# THE TUKTU COMPLEX OF ANAKTUVUK PASS

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Anaktuvuk Pass is a broad glacial valley which trends north and south through the central Brooks Range of Alaska at about 68° N., 151° W. The summit of the pass lies at an elevation of 2,100 feet, and is slightly less than 20 air miles north of the tree line. Our first knowledge of the prehistory of Anaktuvuk resulted from the finds of William N. Irving and Robert J. Hackman in 1950 and 1951 (Irving, 1951, 1953; Solecki, 1951; Solecki and Hackman, 1951), and since 1956 my associates and I have further surveyed and excavated in the region.

The Tuktu complex, discovered in 1959, is one of at least nine quite distinctive cultural components in the known Anaktuvuk archaeological sequence.[1] The complex consists of several hundred stone implements from a site on the nearly level top of a kame terrace four air miles north of the summit of the pass. That well drained, gravelly terrace extends for several miles along the eastern side of Anaktuvuk Pass, and its flat, dry surface has provided excellent camp sites, as well as an ideal route of travel, for generations of caribou hunters. The eastern wall of the pass rises about two miles east of the Tuktu site, and a few yards directly west of the site the kame terrace upon which it lies drops sharply 70 or 80 feet to the swampy floor of the pass valley, which contains a small north flowing stream and several glacial lakes. The nearest of those, Cache Lake, a kettle a little more than one-half mile in length, lies a few hundred yards south-southwest of the Tuktu site. And a bend of the Anaktuvuk River, a Colville tributary, lies one-half mile northeast.

Kames, kame terraces, eskers, and moraines in the region about Anaktuvuk Pass are characteristically covered with a thin layer of tundra sod, two to three inches thick, and most of the Tuktu site was protected by that veneer. The site measured approximately 345 feet north and south by 120 feet east and west. Within that area five concentrations of cultural remains occurred. The areas of artifact concentration ranged from 12 to 24 feet in greatest dimension, and were separated by distances of 6 to 156 feet. Besides the artifacts they contained, those areas within the larger boundaries of the site were quite clearly marked by the dirt of human occupation. Although the only organic materials recovered from the Tuktu site were three bone fragments and two radiocarbon samples, one of wood charcoal,

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and the other of bits of charred bone, the earth which yielded the stone artifacts was stained a different color than the surrounding soil. Nearly all Tuktu implements occurred in a thin cultural layer which extended from the base of the sod to a depth of six inches below the present ground surface. A few artifacts were found on top of the ground among exposed gravels, and a few were recovered from slightly beyond the six inch level, but no cultural remains of any kind were encountered at depths greater than eight inches.

### *Features*

Features in the Tuktu site consisted primarily of hearths. Each of three of the five areas of artifact concentration contained a single lens of charcoal, and in one other area three hearths were associated with the remains of a house. None of the fireplaces were very well defined, and most of them implied the building of small fires, on the old ground surface, which were not enclosed nor contained by hearth stones. A few water-worn cobbles, ranging in maximum dimension from about four to twelve inches, were associated with three of the six hearths, but the stones were not set in any particular pattern, and in two of the three instances it was not possible to determine whether the association of the cobbles with charcoal was an intentional or fortuitous one. In greatest horizontal dimension Tuktu fireplaces ranged from 14 to 36 inches, and in greatest vertical depth from two to four inches. All occurred beneath the sod, and the deepest hearth extended from four inches to eight inches below the present ground surface. Charcoal, within those lenses, consisted of very small flecks of wood or bone, and only two hearths contained enough for radiocarbon samples. The fireplaces did, however, yield a number of Tuktu stone artifacts. Exclusive of the three hearths associated with the house, which I shall presently describe, two chipped pebble sinkers were recovered from one fireplace; one projectile point, one large, fragmentary biface, seven scrapers, one microblade, and one micro-core came from another hearth; and two large, fragmentary bifaces were recovered from a third. In every instance those artifacts occurred in direct association with a charcoal lens.

The outstanding Tuktu feature was the house, mentioned above, which lay at the southern boundary of the site. It was essentially a surface structure, and nearly circular, measuring 12 by 10 feet in diameter. About 20 water-worn cobbles, the largest of which measured 14 inches in greatest dimension, were spaced around the perimeter eight to forty inches apart. The upper portions of several of those stones protruded through the sod. An entrance, 24 inches wide, faced due east. A few cobbles on either side marked the former position of the door opening, but there was nothing to indicate that there had been any sort of extended entranceway. In the center of the house, immediately beneath the sod, there was a small fire-

place, 14 inches in diameter and three inches thick, marked only by the presence of charcoal stained earth. No hearth stones were associated, nor were any artifacts. Few fires had burned at that interior hearth, and I think it served for smudging or heating rather than cooking. In the house entrance there was another small charcoal lens, of nearly the same dimensions as the one described above. Again, no hearth stones were associated, but the base of one projectile point, one large, fragmentary biface, and one microblade were recovered from the charcoal stained earth of the entranceway hearth. I think that in all probability, that fireplace served as a mosquito smudge. The third hearth associated with the Tuktu house was situated nine feet east, and directly in front of the house entrance, and was probably used for cooking. It was typically grown over with sod, and in depth extended from two inches to six inches below the present ground surface. It measured 20 by 25 inches, in diameter, and its long axis was oriented north and south. Eight cobbles, the largest of which measured 12 inches in maximum dimension, were irregularly placed around and within the hearth, and formed no particular pattern. No stone implements were directly associated with that fireplace, but many were found between it and the house entrance. None of those three fireplaces associated with the house contained enough charcoal for a radiocarbon sample.

No features, other than the three hearths, were associated with the Tuktu house, but many artifacts were recovered from the house floor, and from the area immediately outside of the entrance. Scattered about the interior of the dwelling, two to six inches below the present ground surface, we collected five projectile points, one notched end blade, three large fragmentary bifaces, two end scrapers, four side scrapers, four microblades, one micro-core, one doubtful micro-core fragment, and 127 unworked chert, chalcedony, and obsidian spalls. The spalls collected represented 85 per cent of those encountered. The above artifacts include those from the entranceway hearth. From two to six inches beneath the sod, on either side of the exterior of the entranceway, and in a trench five feet wide, which was dug from the house entrance to the fireplace nine feet beyond, we recovered seven projectile points, one notched end blade, four large fragmentary bifaces, nine end scrapers, one end-and-side scraper, nine side scrapers, eighteen microblades, three micro-cores, one large fragment of tabular chert, and one hundred and forty-eight unworked chert, chalcedony, and obsidian spalls. Those spalls represented 66 per cent of the total number of unretouched flakes encountered in that trench.

Two other features were possibly associated with the Tuktu site. Two pits lay several yards east and west, respectively, from the southern boundary of the site. Both measured between three and four feet in greatest diameter, and both were slightly less than four feet in greatest depth. They were not investigated in detail, but they closely resemble late prehistoric or early

historic Eskimo cache pits, which are common in the area, and I think it likely that they were dug by the antecedents of the Nunamiut Eskimos, who presently inhabit the region.

### *The Artifacts*

The Tuktu collection contains 1,529 artifacts of stone, most of which are unretouched spalls. A large majority of both implements and unworked flakes are either chert or chalcedony, among which there is much variety in color and hardness. Tuktu chert is of various shades of brown and gray, and the numerous chalcedony specimens, which tend to be quite glassy, range in color from nearly white to black. Bedrock in the Anaktuvuk area is sedimentary, and deposits of chert occur locally, but I think many Tuktu artifacts were fashioned from stone which was quarried well beyond the boundaries of the pass. Even within historic times the Nunamiut Eskimos traveled long distances in the Brooks Range to quarry sites which contained types of chert and chalcedony particularly desirable for tool making. Old men among the Nunamiut still recall the locations of quarries, some of which are well over 100 air miles from Anaktuvuk Pass, and similar, widely scattered deposits among those mountains and along the Arctic Slope have unquestionably been exploited for thousands of years.

Eighty-eight specimens of obsidian, including eight implements and eighty unretouched spalls, were recovered from the Tuktu site. Since all obsidian encountered was collected, it is disproportionately represented in the complex, and it is probable that obsidian amounted to one per cent or less of the total number of artifacts in the site, including unworked flakes. Obsidian is not abundant in any Anaktuvuk site, but it is present in nearly all of the archaeological complexes which have been discovered there. There is relatively little exposed igneous rock, and no known deposits of obsidian, in the Brooks Range, and I formerly thought that the Anaktuvuk obsidian had perhaps been brought into the area from regions of volcanic activity such as Seward Peninsula. However, Tuktu, and other Anaktuvuk sites, which together span several thousand years, have yielded obsidian artifacts containing remnant water-worn surfaces, and I now believe that obsidian stream cobbles occur somewhere in the Brooks Range. Other stone represented in the Tuktu collection consists of one unworked fragment of quartz crystal, one implement of quartzite, eight of sandstone, one of felsite, and two of micaceous schist, all of which probably occur locally.

I have divided the Tuktu stone assemblage into 15 major categories. Those include projectile points, notched end blades, flaked side blades, large bifaces, end scrapers, end-and-side scrapers, side scrapers, blades, microblades, micro-cores, pebble hafted axes, pebble choppers, pebble sinkers, rubbed stone artifacts, and unretouched spalls and other stone fragments (primarily the bi-products of implement manufacture).

*Projectile points.* The 31 Tuktu projectile points are of two basic types. Corner-notched points are represented by five essentially complete specimens (Pl. I, 1, 3, 4, 6), and seven basal fragments (Pl. I, 5). One is of obsidian. The remainder are chert and chalcedony. Complete examples range in length from $1\frac{3}{16}$ inches to $2\frac{3}{16}$ inches, but one fragment (Pl. I, 5) represents a larger point. The 12 notched points perhaps most outstandingly set apart the Tuktu complex from other known archaeological components in the Anaktuvuk area. There is some variety within this small series, particularly as concerns size, depth of notching, relative proportions of stems to tips, and forms of basal edges. The bases of three examples are quite straight; six are slightly convex (Pl. I, 1, 3, 4); and three are slightly concave (Pl. I, 5, 6). In general, however, Tuktu notched points are characterized by slightly expanded bases, relatively shallow corner-notches, and broad, often heart shaped tips. Most Tuktu notched points are well flaked on both faces. The base of each of the 12 was thinned by the removal of small flakes at right angles, or nearly right angles to the basal edge. Edge grinding is present at the base of one specimen and in the notches of two others.

There are 17 bifacially flaked leaf shaped points of chert and chalcedony in the Tuktu collection, at least two of which are intrusive. Leaf shaped points which probably belong to the complex include six complete or nearly complete specimens (Pl. I, 7, 8, 9), and nine basal fragments. Complete examples range in length from $1\frac{3}{8}$ inches to $2\frac{3}{8}$ inches. Nine Tuktu lanceolate points have convex bases (Pl. I, 7), four have straight bases (Pl. I, 8), and the basal edge of one is slightly concave (Pl. I, 9). The base of another is missing. Basal thinning is present on nine, including all of the specimens having straight bases, and the single example with a concave base. None are edge ground. The leaf shaped points are very well made, and in general exhibit finer, more well controlled flaking than the notched points described above. Of the 15 points of this type which I consider to properly belong to the Tuktu complex, 10 (Pl. I, 7, 8, 9) are relatively thin, and flat-lenticular in lateral cross section. And seven of those ten (Pl. I, 7, 8) are relatively broad in proportion to length. One of them, a basal fragment (not illustrated), was reworked to form an end scraper. Two complete points among the thin, broad examples are nearly lozenge shaped in outline (Pl. I, 8), and it is very likely that two broken specimens were also lozenge shaped. A single point is broad, but thickly lenticular in lateral cross section, and unlike the other lanceolate examples it is asymmetrical in outline. Basal fragments of the four remaining leaf shaped points represent long, narrow specimens, thickly lenticular in lateral cross section.

In addition to those just described, one fragmentary, and one complete point from the Tuktu site are Kayuk points (Pl. I, 12), and I consider them intrusive here. The Kayuk type site (Campbell, 1959) lies on a kame terrace at the summit of Anaktuvuk Pass, four air miles north of Tuktu. That

early hunters' camp has yielded a large number of stone implements, the most distinctive of which are beautifully fashioned, lanceolate, obliquely flaked projectile points. The two examples from the Tuktu site are not as finely made as many of the Kayuk specimens, but both, nevertheless, are typical Kayuk points, and they do not belong in the Tuktu complex. Finally, there are two point tip fragments in the Tuktu collection, the original shapes of which cannot be determined. It is noteworthy, however, that one is retouched only along the edges, and that retouching is almost entirely confined to one face.

*Notched end blades.* There are four distinctive, asymmetrical, corner-notched end blades of chert and chalcedony in the Tuktu collection (Pl. I, 2, 11), which I think represent hafted knives rather than projectile points. Complete specimens range in length from 1½ inches to 2⅜ inches. Three are similar to Plate I, 2, in having relatively short, broad tips. Except for their asymmetrical outlines, those four artifacts are very much like typical Tuktu notched points. Secondary flake scars extend across most of both faces of each specimen. They are all basally thinned, and all are corner notched. The basal edges of three are straight, and that of the fourth is slightly concave. Slight edge abrading occurs in the notches of one example only. A portion of one of the long edges of one notched end blade (Pl. I, 2) appears at first glance to have been broken. I doubt it, however, and if so that edge was subsequently reworked. In any event, the other three examples definitely appear to have been purposely fashioned asymmetrically. One of the four is notched on one edge only, and it is the only artifact in the collection which did not come from the Tuktu site. That end blade was found in a kame terrace four and one-half miles to the south, but in all probability it is a Tuktu implement.

*Flaked side blades.* A single Tuktu implement of chert, 1¾ inches in length, is probably a side blade (Pl. I, 10). Unfortunately, a small portion of its base is missing, but because of its typical asymmetry, its thinness, and its relatively small size, I think it was probably made to be inset in the side of a projectile head of antler or other hard material.

*Large bifaces.* There are 42 large Tuktu bifaces of chert and chalcedony, which probably served as hand-held knives (Pl. I, 13, 14, 15, 16). They are well made, leaf shaped artifacts, retouched on both surfaces, and lenticular in lateral cross section. All were fashioned from flakes. The single unbroken example (Pl. I, 13) measures 3⅜ inches in length. A few fragments imply that some Tuktu knives of this type were slightly smaller than the complete specimen, but many fragments represent much larger implements (Pl. I, 15). Various degrees of control of the flaking technique are reflected in this series. Secondary flake scars and fine retouching are restricted to the margins of almost all of the large bifaces. Primary flake scars on the inner portions

of the faces apparently testify to a preliminary dressing of the large flake blanks. Plate I, 14, however, represents a large biface fragment on which fine secondary retouch scars extend from edge to edge on both faces.

*End scrapers.* The 32 Tuktu end scrapers include 30 examples of chert and chalcedony, and two of obsidian. The largest end scraper in the collection (Pl. II, 1) is 3¾ inches in length, and the smallest is ¾ inch, but 23 of the 32 are less than 1½ inches in greatest dimension. Twenty-seven end scrapers may be characterized as being "snub-nosed". The remaining five are small flakes, very slightly retouched at one end, and those five lack the steep working edges associated with the "snub-nosed" type. All Tuktu end scrapers are entirely unworked on one face, and in almost every instance a bulb of percussion or bulb remnant is present on the unworked surface. Every example was retouched at one end only on the non-bulbar face. Slightly less than half are quite pronouncedly concave-convex in medial cross section, as viewed from the side. The remainder tend to be plano-convex. In outline, a few are triangular, but the majority are roughly oval or rectangular. There is a single keeled example (Pl. II, 1), and at least three end scrapers were fashioned from blades (Pl. II, 2, 3). All, or nearly all of the rest, however, are flake implements (Pl. II, 4, 5).

*End-and-side scrapers.* The nine Tuktu end-and-side scrapers are of chert and chalcedony, and range from 1 3/16 to 3¼ inches in greatest dimension. Seven of the nine scrapers of this type are nearly identical to the "snub-nosed" Tuktu end scrapers except that in each instance the worked edge includes other portions of the border in addition to one end. The other two scrapers in this category are chert spalls, slightly retouched on two edges, but lacking steeped working edges. On five end-and-side scrapers, end retouching extends upward along two opposing edges (Pl. II, 6). Retouching on each of the other four examples is restricted to one end, and one other edge only (Pl. II, 7). Three specimens are plano-convex, and six are concave-convex in medial cross section. One end-and-side scraper (Pl. II, 6) was fashioned from a blade. The remaining scrapers of this type are flake implements.

*Side scrapers.* This large category contains 55 specimens, 51 of which are of chert and chalcedony. Four are of obsidian. In greatest dimension Tuktu side scrapers range from 1 inch to 4⅛ inches. These implements are relatively large, and 38 measure 2 inches or more in greatest dimension. With two exceptions they are retouched along one or more edges on one surface only. Two side scrapers are retouched on one surface along one edge, and on the opposite face along the opposing edge. Except for five examples, including the two scrapers noted above, retouching is restricted to the non-bulbar or dorsal surfaces. At least nine side scrapers were manufactured from blades (Pl. II, 8, 9). All or most of the remainder are flake

implements (Pl. II, 10). Thirty-five Tuktu side scrapers are worked along one edge only (Pl. II, 8), and 20 are retouched on two opposing edges (Pl. II, 9, 10). This class of Tuktu implements is a heterogeneous one, and there is much variety in size and shape. Some examples are triangular in lateral cross section, others are plano-convex, a few are roughly lenticular, and a few are roughly rectangular. In outline, they range from triangular to oval. The amount of marginal retouch, and the size of retouch flake scars also vary greatly.

*Blades.* The 21 large, chert and chalcedony blades from the Tuktu site range in length from 1 7/16 to 4 1/8 inches. Scrapers were fashioned from 13 of them. Examples 1 and 2 in Plate III represent blade side scrapers. The specimen illustrated in Plate III, 1, is retouched on one edge only. Plate III, 2, represents a double-edged blade side scraper. Eight of the large blades in the collection have not been deliberately retouched (Pl. III, 3, 4). Very small nicks along the edges of seven of the eight (Pl. III, 3, 4) may have resulted from use. Large Tuktu blades are typically triangular or trapezoidal in lateral cross section. Some retain bulbs of percussion, and striking platform remnants are clearly present on several.

*Microblades.* There are 59 Tuktu chert and chalcedony microblades, complete or nearly complete examples of which range from 5/8 inches to 1 1/2 inches in length. A few fragments represent somewhat larger specimens, and in terms of size Tuktu blades and microblades intergrade. Most microblades in the collection exhibit a high degree of control of the manufacturing technique. Typical examples are parallel-sided, and triangular or trapezoidal in lateral cross section. Forty microblades show no evidence of retouch or use (Pl. III, 5-7). Nine specimens are scarred on the dorsal or non-bulbar surface at the bulbar end (Pl. III, 8-11), and on some of those the scarring appears to have resulted from use. The ends of at least four, however, were deliberately retouched. Ten Tuktu microblades are scarred along one or both of the long edges, rather than at the ends (Pl. III, 12-14). The scarring is very fine, and cannot be clearly seen without magnification, but in at least some instances it appears to be the result of purposeful retouching. Among those edge-scarred microblades, six specimens are scarred on one long edge only, on the non-bulbar face (Pl. III, 12); two are scarred on one long edge only, on the bulbar face (Pl. III, 13); and two are scarred on one long edge on the non-bulbar face, and along the opposing edge on the bulbar face (Pl. III, 14). The end or edge scarred microblades perhaps imply bone or antler engraving, and the unretouched specimens possibly served as inset side blades.

*Micro-cores.* Nine micro-cores in the Tuktu collection include eight examples of chert and chalcedony, and one of obsidian. In greatest dimension they range from 1 1/16 to 1 3/4 inches. In this category there are four

doubtful specimens. Three of the five examples which are undoubtedly micro-cores are relatively thick, quite typical, polyhedral cores (Pl. III, 15, 16), although in no instance are blade scars present on more than one third of the combined total surface area of the several sides. Plate III, 15, represents a nearly pyramidal specimen, the striking platform of which is roughly triangular in outline. At least seven microblades were removed from the surface presented in the photograph. In addition, two other blade scars, oriented at right angles to those shown, occur on another side of this core. The specimen thus contains a typical, relatively flat, prepared striking platform at one end, from which the majority of the microblades were struck, while the edge of one of the steep sides was also used as a striking platform. An opaque obsidian micro-core (Pl. III, 16) contains a sharply sloping platform. From this core, microblades appear to have been struck from an acutely angular, rather than horizontal, striking platform. Microblades were removed only from the side shown in the photograph, although one other side was dressed by the removal of several flakes at right angles to the long axis of the blade scars. A thick, polyhedral micro-core, not illustrated, is noteworthy because of the smallness of some of the blade scars it contains. At least eight fragmentary scars are present on one surface. Four of these, which occur together, range in length from ½ inch to 1⅛ inches, but average only about 1/16 inch in width.

Two Tuktu micro-cores (Pl. III, 17, 18) are relatively quite thin, and probably represent fragments of broken cores rather than cores that have been exhausted by the removal of microblades. In both instances blade scars are present on one surface only. The original surface of the striking platform of one (Pl. III, 17) is missing. The platform surface of the other (Pl. III, 18) is relatively flat. In addition to the five micro-cores discussed above, there are four flake or blade fragments in the Tuktu collection, each of which contains on one surface a few scars resembling those resulting from the removal of microblades. While I think it probable that the scars on those thin chert and chalcedony fragments only fortuitously resemble blade scars, it is possible that some Tuktu microblades were struck from larger blades, or flakes, rather than from the usual cores.

*Pebble hafted axes.* There are two sandstone, pebble artifacts in the Tuktu collection which appear to have been hafted (Pl. IV, 3, 4). Perhaps they were not used for cutting wood, but I think they represent ax-like implements of some sort. The first, (Pl. IV, 3), is 3¾ inches long, and thickly lenticular in lateral cross section. Several large, primary flakes were removed from both faces at one end to form a sharp cutting edge. The ground notches on either side probably received a haft or the lashings of a haft. Another sandstone, pebble ax (Pl. IV, 4) is 4 inches long, quite flat, and thinly lenticular in cross section. It is possible that this artifact belongs in the category of sinkers, which I shall presently describe, but I think it is more probably

a hafted tool. The side notches were achieved by the removal of primary flakes from both faces on two opposing edges. Slight edge abrasion is present in the notches. The bifacial scars at either end appear to be at least partially the result of use.

*Pebble choppers.* The single quartzite pebble chopper (Pl. IV, 6) is 5⅛ inches long. It is a thick and relatively heavy implement. Large, primary flakes were removed from both faces at one end, and on the face not shown most of the original pebble surface is missing.

*Pebble sinkers.* Six quite flat, notched pebble artifacts (Pl. IV, 5), ranging from 3⅞ to 5 inches in maximum dimension, were probably used to sink fish nets or lines. Five are sandstone, and one is felsite. Four, including the one illustrated, are essentially complete pebbles, the waterworn surfaces of which are intact except for the notches. The other two sinkers were fashioned from large, thin flakes struck from the outer surfaces of pebbles, and in each instance the original surface remains on a part of one face only. On each of the six sinkers there are two notches on two opposing edges, formed by the bifacial removal of primary flakes. A few flake scars occur elsewhere along the edges of three of the specimens. The notches on the four sinkers fashioned from whole pebbles are slightly abraded. The two large pebble flake sinkers are not abraded.

*Ground stone artifacts.* Two ground or rubbed implements of micaceous schist, one of which is fragmentary, measure 5⅛ inches and 2¾ inches in length, respectively (Pl. IV, 1, 2). Plate IV, 1, represents a flat fragment, slightly smoothed on the surface illustrated. Numerous parallel incisions occur on both faces. In width the incisions are of two quite different sizes, and most of them run at right angles to the long axis of the artifact. This object was found in two pieces, several feet apart, and the dark color of one face of the larger piece is probably the result of grease staining. Only a small portion of one face of the fragmentary specimen in this category (Pl. IV, 2) has been intentionally smoothed. I do not know the use of either of the implements.

*Spalls and other stone fragments.* There are 1,266 unretouched flakes in the collection, which in greatest dimension range from less than ¼ inch to 4⅛ inches. Most are considerably less than two inches in greatest dimension. One thousand one hundred and eighty-six are chert and chalcedony, and eighty are obsidian. The sample represents far less than half of the total number of unretouched chert and chalcedony spalls discovered in the Tuktu site, but, as I have noted previously, every piece of obsidian encountered was collected, and obsidian is therefore disproportionately represented in the spall series. There is one heavily waterworn chalcedony spall. Perhaps it was present in the glacial drift in the kame terrace prior to the Tuktu

occupancy, and it is possible that its several fracture surfaces are not the result of human agency.

A small fragment of quartz crystal, and a tabular piece of gray chert complete the Tuktu collection. The quartz crystal is unworked, but I think it is a part of the Tuktu cultural inventory. The specimen of tabular chert probably indicates the form in which much of that material was transported to the site. The angular piece, which is 4¾ inches long, is quite flat on two surfaces, and has a nearly uniform thickness of 1 to 1⅛ inches.

### *A Reconstruction of Tuktu*

It is not presently possible to speak of a Tuktu culture. The Tuktu artifacts and features do permit, however, a partial reconstruction of a particular phase of an old arctic society. The series of stone artifacts represents a constellation of distinctive tool making techniques and traditions, which in turn testify to the subsistence economy of the Tuktu phase. A flake tool tradition is reflected in the projectile points, notched end blades, the flaked side blade, large bifacial knives, and most of the many scrapers. A highly developed blade tradition is represented by the relatively few, but handsomely fashioned large blades, the numerous microblades, and the micro-cores. And ground stone tool making, although not highly advanced, was also a part of the complex.

The fairly large projectile points, and especially the abundant scrapers and large bifacial knives, unquestionably stand witness for an economy based primarily on big game hunting, but some fishing is also represented by the several notched pebble sinkers. In addition, the various types of stone from which the Tuktu implements were made, imply that the Tuktu peoples were not emigrating through Anaktuvuk Pass, but were well established in the Brooks Range, and intimately acquainted with its resources, since only human groups long resident in those mountains would know the locations of the widely scattered quarries which yielded the materials of manufacture.

In terms of the Tuktu features, while only one house was discovered, I think that the five small areas of artifact concentration represent separate dwellings. Each contained a fireplace, and refuse stained soil, and each yielded artifact types that one would expect to find associated with the variety of daily household tasks of a hunting group. It is also noteworthy that the large number of tools of food and artifact preparation, particularly the abundant scrapers, imply a sexual division of labor, which re-enforces the hypothesis that those areas represent households. I do not know why we failed to discover the cobble outlines of houses in four of the five areas of artifact concentration. Perhaps in those instances the house stones were scattered subsequent to the original abandonment of the individual dwelling sites, and perhaps fewer or smaller house stones were used, and we did not

recognize them. It should be recalled that in the instance of the single well defined house the only associated features consisted of hearth. And since numerous artifacts were found immediately outside of that dwelling, the only indisputable evidence for the specific position and outline of the house was the ring of stones around its perimeter. I think that perhaps the explanation for our not finding house rings in four of the dwelling areas is that one or two families discontinuously occupied the site for a period of several years, and re-used the cobbles at different house locations within the camp area.

In any event, the outline of one house, and its associated hearths, considerably illuminates the probable size and type of the Tuktu family group, the form of the dwelling, and the time of the year it was occupied. It is reasonable to assume that the house contained a nuclear family of no more than four or five individuals. The nearly circular floor outline implies a hemispherical or conical dwelling, and on the basis of a common more recent Brooks Range house type, I think it not unlikely that the Tuktu house was hemispherical, and covered with hides bent over a willow frame. Willows, in abundance, have probably grown in the nearby flood plain of the Anaktuvuk River for thousands of years. And the exterior cooking hearth, and the probable smudge hearth in the entrance, certainly indicate that the dwelling was occupied during the warm season.

The Tuktu site thus represents a phase of a well established Brooks Range culture. The Tuktu phase contained a constellation of several notable stone tool techniques and traditions, most of which were oriented toward the killing and preparing of large game mammals. The Tuktu phase was also characterized by small family groups, which, during summers, occupied Anaktuvuk Pass, where they lived in very small encampments of probably hide-covered, circular houses. At Anaktuvuk they supplemented hunting by catching fish in the streams and glacial lakes of the area.



### *Antiquity and Cultural Relationships*

The two forthcoming radiocarbon dates from the Tuktu site are awaited with anticipation. Meanwhile, the scarcity of organic material in the site and a typological comparison of Tuktu artifacts with those from other arctic localities permits an estimate of the relative age of the complex. Two restricted areas of the previously mentioned shallow Kayuk site, which lies on a kame terrace four miles south of Tuktu, yielded a series of typical Ipiutak implements of stone, bone and antler. Those artifacts postdate the Kayuk stone implement assemblage. Typologically they may be directly equated with specimens from the Ipiutak type site at Point Hope, Alaska (Larsen and Rainey, 1948), and as such should have an age of 1,500 to 2,000 years. I cannot positively say that soil and drainage conditions are

exactly the same in the kame terrace occupied by the Kayuk site and that terrace occupied by Tuktu, but the two glacial features appear to be very much alike, and I think that conditions of preservation at Kayuk and at Tuktu are probably nearly identical. Therefore, since, with the exception of a little charcoal and a few bone fragments, organic remains were absent from the Tuktu site, I believe that it predates the Anaktuvuk Ipiutak component, and, if I am correct, a minimum age of 1,500 to 2,000 years may be assigned to the Tuktu complex.

Turning to typological comparisons of the Tuktu artifact assemblage with those from other northern sites, the Tuktu collection appears to represent a distinctive arctic complex which can not be directly equated with any previously reported finds. If considered separately, and broadly, in terms of both age and cultural alignments, most of the implement types, and most of the implement manufacturing techniques represented in the Tuktu complex have a wide range in northern North America, and are therefore difficult to use, in any very specific sense, as time or culture markers. I refer here most directly to Tuktu bifaces, scrapers, and the notched pebble artifacts, but my remark also applies to blades and microblades, polyhedral cores, and implements of ground stone. While variations within these artifact types are becoming increasingly useful in placing archaeological units in particular traditions or cultural continua, we have not yet reached the place in northern archaeology where age, at least, can be confidently reckoned according to subtle characteristics of blades or cores. Nor is age (or cultural affinity) revealed by such amorphous artifacts as contained in the impoverished Tuktu ground stone inventory.

The corner-notched points and end blades represent the only Tuktu artifact type that, if considered in the context of accompanying implements, is sufficiently distinctive to presently permit any very direct comparisons with other northern North American finds. (In this respect, except for the two intrusive Kayuk points, I do not derive any particular meaning from the various lanceolate points in the Tuktu series (Pl. I, 7-9), nor can I, in specific terms, comparatively evaluate the single flaked side blade (Pl. I, 10). Not many corner-notched points have been reported from the American north, although they have been found over a wide area, and occur in both the boreal forest and the tundra regions. And among those northern complexes that contain corner-notched points there are primarily three that presently promise meaningful relationships with Tuktu. In no instance is the affinity clear, but I think there is a connection between Tuktu; the Lockhart River complex of the Artillery Lake region near Great Slave Lake in the District of Mackenzie (MacNeish, 1951); finds from the Ratekin site on the Denali Highway in west-central Alaska (Skarland and Keim, 1958); and the Palisades assemblage, recently discovered at Cape Krusenstern on Kotzebue Sound, Alaska (Giddings, in press).

The Lockhart River complex consists of a small series of stone implements collected from the surfaces of five sites on the barrens east and north of Great Slave Lake. Organic materials were apparently absent. Although most Lockhart artifacts are relatively rude in appearance, perhaps because nearly all were fashioned from quartzite, the majority of the implement types, including corner-notched points (a few of which are quite possibly asymmetrical, notched end blades), a few leaf shaped points, large bifaces "blades", end scrapers, side scrapers, blades "prismatic flake knives", and choppers (MacNeish, 1951, pp. 32-7; Pls. III-VI) resemble those of the Tuktu collection. From the photographs (MacNeish, 1951, Pls. III-IV), the notched points of the Lockhart River complex, of which there are about 20, particularly resemble Tuktu specimens. Lockhart lacks, however, fine microblades, micro-cores, ground stone, and notched pebble implements. Since the sites postdate the last glacial ice sheet in the area, which is estimated to have melted 4,000 to 7,000 years ago, and because of the positions of the sites on ancient beaches, for which a chronology has been tentatively established, MacNeish estimates that the Lockhart River complex is 1,000 to 4,000 years old (MacNeish, 1951, 33).

Abundant stone artifacts in the Ratekin site, which was located at about timber line, occurred from the surface to a maximum depth of six inches. No organic materials remained in association. The site yielded corner-notched points, at least one asymmetrical notched point or end blade, large bifaces, end scrapers, end-and-side scrapers, and side scrapers (Skarland and Keim, 1958, pp. 82-6), all of which are very similar to Tuktu implements. Blades, microblades, micro-cores, and pebble artifacts were absent from the Ratekin site, but an "arrow-shaft shaper", smoothed by pecking, was found with the other materials. Skarland and Keim (p. 81) have remarked that ". . . on the basis of patination of flint specimens, one might safely assume that the material is at least 2,000, perhaps more than 4,000 years old."

It is noteworthy that the estimated age of those Denali Highway finds agrees quite well with the tentative conclusions reached by Irving regarding the antiquity of artifacts from a surface site near the Tyone River in the Susitna watershed which drains to Cook Inlet, Alaska (Irving, 1957, p. 48). The Tyone River site contained microblades, and corner-notched and lanceolate points similar to Tuktu specimens (Irving, 1957, pp. 42-4, 50, 51; Pls. I-II). Irving's Tyone series is a small one, and I am reluctant to speculate on its cultural affinities, but I think it quite possible that the Tyone collection is related to both Ratekin and Tuktu.

Giddings' Palisades assemblage contains patinated stone artifacts recovered from the surface and just below the surface on the top of a bluff (Giddings, in press). Again, no organic materials remained. The collection

lacks chipped pebble and ground stone implements, as well as microblades, micro-cores, and the variety of Tuktu scrapers. It contains, however, two large flake chopper-like implements. And corner-notched points, asymmetrical corner-notched end blades or points, large bifaces, and large blades from the site appear closely akin to those types of implements from Tuktu. On the basis of the relationship between his Palisades site, and a sequence of sites on nearby fossil beaches, Giddings has tentatively assigned an age of five or six thousand years to the Palisades series.

Thus, in terms of age, because of the scarcity of organic materials at Tuktu, and the presence of well preserved Ipiutak artifacts from essentially the same depths in a very similar glacial feature at Anaktuvuk Pass, it appears that the Tuktu complex is at least older than the Anaktuvuk Ipiutak component. And on the basis of typological comparisons, Tuktu is very probably related to other northern notched point complexes that are perhaps as old as five or six thousand years. It is my hunch that Tuktu is about 3,000 or 4,000 years old, although this is admittedly a guess date.

In terms of broader cultural relationships, it seems to me that we are obtaining increasing evidence from the American arctic and subarctic for the former presence in those regions of a previously unrecognized notched point tradition, of which the Tuktu complex was a part. That tradition was primarily oriented toward the hunting of large land mammals, and possibly toward sea hunting as well. A final definition of its limits in both time and space, and a further knowledge of its relationships to other cultural components in the several northern North American sequences, await further investigations. But meanwhile it appears that the northern notched point tradition ranged widely in time, and its wide spatial and environmental range is witnessed by its occurrence on the barren grounds, deep in the northern forest zone, on the coasts of the Chukchi Sea, and among the arctic mountains.

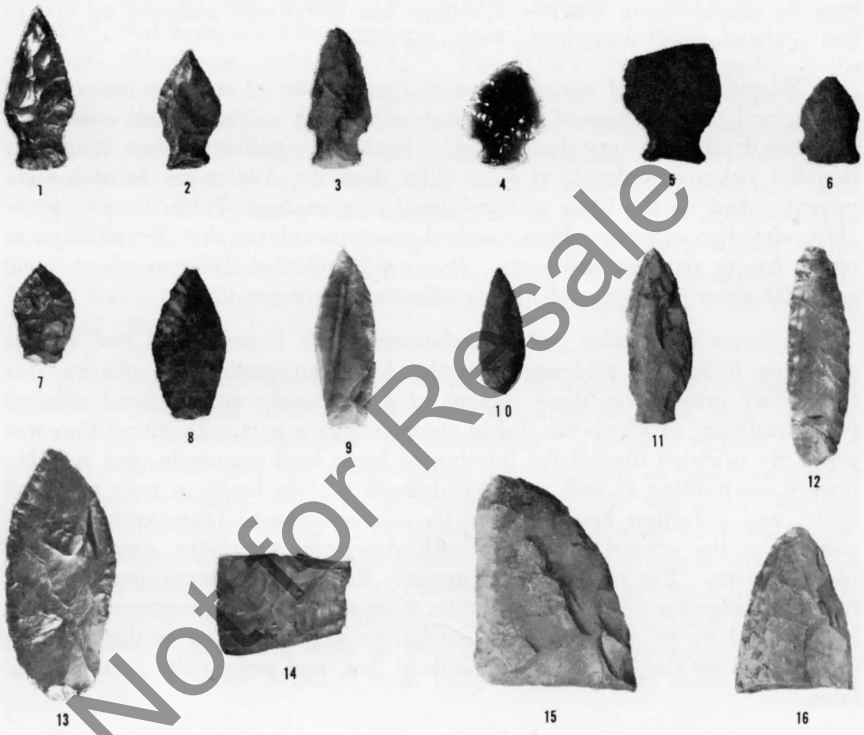




Plate I

Projectile points, notched end blades, flaked side blades, and large bifaces from the Tuktu site. 1, 3-6, typical Tuktu corner-notched points; 7-9, Tuktu leaf shaped points; 12, intrusive Kayuk point; 2, 11, Tuktu corner-notched end blades; 10, flaked side blade; 13-16, large bifaces. To scale, length of 1, $2\frac{3}{16}$ inches.[2]

[2] United States National Museum photograph.




Plate II

Scrapers from the Tuktu site. 1, keeled end scraper; 2, 3, blade end scrapers; 4, 5, flake end scrapers; 6, blade end-and-side scraper; 7, flake end-and-side scraper; 8, blade side scraper worked on one edge only; 9, blade side scraper retouched on two opposing edges; 10, flake side scraper retouched on two opposing edges. To scale, length of 1, 3¾ inches.[2]

[2] United States National Museum photograph.

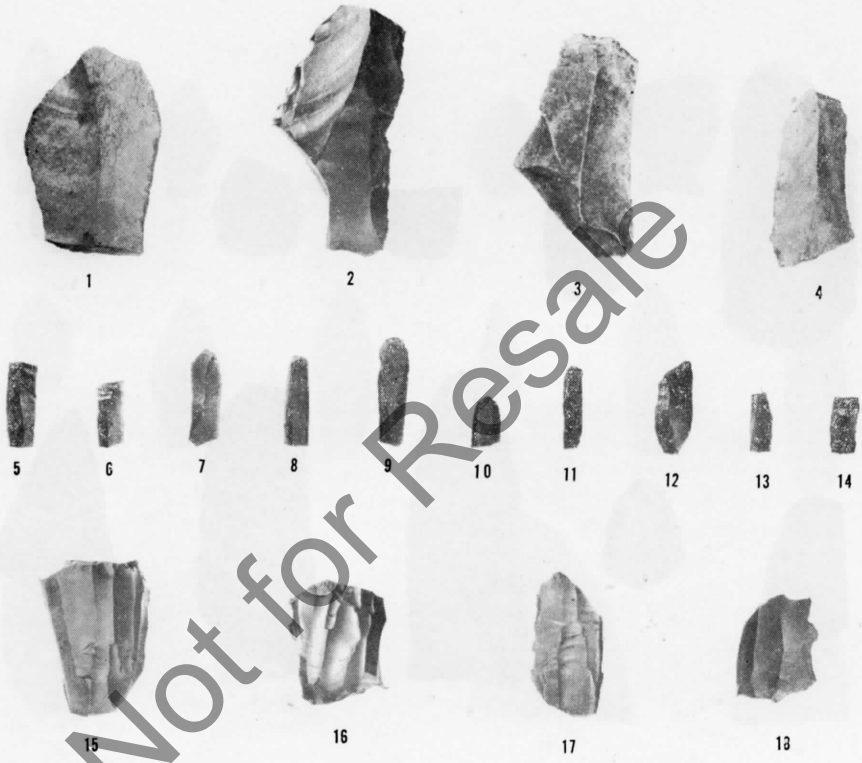




Plate III

Blades, microblades, and micro-cores from the Tuktu site. 1, 2, retouched blades (side scrapers); 3, 4, unretouched blades; 5-7, unretouched microblades; 8-11, microblades scarred on the non-bulbar surface at the bulbar end; 12-14, microblades scarred on one or both of the long edges on one or both faces; 15, 16, micro-cores, 17, 18, thin, micro-core fragments. To scale, length of 1, 2 inches.[2]

[2] United States National Museum photograph.




Plate IV

Ground stone artifacts, and axes, sinkers, and choppers from the Tuktu site. 1, 2, objects of ground or rubbed micaceous schist; 3, 4, pebble hafted axes; 5, notched pebble sinker; 6, pebble fragment chopper. To scale, length of 1, 5⅛ inches.[2]

[2] United States National Museum photograph.

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