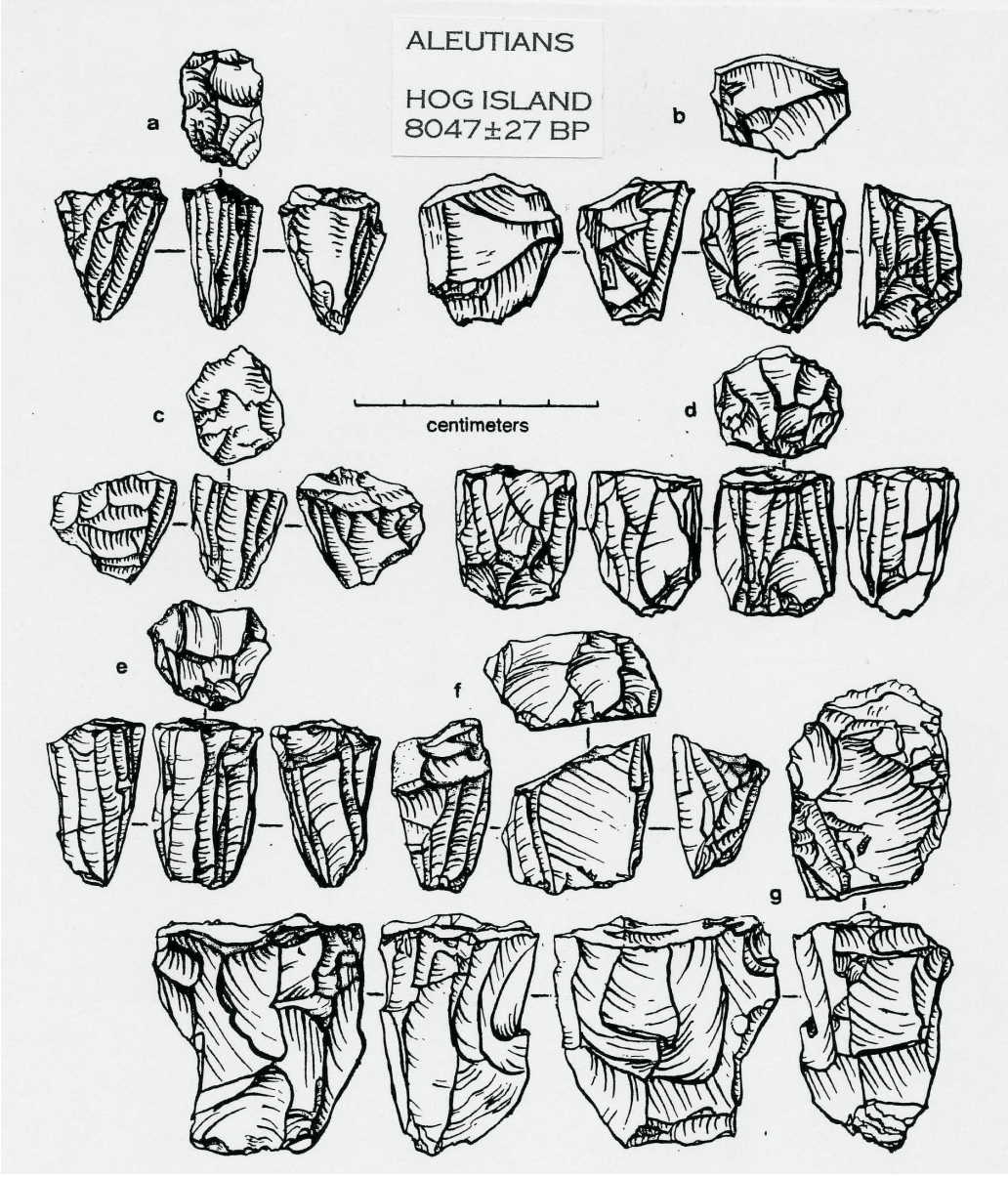

Figure 10.14: Hog Island site.
Blade cores (a-g) (after Dumond and Knecht 2001).

Island (Figure 10.1:20, Figure 10.13) off Umnak Island (Aigner 1978; Laughlin 1975; Laughlin and Aigner 1966; McCartney *et al.* 1998; McCartney and Veltre 1996) and on Hog Island in Unalaska Bay (Figure 10.1:21, Figure 10.14; Dumond and Knecht 2001; Knecht and Davis 2001) were marked by blade industries with no associated bifaces. Later microblade complexes (c. 6600–6000 BP) recovered from the Zaimka Mound, Rice Ridge, and Tanginak Springs sites on Kodiak Island (Figure 10.1:22), were said to have been based upon the core and blade industries of the eastern Aleutians rather than the Denali complexes of the adjacent Alaska Peninsula (Steffian *et al.* 2002). If so, this would give additional credence to a separate centre of early maritime development in the Eastern Aleutians-Kodiak Island region as opposed to the southeastern Alaskan region where striking resemblances between the microblade cores from the Ground Hog Bay 2 site and those from the Denali complex of the Ilnuk site on the Holitna River of southwestern Alaska have been noted.

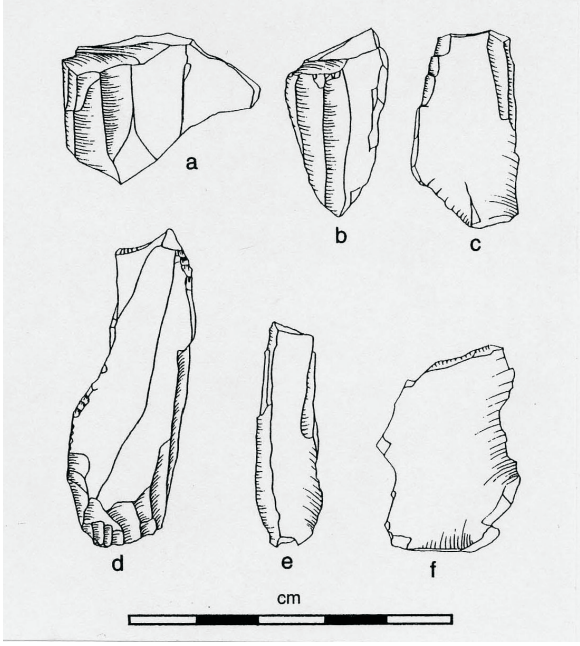

Figure 10.15: Bluefish Cave 2 site. Microblade cores (a and b), angle burins (c-f) (after Ackerman 1996f).

YUKON TERRITORY MICROBLADE COMPLEXES

Returning to the interior, microblades appeared in the Yukon Territory at rather different times and often were associated with rather different assemblages (Clark and Gotthardt 1999). The earliest reported occurrence is in the northern Yukon at the Bluefish Caves (Figure 10.1:23, Figure 10.15) with a suggested occupation of between 13,000 BP and 10,000 BP (Cinq-Mars 1990). If the dating is correct, peoples with a microblade technology were in the northern part of the Yukon Territory while similar microblade using groups were in the Nenana and Tanana valleys of central Alaska. One would wish for other similarly aged sites in the northern Yukon and adjacent Alaska to support the Bluefish Cave record. There is then an apparent gap of several thousand years, for there are no other reports of microblades until considerably later when macroblades and possibly microblades were found at sites associated with the Northern Cordilleran tradition (Gotthardt 1990). Sites in the Rock River area in the northern Yukon (Figure 10.1:24) contained blades, small blades that might be considered microblades, and the Kamut type of bifacial projectile point. The association of a Campus type microblade core with a date of 7160±60 BP (Beta–97212) is, however, uncertain (Clark 2001; Clark and Gotthardt 1999). A more certain association is the date of 7310±40 BP (Beta–154960) obtained from a bone dart point from an alpine ice patch in the Coast Mountains of southwest Yukon (Hare *et al.* 2004). Lateral slots were cut into the dart point for the insertion of microblades. It would appear that arming of antler or bone throwing darts was by insetting microblades into side slots or tipping them with stone bifacial points (Hare *et al.* 2004). As yet neither microblades nor microblade cores have been reported from the alpine ice patches. An Acosta culture complex found on the north shore of Great Bear Lake in the Mackenzie District contained Donnelly type burins and Kamut points linking it to the Rock River sites in the Yukon, but the assemblage lacked microblades (Clark and Gotthardt 1999). Microblades, but no cores or core tablets, were recovered from a site near Annie Lake just south of Whitehorse (Figure 10.1:25)

that dated between c. 7160 BP and c. 6320 BP and has been assigned to the Little Arm phase of the Yukon sequence (Clark 2001; Greer 1993). Extensive collections of Denali type microblade cores were recovered at workshop concentrations at Kelly Creek (Figure 10.16) and at Otter Falls (Figure 10.1:26, 27; Clark 2001; Clark and Gotthardt 1999). The Kelly Creek site is estimated to date between c. 7000 BP and c. 4500 BP (Clark and Gotthardt 1999), while the Otter Falls site has a late date of 4570±50 BP (Workman 1978) that has been questioned as too recent. There is then considerable evidence of the spread of the Denali complex to western Canada, but the evidence is quite uneven. Clark (2001:66) noted that "...some Cordilleran peoples appear to have been familiar with microblades, but their industry was not based on the Denali or Campus type of core." The later appearance of microblades in the southern part of the Yukon Territory and at the Pointed Mountain

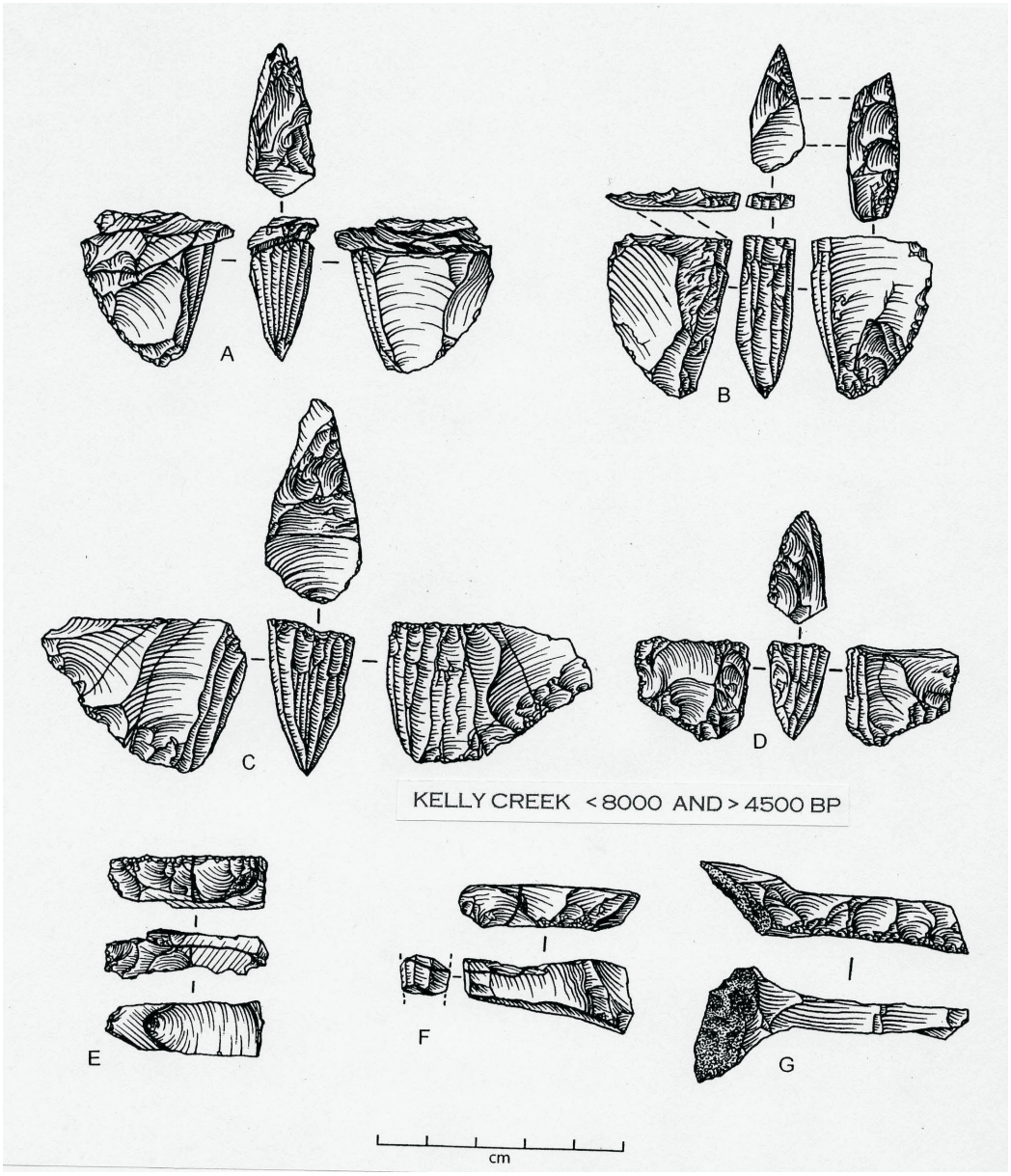

Figure 10.16: Kelly Creek site.
Wedge-shaped microblade cores (A-D), platform tablets (E-G) (after Clark 2001).

site in the Mackenzie District between c. 6000 BP and c. 4000 BP (Morrison 1987) has been associated with the Northwest Microblade tradition (MacNeish 1954), a loosely defined tradition that encompassed a variety of microblade core types, bifacial tools such as side-notched, corner-notched, and leaf-shaped points and knives, flake burins, and macroblades (Clark 2001; MacNeish 1954). Dates for the Northwest Microblade tradition range from c. 8000–7000 BP to as late as c. 4500 BP at the Otter Falls site where classic Denali type cores were recovered (Workman 1978). The prehistoric complexes in the Yukon Territory seem to reflect a mix of influences with microblade technology coming from Alaska to the west, and projectile point assemblages from British Columbia and Alberta to the south. During the time when there was increasing evidence for a Denali presence in the Yukon Territory there was also evidence of a Northern Archaic component. These Northern Archaic components have conical, cylindrical, pyramidal, cuboid, tetrahedral, and scalene types of microblade cores (Clark 2001), suggesting that by the mid-Holocene the Yukon Territory is subject to many cultural currents.

LATER ALASKAN CULTURAL COMPLEXES

Returning to Alaska, the Denali cultural complex was replaced by a culture complex known as the Sumnagin in Siberia (Mochanov 1984, 1993) and by the Late Tundra tradition in Alaska (Ackerman 2001a) that includes sites such as the previously mentioned Anangula (Aigner 1978; McCartney and Veltre 1996), Hog Island (Dumond and Knecht 2001; Knecht and Davis 2001), Kagati Lake (Ackerman 1987; Figure 10.1:28), and Whitmore Ridge (West *et al.* 1996; Figure 10.1:29, Figure 10.17) sites. These sites are characterized by an emphasis on blade/microblade production where the blades/microblades were detached from the circumference of prismatic to conical cores. Platforms were created and modified by the removal of platform flakes detached from the edges of the platform. Often, when step fractures prevented the further removal of blades, the entire top of the core was removed as an oval to round platform tablet. In terms of technology, both blade and microblade cores were similar in morphology although different in size, and reflected similar manufacturing procedures. While bifaces were rare to non-existent in the Sumnagin culture of Siberia (Mochanov and Fedoseeva 1984) and are absent in the assemblage from the Anangula site (Aigner 1978), bifaces were recovered with blades at the Kagati Lake (Ackerman 1987) and Whitmore Ridge (West *et al.* 1996) sites. The Sumnagin culture in Siberia spans the period from about 10,500/9500 BP to about 6200 BP (Mochanov and Fedoseeva 1984), whereas sites of the Late Tundra tradition are largely undated with the exception of Anangula with an occupation between about 8250 BP and 8750 BP (McCartney and Veltre 1996). There does not seem to be any cultural overlap between the Dyuktai/Denali and Sumnagin derived complexes in either Siberia or Alaska. It is as if an entering cultural wedge were inserted between the Dyuktai cultural complex and the following Neolithic cultures in Siberia, and between the Denali complex and the Northern Archaic tradition in Alaska. In some Northern Archaic sites there are tabular, prismatic to blocky microblade cores (Campbell 1961, 1962; Dixon 1985; Dumond 1981, 1984), while in others there is no evidence of a blade or microblade technology (Ackerman 1963, 1964, 1985, 1994, 2004; Anderson 1988). There may have been a sharing of elements from both the Denali complex and Northern Archaic tradition in some of the Yukon sites as that is where the multi-complex Northwest Microblade tradition concept was developed (Clark 2001). In many parts of Alaska this does not seem to be the case. I would prefer to derive those microblade cores that are found in Northern Archaic tradition sites from an intermediate complex or tradition between the Denali and the Northern Archaic tradition (Ackerman 2001a).

It is only with the Arctic Small Tool tradition in Alaska (Irving 1962, 1964), beginning roughly about 4500 BP, that there is a return to an emphasis on microblades, a tool kit that is strongly reminiscent of the Siberian Neolithic. The assemblage is characterized by bifacially flaked, small end and side blades made on flakes or microblades. These end blades and side blades were inserted into antler arrowheads similar to the practice of

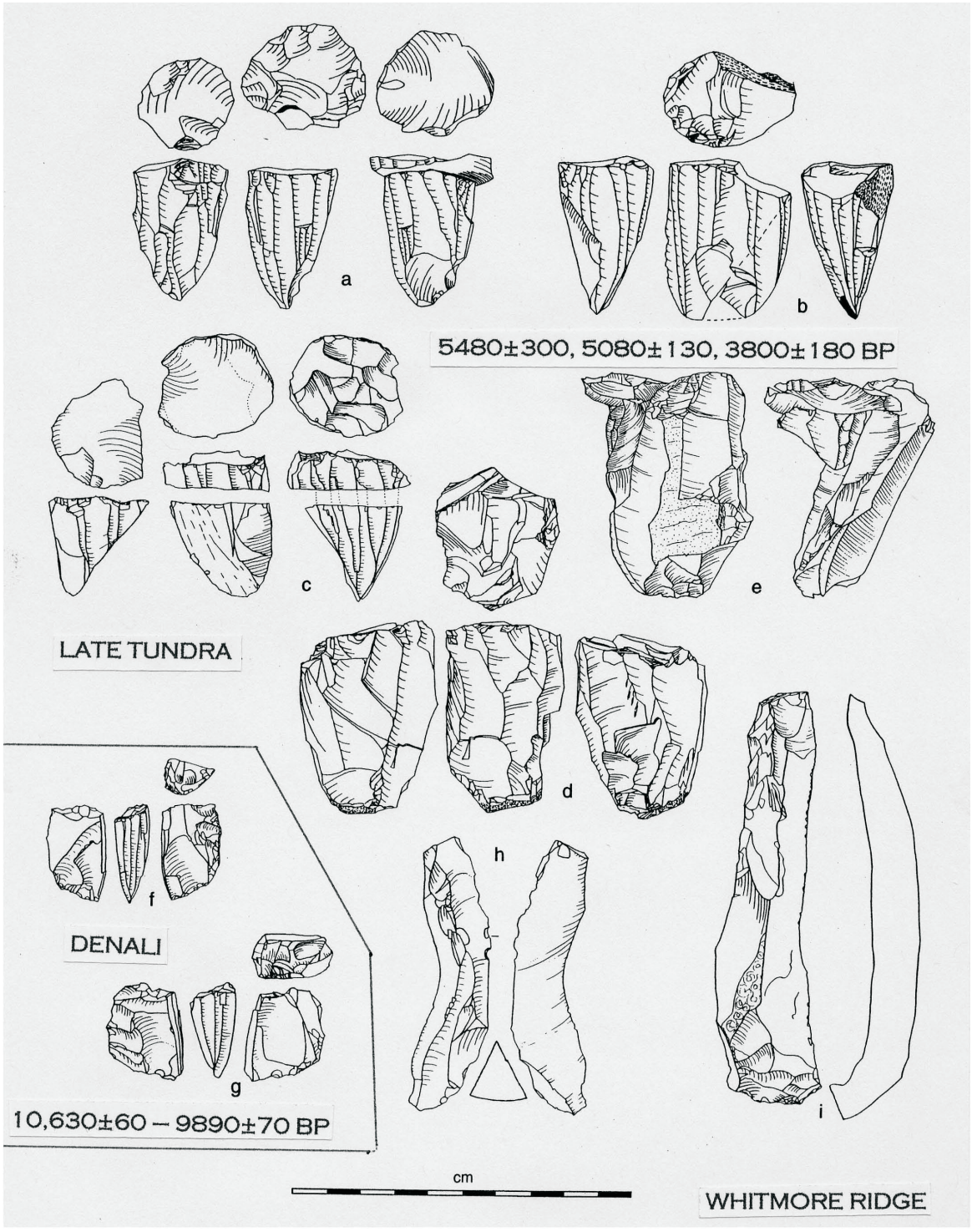

Figure 10.17: Whitmore Ridge site.
Conical cores with articulating core tablets (a-c), subconical cores (d and e), wedge-shaped microblade cores (f and g), crested blades (h and i) (after West *et al.* 1996).

using microblade inserts earlier in the Denali complex (Ackerman 1996a). With the onset of the Choris/Norton phase, c. 3000 BP, microblades disappeared as part of the cultural inventory of mainland Alaska.

WHY MICROBLADES?

The age and distribution of microblades has been briefly touched upon in the above discussion, but why did microblades rather suddenly become very popular in Asia around 18,000–20,000 BP and why their continued use during the Late Pleistocene and Early to Middle Holocene in Alaska? The function of microblades has been extensively discussed in the archaeological literature (Knecht 1997a, 1997b), and microblades have been recovered in end hafted and side hafted implements in Siberian sites dating from the Upper Palaeolithic into the Neolithic/Bronze ages (Abramova 1979; Derevianko *et al.* 1998c; Dikov 1996; Pitul'ko 1993; Pitul'ko and Kasparov 1996). Their use has been largely associated with bone or antler projectile points in the Arctic where cold temperatures mitigate against the use of stone points that become extremely brittle in low temperatures (Guthrie 1983) and where use efficiency and risk-minimizing are relevant (Elston and Brantingham 2002; Knecht 1997a, 1997b). Does this explain their relatively sudden popularity? In a very provocative paper, Mason *et al.* (2001) noted that the greatest number of Denali complex site occupations in Alaska are associated with a temperature decline between c. 8500 cal BP and c. 8000 cal BP (roughly 8000–7500 BP). They hypothesized that periods of cooler conditions would have promoted caribou herd increases (Mason *et al.* 2001). Expanding on this idea, was the onset of cooler conditions during the Sartan (i.e., Late Wisconsin) glacial stadials also a time of similar herd increases throughout Beringia?

Further, why or how did the increase in certain herd animals such as caribou bring about an increased interest in microblades? I think that the answer may lie in the type of hunting strategies employed (Churchill 1993). This was demonstrated by the recovery of organic hunting implements during our excavation of a cave in the Lime Hills region of southwestern Alaska (Ackerman 1996a; Figure 10.1:31). In the 3rd cultural horizon of the cave we recovered three fragments of side slotted antler arrowheads, a base and mid section of an antler side slotted spearhead, and 56 microblades. Since the organic artifacts provided evidence for the use of microblades, their recovery was particularly important. The largest antler arrowhead fragment (10.72 cm long) consisted of a beveled tang and a mid section with two opposing and continuous side slots that extended 3.72 cm back from the broken end (Figure 10.18:b). The arrowhead was ground to an oval cross-section (maximal width 5.8–7.0 mm). A charcoal sample found below the side-slotted arrowhead provided a date of 9530 ± 60 BP (Beta-67667) (Ackerman 1996a). The two other arrowpoint fragments were tip sections revealing that the side slots went almost to

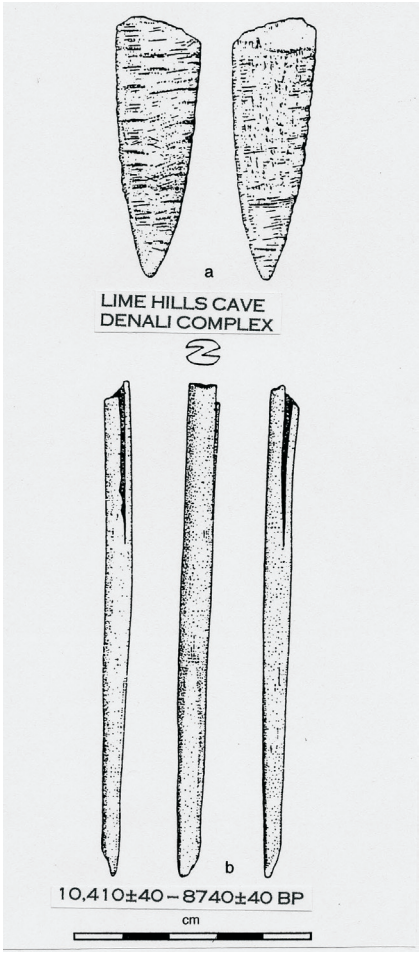

Figure 10.18: Lime Hills Cave 1 site. Base of a bone point (a), basal section of a side-slotted arrowhead (b) (after Ackerman 1996a).

the tapered tip. One of the tip fragments dates to 8740±40 BP (SR–5036/CAMS–55199). Almost identical arrowheads with grooves for microblades and with beveled tangs were found in layer 3 at the Trail Creek Cave 2 site on Seward Peninsula (Larsen 1968; Figure 10.1:30; Figure 10.19). A caribou bone sample from the same layer as the arrowheads has a date of 9070±150 BP (K–980) (Larsen 1968). We also recovered a basal (Figure 10.18:a) and a mid section of a spearhead with opposing slots for side blades in the Lime Hills Cave 1 that provided an AMS date of 10,410±40 BP (SR–5042/CAMS–56519).

The arrowhead grooves were 3.2–3.8 mm in depth and the spearhead grooves were 3.5–4.5 mm in depth. As the majority (36) of the microblades were 4–6 mm wide, these would protrude between 1 and 2 mm beyond the side of the arrowheads and less than 1 mm to about 1.5 mm on the spearhead. The spearhead would have had a better cutting edge through use of the wider microblades (15 examples at 6–8 mm). Our width measurements indicated that most of the discarded microblades in the cave were used as insets in arrowheads rather than for spearheads.

The dates for the antler arrow and spearheads from the caves in Trail Creek (Larsen 1968) and Lime Hills (Ackerman 1996a) fall well within the early part of the Denali complex demonstrating that an important use of microblades was for the arming of arrows as well as dart or spearheads. As noted by Churchill (1993), the bow and arrow is an efficient weapon in encounter hunting of dispersed animals. The Lime Hills cave was a stop-over for hunters who were pursuing scattered caribou during the summer following the spring migration and before the herd assembly in the fall. The Trail Creek caves served a similar function. Bow and arrow technology may serve as an explanation for the appearance of microblades beginning some 18,000–20,000 BP in Siberia as it is for the popularity of microblades in Denali sites

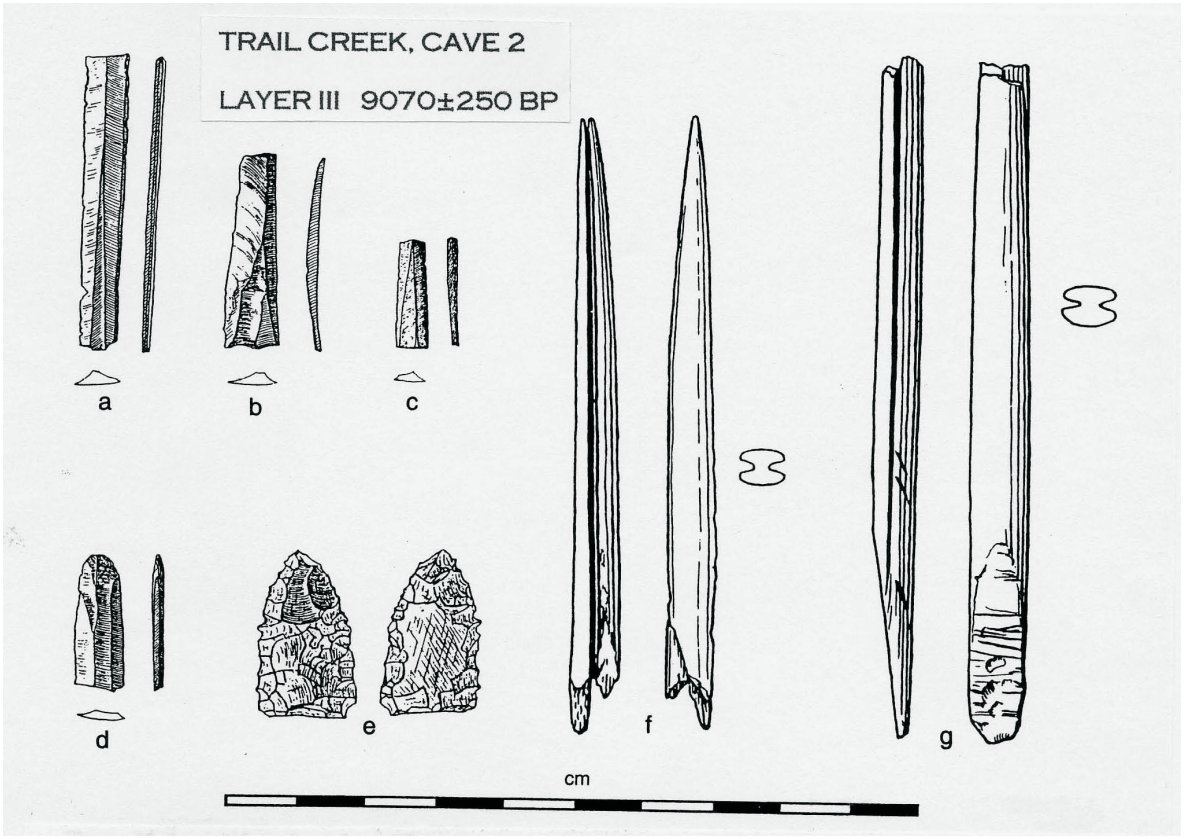

Figure 10.19: Trail Creek Cave 2 site.
Microblades (a-d), biface (e), slotted antler arrowheads (f-g) (after C. West 1996).

during the Late Pleistocene to Early Holocene of Alaska. Without the evidence of antler side-slotted arrowheads from the limestone caves of Trail Creek and Lime Hills dating to some 9000 BP, a very recent date for bow and arrow technology in Alaska would still be considered.

The recent recovery of bilaterally slotted bone points from the Rice Ridge site on Kodiak Island (Steffian *et al.* 2002) demonstrates that the practice of inserting side blades as armatures for spears or arrowheads was not restricted to interior hunting practices. The Rice Ridge site, dating to 6180±305 BP (GX–14672) (Ocean Bay I in the Kodiak Island sequence), contained a faunal assemblage that was roughly 75% mammal remains (sea otter, harbour seal, whale, and sea lion or fur seal) and 25% fish (Steffian *et al.* 2002). Slotted points with microblade inserts were replaced by ground slate lanceolate forms during Ocean Bay II marking the demise of the microblade industry in the region (Steffian *et al.* 2002).

The presence of microblades at coastal sites in southeastern Alaska by at least 9500–9000 BP would additionally suggest that there was a rather widespread cultural complex with tool kit that included bone and antler hunting implements armed with inset microblades that spread along the North Pacific coast of northwestern America. An earlier arrival into the ice-free areas of western and central Alaska has been noted.

RESEARCH STILL AT THE PIONEERING STAGE

Microblade technology had its origins in Asia, but the cultural priority of one region over another in Asia is still an open question. Within Siberia, the only certainty is that the spread of microblade technology was to the east and north. The arrival date at the edge of central Beringia remains unknown. By somewhat before 12,000 BP microblade assemblages were in central Alaska. At this time or just a bit later, artifact complexes known as the Nenana and Mesa complicate the picture. Whether these are alternate technologies, task assemblages that are part of a larger as yet undefined cultural complex, or just different groups of people populating the landscape remains unknown. This is the task for present and future generations of northern archaeologists to unravel.