Between 14,000 and 15,000 years ago the glacial ice covering the Northwest Coast began to melt, and by 12,000 years ago migrating peoples with the requisite technology could have reached Puget Sound from the north (Hopkins 1979; Fladmark 1983:25–26), spread to the coast from unglaciated regions to the south, or both. There are definite archeological assemblages from Northwest Coast sites that date between 10,000 and 8,000 years ago, and other somewhat equivocal finds that may be 1,000–2,000 years earlier (Fig. 1).

Archaeological remains with a firm antiquity of greater than 5,000 years are not abundant on the Northwest Coast. In the few sites that are known, mollusk shells, whose alkaline content assists in the preservation of bone, are usually absent, so the faunal remains and bone tools that enrich the archeological record of later periods are poorly represented. With few exceptions only the stone tools and the debitage from stone tool production remain. Archeological knowledge is limited almost entirely to the forms and technology of these stone tools, to their specific context, and to the geographic locations and geological contexts of the sites in which they are found. Site geography is significant, as certain inferences concerning the way of life of the peoples who made these early tools can be drawn from this information. Some early assemblages are well dated whereas others are surface finds, and assignment to the period before 3000 B.C. is based on their similarities with dated assemblages. In this early period there were fewer identifiable cultures than later, and those that are found seem simpler in overall technology and more widespread in geographic extent.

In the period from about 8000 to 7000 B.C. in the Pacific Northwest there were four somewhat different technological complexes distributed over adjacent geographic regions. These complexes overlapped at their borders. These distributions suggest that there were four early cultural traditions each bearing a somewhat different technology (Carlson 1983c). Extending from Whidbey Island in Puget Sound south through the Puget lowlands to the Columbia River and then both east to the Plains and south to the Great Basin and California was the Fluted Point tradition. From the mouth of the Columbia River eastward to the Snake and then south through the Great Basin was the Stemmed Point tradition. Centered on the lower Fraser River, but extending north at least as far as the central coast of British Columbia and south to coastal Oregon was a pebble-tool and leaf-shaped-point complex called the Pebble Tool tradition. On the central and northern coasts and the Queen Charlotte Islands was the Microblade tradition with affinities north to the Subarctic and Siberia. The peoples bearing these traditions were all food collectors relying on hunting, fishing, gathering, or combinations thereof for sustenance. The different forms of projectile points associated with each tradition may indicate differences in weaponry. These differences suggest that each of these cultures had a somewhat different historical background. The different habitats also suggest differences in how these peoples made their living, but it seems better to define the cultures on the basis of their known artifactual forms rather than on the less well known subsistence systems.

The Fluted Point Tradition

The Fluted Point tradition, the most widespread of the early cultural traditions of North America, is only minimally represented on the Northwest Coast (Carlson 1983c: 83–98). Elsewhere on the continent, its hallmark are fluted points frequently associated with elephant remains. A few mammoth and mastodon remains and 11 undated, isolated fluted points have been found in coastal regions, but none has been found in association with faunal remains or with other artifacts. There are surface finds of fluted points in western Oregon: SILCOOS Lake on the coast; on the Rogue drainage east of Ashland at 4,600 feet; in the Willamette drainage near Cottage Grove and in the Molalla Valley east of Eugene; and on the north Umpqua (Minor 1985; Follansbee 1977). In Washington there are surface finds near Olympia and Chehalis (D. Osborne 1936) and from Whidbey Island in northern Puget Sound (Chatters 1982). Elsewhere in North America the earliest clear expression of this tradition, Clovis, is given an average age of 9500 B.C. (Haynes et al. 1984). Later forms of fluted points persist to at least 8500 B.C. in northeastern British Columbia (Fladmark, Alexander, and Driver 1994). On the Northwest Coast the only dated site within this time span is the Mains mastodon site near Sequim, Washington; and its cultural affiliation, if any, is uncertain.
The Manis site has evidence of at least 12 depositional levels between 10,000 and 4000 B.C. (Gustafson and Manis 1984). Bison bones and a partial mastodon skeleton with a pointed bone fragment embedded in a rib were recovered from a layer of brown colluvium radiocarbon dated to between 10,000 and 9000 B.C. Parts of a second elephant were found in an older stratum. No demonstrable stone artifacts were recovered from either of these layers, and the pointed bone fragment and some polishing and striations on other bones are not conclusive evidence of human presence. Whidbey Island, where a fluted point has been reported, is about 20 miles from Sequim. There are also mammoth remains without definitely associated artifacts from the Willamette Valley.

The question of antecedents of the Fluted Point tradition is much debated in American archaeology. Because no fluted points have been found in Siberia or beyond, the place of origin of the points themselves, if not the way of life, would seem to be in the New World. Whatever the case, the place of origin was not the Northwest Coast, and the brief occurrence of this tradition there is probably late and derived from the Great Basin via the Columbia River and its tributaries. Strong evidence of continuity or transition between the Fluted Point tradition and later cultures of the Northwest Coast is lacking.

The Stemmed Point Tradition

The Stemmed Point tradition is primarily a culture of interior North America that spills over to the coast along the Columbia River waterway. It is typified by chipped stone crescents and points with long stems and an emphasis on hunting. Other forms of points also occur, as well as bone needles, harpoons, and atlatl hooks, and shell beads and pendants. On the Northwest Coast–Plateau boundary area a small assemblage is found as the earliest (Initial Early) component at Five Mile Rapids (Rice 1972: 164; Cressman 1977: 134) where it dates to 7835 B.C. ± 220 (Cressman et al. 1980: 48). Upriver in the Plateau area, it is well dated to between 8400 and 6600 B.C. (Rice 1972). Down the Columbia, assemblages from undated sites grouped as the Youga River complex (Minor 1984; "Prehistory of the Lower Columbia and Willamette Valley" this vol.) also appear to belong to this tradition, as do some of the projectile points from the Judd Peak Rockshelters in Lewis County, Washington (Daugherty, Flenniken, and Welch 1987).

This tradition is primarily interior in distribution, and its weak expression on the coast is poorly known. Before 3000 B.C. its subsistence system based on hunting was succeeded by one in which salmon became a staple and in which leaf-shaped points became important. This succession becomes later farther up the Columbia and its tributaries, where these later components are sometimes
grouped as the Cascade phase. Upriver this tradition is found in the region occupied historically by Salish-speaking peoples, and downriver it is found in the territory occupied by Chinookan speakers. The Steamed Point tradition probably represents the ancestors of these peoples.

The Pebble Tool Tradition

The Pebble Tool tradition is defined on the basis of the co-occurrence of unifacial pebble choppers (fig. 2) and leaf-shaped bifaces in early assemblages, but it includes assemblages of pebble (or cobble) tools by themselves. Formerly pebble tool assemblages without bifaces were considered a very early part of the tradition and were referred to as the Pasika complex (Borden 1968). However, study of the assemblages from the type site, South Yale (DjRi7) at the mouth of the Fraser Canyon (Haley 1983), has demonstrated the presence of bifacial trimming flakes, and radiocarbon dates place the Pasika complex at the type site at 4000–2000 B.C. Such assemblages are contemporaneous with components in which leaf-shaped bifaces do occur and may well go back to 7000 or 8000 B.C., but there is no evidence that they are earlier. Pebble tools are found in assemblages belonging to other cultural traditions, but not with such abundance or regularity. The Pebble Tool tradition centers in the heartland of ethnographic Northwest Coast culture, the protected waterways of the Straits of Georgia and Juan de Fuca, Johnson Strait, Puget Sound, and the lower reaches of coastal lakes and streams where salmon and salmon can be caught.

Various local names are in use for components or regional expressions of the Pebble Tool tradition (fig. 1). The Okets complex is the conveniently vague term frequently used in western Washington. On the Lower Fraser, the Old Cordilleran component at the Glenrose Cannery site (Maixon 1976), and in the Fraser Canyon, the Milliken and Mazama components at the Milliken site (Borden 1968) are included (figs. 3–4). On the Lower Columbia the early component from Cascadia Cave (T.M. Newman 1966) belongs, as does the later portion of the Yovani River complex and the earlier parts of the succeeding Seal Island phase, or at least to an interface with the Steamed Point tradition. Further south on the Oregon coast early leaf-shaped points may belong to this tradition. Bear Cave I (C. Carlson 1979a), O'Connor I (Chapman 1962), and beach assemblages from Quahatato Sound (Carlson and Hobler 1976) on northern Vancouver Island, and the Lower Columbia, the Old Cordilleran component at the Glenrose Cannery site (Maixon 1976), and in the Fraser Canyon, the Milliken and Mazama components at the Milliken site (Borden 1968) are included (figs. 3–4). On the Lower Columbia the early component from Cascadia Cave (T.M. Newman 1966) belongs, as does the later portion of the Yovani River complex and the earlier parts of the succeeding Seal Island phase, or at least to an interface with the Steamed Point tradition. Further south on the Oregon coast early leaf-shaped points may belong to this tradition. Bear Cave I (C. Carlson 1979a), O'Connor I (Chapman 1962), and beach assemblages from Quahatato Sound (Carlson and Hobler 1976) on northern Vancouver Island.
Island mark the northern end of the tradition, although some small, undated assemblages (leaf-shaped points lacking) from the Queen Charlotte Islands (Fiedmark 1970a; Hobler 1978) constitute the northern aspect of this tradition. At Namu (Carlson 1975; Hester and Nelson 1978) and related Cathedral phase sites (Apland 1982) the early period assemblages after 6500 B.C. may be conceptually understood as interfaces with the Microblade tradition.

The Olcott assemblages in western Washington fall in the period after the time of initial settlement (whether that was) and before the appearance of shell middens or late artifact types (Butler 1961; Kidd 1964; Dansey 1969). Assemblages from both coastal localities such as Birch Bay (Gaston and Grandt 1975) and upriver locations have been found. There seems to be no single site in Washington that is both radiocarbon dated and contains a large sample of material. The best-dated assemblages are from the postmastodon levels of the Manis site, where 16 pebble spalls and a single point were found in contexts dating from about 8000 to 4000 B.C. (Gustafson and Manis 1984). The Olcott material seems to be a pale representation of the same culture known from the larger assemblages of the Milliken and Matsunam phases (Borden 1968) and Old Cordilleran component (Matson 1976) from the sites on the Fraser River just to the north.

The oldest component from the Glenrose Cannery site (Matson 1976, 1981) is the largest and best reported of those included in the Pebble Tool tradition. This site is situated at the edge of the uplands along the south arm of the Fraser River near its mouth. The oldest component dates between 3750 and 6200 B.C. Antler wedges indicating woodworking and one barbed antler point were found in addition to numerous leaf-shaped points, scrapers, pebble tools, and retouched flakes (fig. 3).

The earliest component at the Milliken site, about 100 miles upriver from Glenrose, is a little earlier with radiocarbon dates of 7030 B.C. ±15 (S-113) and 6200 B.C. ±310 (S-47) (Borden 1983:133). This site is in the steep canyon of the Fraser within the stretch of river that contained the main native fishery of the historic Upper Stalo Indians at the upriver end of the Central Coast Salish language distribution (fig. 4). The artifactual assemblage from the earliest component, the Milliken phase (fig. 5), consists of about a dozen leaf-shaped and single-shouldered bifaces, scrapers on thin flakes, burins and pointed flakes, pebble tools, fragments of polished soapstone, an obsidian fragment, and red ochre (Borden 1968:1). Hearths with charcoal and carbonized choko-

Fig. 4. The Milliken site (DJRI 2), B.C. left, show, steep rim of granite that underlies the site and protects geological and archaeological deposits from erosion by the Fraser River. Excavations in this sediment trap exposed 14 m of strata, with the earliest cultural complex at 6.5-8.6 m radiocarbon dated 7030 B.C. ±150 and 6200 B.C. ±310 (Borden 1975:61). right, Excavation carried to the sands holding the earliest cultural deposit, the Milliken phase component. Scattered hearths and charred wild cherry pits in these early levels indicate seasonal occupations exploiting the main runs of spring and sockeye salmon. Photographs by Ray and Maureen Carlson, 1981.

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cherry pits suggest occupation in August, the time of the major salmon runs. No other organics were preserved. The succeeding Mazama phase component, separated from the earlier one by a layer of alluvial gravel, consists of a small assemblage with the same main artifact types. It is dated at 5240 to 5400 B.C. (Borden 1983:133). There would have been no reason for living in this steep canyon if it were not for the salmon runs.

The Bear Cove site (C. Carlson 1979a) is on Hardy Bay on the northeast side of Vancouver Island. The oldest component there dates between 6070 B.C. ±110 (WSU 2141) and 2230 B.C. ±90 (WSU 2140) and is contained within an early non-shell matrix underlying a shell midden. The artifacts consist of pebble tools, leaf-shaped bifaces, and flake tools. Numerous fish and sea mammal remains were found only in the upper levels of the earliest stratum. Nearby at the O'Connor site (Chapman 1982), a small assemblage from the base of the midden is similar and part of the same tradition. Earlier dated samples from northern Vancouver Island sites have been found to contain coal (Capes 1977), which renders the dates far too old. At Namu (Hester and Nelson 1978; Carlson 1979) much the same artifactual assemblage—leaf-shaped bifaces, pebble tools, and scrapers—is present (figs. 6–7) in deposits (fig. 8) with a beginning date of 7770 B.C. ±140 (WAT 452).

Faunal remains have been studied at seven sites, but analyses have so far failed to demonstrate clearly that the relative proportions of different species found in any single component or site indicate the relative importance of different subsistence strategies for the culture as a whole. Small sample size and problems of preservation are clear causes of this dilemma, and seasonal occurrence of both resources and human occupation is probably another. Blakis Oaat (1984) has addressed this problem for Puget

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*Fig. 5. Milliken phase artifact assemblage. Milliken site (DjRi 3), B.C. a–c, Large, broad, asymmetrically foliate, bifacially flaked knives and laurel-leaf-shaped points. Scrapers include convex-shaped side scrapers on flakes or cortex spalls (d, i), straight-to concave-edged scrapers on blade-like flakes (o), keeled end scrapers (f), blade end scrapers (o), discoidal scrapers (g), angled scrapers (m), and a multi-sided scraper with a stout point that may have been a perforator (c). Blade-like flakes (k, n) are common. One stout angle burl was recovered (l). Hammerstones and anvils, pebble choppers (h), various other unifacially flaked pebble tools, pebble raps, and utilized flakes fill out this early assemblage. Length of a, 11.5 cm.*
Sound sites, and Croes and Hackenberger for the Strait of Georgia.

Cervids (elk and deer) followed by either canids (probably dog) or phocids (mostly seal) dominate all mammalian faunal assemblages except Bear Cove, where 78 percent of the identified mammalian remains are sea mammal, and only 22 percent land mammal. At Bear Cove fish remains are about half so common as mammal bones, and the largest genus represented is rockfish, followed in frequency by small numbers of cod and other species including salmon (C. Carlson 1979a:188). This assemblage is very late in the sequence, probably about 3000 B.C. right at the time of transition to the shell midden period. At Glenross Canoe (Matson 1976, 1981) salmon bones are abundant, but there are also sturgeon, flounder, eulachon, squawfish, and sticklebacks. Elk bones are common. Bay mussels may also have been very important in the diet.

At Namu (Cannon 1987, 1988) the earliest faunal assemblage belongs to the period between 4500 and 3000 B.C. Mollusk shells first occur at this time. All species found in later deposits at the site are present. The highest proportion of sea mammals occurs in this early period as is the case also at Bear Cove (C. Carlson 1979a). Salmon bones outnumber those of other species but constitute a much lower percentage of the faunal assemblage than in younger periods. At Five Mile Rapids the more than 125,000 salmon bones in the Full Early component outnumber everything else (Cresman et al. 1960). What is important in all these sites is the presence of these bones, which indicates knowledge of the techniques necessary for taking these species. For the coast as a whole, adaptability and the presence of technology to exploit both marine and terrestrial resources are what should be stressed for this early period.

Relative importance of marine and terrestrial protein in the diet can be determined from stable carbon isotope analyses of humaa bone (Chisholm 1986). Two early period burials have been analyzed; both are close to 5,000 years in age. The earliest dated burial in the Strait of Georgia region is on Pender Island (DeRt 2, Burial 84-12) at 3220 B.C. ±220, and the earliest at Namu is 3640 B.C. ±100 (Ellis 1, Burial 1.11.B.1). Analysis indicates about 90 percent marine protein in the diet of both individuals. There is no sound reason to believe that the maritime adaptation indicated by this figure does not extend far backward in time to the beginning of human occupation in coastal regions north of the Strait of Juan de Fuca.

Several assemblages from the Queen Charlotte Islands can be grouped in the Pebble Tool tradition. All are small and none is radiometrically dated, but they do occur in circumstances indicating geological antiquity. At Skoglund's Landing on Graham Island a small collection of crude flaked stone artifacts including pebble tools was collected from an ancient raised beach gravel deposit estimated to be older than 7000 B.C. (Fladmark 1979). On Moresby Island several small assemblages of artifacts and flakes recovered from intertidal sites were estimated to date to 8000–6500 B.C., when sea level was lower than at present (Hobler 1978). There are additional isolated finds of pebble tools and large flakes from other sites in the...
Queen Charlottes. Foliate bifaces are absent in all these assemblages.

At Five Mile Rapids on the Columbia (Cressman et al. 1960) the Full Early component seems to be an interface between the Pebble Tool tradition and the Stemmed Point tradition. It is from this component that there is the best evidence for both heavy salmon utilization and the presence of an extensive bone and antler industry (fig. 9). Atlcat hooks, wedges, small barbed leister parts, red ochre, and girdled bola stones or fish weights are found. This component dates to about 6500 B.C.

Overall, the distribution of the Pebble Tool tradition, the location of sites at major fisheries on both the Fraser and Columbia rivers, and site locations such as Bear Cove and Nunn, which presuppose advanced water transport, suggest that fishing and sea mammal hunting played an important role in this culture at the very beginning. The Pebble Tool tradition was not an unstandardized cordilleran important role in this culture at the very beginning. The Pebble Tool tradition was not an unstandardized cordilleran hunting and gathering culture that later adapted to marine resources (cf. Butler 1961; Matson 1976); it was originally a coastal culture that spread up the rivers and into the mountains and the interior. The pursuit of salmon was probably the driving force in this expansion as these numerous fish spread to spawning grounds farther and farther up the rivers as part of the postglacial environmental adjustments.

A prototype for the Pebble Tool tradition should have pebble tools, leaf-shaped bifaces, be marine adapted, and lack microblade technology. This tradition may be a continuation of a pattern of adaptation to coastal and downriver resources such as has been proposed for the Aleut (Laughlin 1963; C.G. Turner 1984). If such is the
case the antecedents are in Beringia, probably underwater, and comparisons must be made in Northeast Asia. The closest Asian parallel is probably Ushki VI in Kamchatka (Dikov 1979) with its salmon, leaf-shaped bifaces, riverine location, and radiocarbon dates of 10,000–9000 B.C., although weakly developed microblade technology is present. Across from Kamchatka on the northwest coast of the Sea of Okhotsk is a poorly known variant of the late Paleolithic Diuktau culture that has bifaces and lacks wedge-shaped microblade cores (Mochanov 1984:717). It is in this cultural milieu, around Kamchatka and the Sea of Okhotsk, that the antecedents of the Pebble Tool tradition may be found.

In later derivatives of the Pebble Tool tradition either contracting stemmed points or microblade technology or both are added to the cultural inventory. Undated sites on the Somen River on Vancouver Island (McMillan and St. Claire 1982) and at Coquihalla Lake (M. Wright 1988) have yielded such assemblages, which probably date between 5000 and 3000 B.C. Along the Fraser from Esai in Village near Yale to at least Helen Point in the Gulf Islands are a series of sites with cultural components referred to variously as the Charles, Mayne, St. Munro, or Bayman phase or culture type, which begin before 3500 B.C. and persisted to about 1500 B.C. The changes in lithic technology, the appearance of large shell middens, and the appearance of ground stone woodworking tools, ground slate points and knives, and art and sculpture, and later use all begin in the late part of this period. By 1500 B.C. certain ritual and ceremonial aspects of ethnographic Northwest Coast culture—including masks and the memorial potlatch—are recognizable in the archeological record of the Strait of Georgia region (Carlson 1987). The record also indicates transition and continuity from the Pebble Tool tradition into these later phases and suggests that the bearers of the Pebble Tool tradition were the ancestors of the Coast Salish.

The Microblade Tradition

Microblade technology offers a different solution to the problem of making stone cutting and piercing tools, a problem resolved in the older traditions by flaking bifacial projectile points and knives. In sites of the Microblade tradition small, parallel-sided blades and the cores from which they were struck are found. Segments of these blades were presumably inset into wooden hafts and points to form the cutting edges of cutting and piercing implements. Northwestern North America is at the forward edge of the distribution of this practice, which spread across northern Asia in the late Pleistocene. Between 8000 and 6000 B.C. the northern Northwest Coast was colonized by peoples bearing a marine-oriented, microblade-using culture.

Microblade technology is progressively more recent as one moves south along the Northwest Coast (Borden 1969: fig. 1; Carlson 1983c; Mochanov 1984). This technology reached southwest Washington by 5000 B.C. (Daugherty, Flenniken, and Welsh 1987). The earliest microblade sites on the Northwest Coast share a common feature, which is that human access and survival could only have been attained with superior water transport and knowledge of marine subsistence.

The earliest dated sites on the northern Northwest Coast all contain microblade technology that persists throughout the first 5000 years of known prehistory in this region. In the Alaska panhandle are three sites—Ground Hog Bay 2 (Ackerman, Hamilton, and Stuckenrath 1979), Hidden Falls, and Locality 1 at Chuck Lake on Heceta Island (Ackerman et al. 1985). Ground Hog Bay 2 is situated high on a marine terrace, 10–15 meters above beach level. Its oldest component, dated between 8250 B.C. ±200 (WSU-412) and 7180 B.C. ±130 (I-6304), contains only two biface fragments, three flakes, and a water-rolled chert scraper (Ackerman 1974:4). The succeeding component, dated between 6930 B.C. ±125 (I-7057) and 2205 B.C. ±95 (I-7056) contains microcores of various types, microblades showing end and side use, macrocores, flakes, choppers, biface fragments, and waste flakes. Hidden Falls on Baranof Island has one date at the base of the microblade-bearing layer, 7110 B.C. ±230. Scrapers, pebble tools, and engraving tools are present in the small assemblage; there are no bifaces. At Chuck Lake a shell midden is associated with the microblade industry radiocarbon dated to 6250 B.C.

In the Queen Charlotte Islands microblade assemblages are known from two excavated sites, Lawn Point and Kasta (Fladmark 1986), from several beach finds (Hohler 1979), and from an island midden on Graham Island (Ham 1988). At Lawn Point where the site is on an old marine terrace well above high tide, charcoal from two small hearth areas was dated to 5100 B.C. ±110 (Gak 3272) and 5450 B.C. ±140 (S-679). An underlying cultural layer remains undated, but a younger one has a single date of 3800 B.C. ±110 (Gak 3271). Kasta yielded dates of 4060 B.C. ±95 (S-677) and 3470 B.C. ±100 (Gak 3511). Flakes, core fragments, hammerstones, microcores, and numerous microblades all made of chert and chertly agglutinate constitute the total assemblage. These microblade assemblages are named the Mershab tradition.

The earliest assemblage known from the Skena Valley, the Bormite phase component at the Paul Mason site in Kitesite Canyon, lacks bifaces and is dominated by both pebble tools and microblades (Coupland 1987). It is dated at 3100 B.C. ±140.

At about 6000 B.C. microblade technology appears in the stratigraphic record at Namu and continues along with the earlier tool types until 3000 B.C. A few bone artifacts—bars for composite fishhooks, and small unilaterally barbed harpoon heads—have also been preserved.

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from the period between 4500 and 3000 B.C. and attest to the presence of fishing and sea mammal hunting.

On the Northwest Coast the distribution of microlate technology before 5000 B.C., except for Nanu, is limited to that area occupied ethnographically by the Tlingit and Haida. Aleut, Eskimo, and Athapaskan territories in Alaska were also the homes of early microlate users, and the Microblade tradition may represent the ancestors of all these peoples. Between 5000 and 3000 B.C., microlate technology spread farther south, and assemblages of that time period from the southern coast of British Columbia contain both microlates and leaf-shaped and stemmed bifaces (fig. 10). At Leyeer Cave and the Judd Peak Rockshelter (Daugherty, Flenniken, and Welch 1987, 1987a) in southwest Washington microlates and cores occur as early as 4500 B.C. as part of the tool kit of early hunters who also used both leaf-shaped and large stemmed and side-notched points. The latter type indicates influence from the adjacent Columbia plateau, whereas the presence of microlates indicates influence from the north.

Borden (1979), Dumond (1969, 1974), and Carlson (1979) have suggested an association between microlates and the proposed but controversial Na-Dene language phylum and attributed their spread to the southward movement of Athapaskan speakers. If Tlingit and Eyak-Athapaskan prove to be related, the antiquity of this group might correspond to the separation of coast and interior microlate traditions in the north. However, the probable date of the movement that took the Athapaskan languages to the southern Northwest Coast (between 500 B.C. and A.D. 500) is much too late to account for microlates there (vol. 6:67-68).

While it is clear that microlate technology is Old World in origin, it is equally clear that it was adopted and used by many peoples as cultures diverged and expanded in time and space. There is no one-to-one correspondence between any of the microlate-using cultures to the north with the Microblade tradition of the Northwest Coast. This is not unusual in view of the nature of archaeological sampling and the multiple variables affecting the content of archaeological assemblages.

Summary

Early prehistoric remains on the Northwest Coast consist of assemblages of stone tools and lithic detritus that exhibit both typological distinctiveness and geographical patterning sufficient to indicate that the Northwest Coast was colonized following the retreat of ice of the last glaciation by peoples with diverse cultural backgrounds bearing at least four cultural traditions: the Fluted Point tradition, the Stemmed Point tradition, the Pebble Tool tradition, and the Microblade tradition.

These early cultures reached the Northwest Coast by two different routes at slightly different times. The Fluted Point and Stemmed Point traditions both spread down the Columbia River from interior North America between 9500 and 8000 B.C. They were probably derived from interior hunting cultures of Beringia that expanded south during the retreat of the last Wisconsinan glaciation, and their bearers are closely related historically to the Paleo-Indian peoples of the rest of North and South America. The other two traditions, which are not in evidence until 8000 to 7000 B.C., seem to have spread down the coast and up the river valleys. They may have been derived from earlier cultures occupying the coastal fringes and river valleys of Beringia, and their bearers are probably less closely related to the Paleo-Indian peoples of the remainder of the New World.

The pattern of external similarities of early Northwest Coast cultures resembles the overall pattern of relationships in human biology deduced by C.G. Turner (1983, 1984) from a comparative study of selected dental attributes of New World and Asian populations. In this study the greater Northwest Indian group (Northwest

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Fig. 10. Microlates and microlate cores from Roman River site, southern Vancouver Island, B.C. Assemblages with both leaf-shaped points and microlates from southern Vancouver Island are estimated to date 5000-3000 B.C.: a-b, microlate cores; d-e, microlates. Height of a is cm; others to same scale.
Coast plus all Athapaskan speakers) is intermediate in frequencies of these traits between Eskimo-Aleut on the one hand and all other New World Indians (including Paleo-Indians) on the other. While C.G. Turner (1934:65) prefers a model of biological hybridization in Siberia and subsequent migration to the New World of three groups bearing the gene frequencies for these dental traits, archeology would suggest that the equivalent cultural process, acculturation, was taking place on the Northwest Coast between interior American cultures (Fluted Point and Stemmed Point traditions) and those derived perhaps slightly later from coastal and riverine portions of Beringia (Pebble Tool and Microblade traditions). Between 8000 and 3000 B.C. differences among these early period cultures were being leveled through the processes of adaptation, population growth, and acculturation, bringing about greater similarity throughout the area.

The abundant and diverse flaked stone tool industries typical of the archeology of the pre-3000 B.C. period look quite different from the pecked and ground stone tools and other artifacts in general were woodworkings implements. That this industry was widespread on the coast before 3000 B.C., and that the later ground stone chisels and adz blades were simple improvements that began a millennium later. Poor preservation of bone probably accounts for the early period scarcity of fishing and hunting implements, which are abundant in sites after 3000 B.C. Mere glimpses of these technologies are provided by the few surviving examples from Namu and Five Mile Rapids.

Distributional correlations noted between some of the early cultural traditions and the language groupings of the historic period suggest that these early cultural traditions were borne by the ancestors of the historic peoples and that there has been long continuity and in-place development of culture. The distribution of Coast Salish and to some extent Wakashan (early period remains are unknown in Nootkan territory) correlates with the early distribution of the Pebble Tool tradition. Assemblages of the Stemmed Point tradition are the most widespread cultural remains found in the areas occupied by historic Chinookan speakers and linguistically distantly related Sahaptian speakers. Microblade technology is typical of the early northern Northwest Coast and the adjacent Subarctic regions occupied historically by speakers of Haida, Tlingit, and Eyak-Athapaskan languages, which make up the proposed Na-Dene linguistic phylum. Microblade technology seems to have been originally northeast Asian, then Aleutian and Yukon, and only finally Northwest Coast. Was it migration borne? If so, it could mark the separation of ancestral Haida, Tlingit, and Eyak-Athapaskan speakers.

The unknown factors in the early period of Northwest Coast prehistory are still considerable. Many are factors of culture content. What were the religious beliefs, clothing, houses, cano types and other aspects of culture? What is the early prehistory in the Tsimshian and Nootkan regions? Is the scarcity of shellfish remains before 3000 B.C. the result of in the eastern and Nootkan regions? Is the scarcity of shellfish remains before 3000 B.C. the result of land and sea level changes that have destroyed the middens, or was a different subsistence system employed? How were fish and sea mammals actually taken at this time? What food storage and preservation techniques were known and used? In spite of the absence of substantive evidence for these particular factors much before 3000 B.C., it is clear that the early migrants to the Northwest Coast achieved a successful adaptation to the wealth of environmental resources and established a basis for the later development of a level of cultural achievement rarely found among food collecting peoples the world over.