

TRENDS IN ALEUTIAN CHIPPED STONE ARTIFACTS

WILLIAM S. LAUGHLIN AND GORDON H. MARSH

Owing to the considerable depth and antiquity of the Chaluka midden, Umnak Island, it has been possible to examine the similarities and differences between artifacts and skeletons from different levels. It is immediately apparent that the relative frequencies as well as the absolute numbers of artifacts vary with succeeding periods in time. By examining the trends inside a single site over a long period of time it is possible to distinguish those artifacts or assemblages of artifacts which are stable and characteristic features of the people who lived there from those artifacts whose life history is more episodic and less permanent. A study of the interrelationships may also enable us to throw light on the problem of which artifacts are actually interdependent upon each other and which ones are relatively more free to vary in their form or frequency. Thus, we wish to consider the interrelationships of various artifacts within a single historically continuous cultural tradition. This will aid in eventual comparisons between sites by improving our understanding of the duration in the form and in the relative frequencies characterizing the relationships between different kinds of styles of artifacts which are characteristic of particular periods in time.

The Chaluka midden is especially useful for tracing developments in the material culture of the Aleutian Eskimos, for there are differences in technique of manufacture as well as in the form of the artifacts. In the lower levels are many artifacts made of lamelles, which represent an identifiably different technique in manufacture from the more common pressure flaking technique or free hand flaking used to make the ordinary spalls. In addition, a sample from the more recent western end of the site was provided evidence of the use of ground slate blades, ulus. Thus, another real difference in technique of manufacture as well as in the form of the artifacts, and associated with a different point in history, is available for study within the confines of the same permanent village site. The subject of the lamellar flaking industry has already been examined (Laughlin and Marsh, 1954). Here we wish to treat the subject of chipped stone artifacts by looking into the categories of projectile points, knives, adze blades, and lamellar scrapers and graters, together with certain related bone artifacts.¹

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It will be noted in the succeeding tables that the cultural deposits have been divided into fifths. This has been done so that areas of different depths in the same excavation may be rendered comparable since all the strata lie horizontally. For each section excavated, one meter by three meters square, the surface and bottom position were determined and this total depth of deposit has then been divided into fifths. Thus, 38 sections of the 1948-50 excavations, constituting one large trench in the eastern portion of the site, are presented in this fashion. While the excavations were usually made on 25 cm. levels, such divisions are too fine for analysis in terms of the number of artifacts and duration of classes of artifacts. As a general rule, whenever the deposits have a total depth of less than one meter they may contain specimens sloughed down from the deeper or older portions. Those sections of 2 m. or more in depth appear to give the most consistent and reliable sequence of artifacts. Ten sections of less than 2 m. in depth on the outer periphery of this excavation may contain some specimens from the older strata.

PROJECTILE POINTS

Before examining the relation between projectile points and the other categories of chipped stone artifacts it is desirable to outline the changes between the styles within this category. The 81 specimens of this major category have been sorted into four styles according to the presence or absence of tangs, and round or square shape of the butt. These criteria were based on the observation that the slots or basins in the harpoon heads were round or square. They proved to be significant criteria for they tend to vary together in their time sequence.

Square Butt, tanged: Style 1 47 specimens. (Plate 1, rows 1 and 2)

These are distributed from bottom to top but are rare in the bottom and the top fifth. They are most frequent in the 4th and 3rd fifths which together comprise 62% of the total number of this style. Since the harpoon style H-3 (fluted) is the chief style into which these could have been inserted in the earlier periods, it is significant that seventeen out of twenty-two harpoon heads of this style (77%) are also found in the 4th and 3rd fifths.

Square Butt, untanged: Style 2 10 specimens. (Plate 1, row 3)

These are distributed from bottom to top but with complete absence in the 3rd fifth. They are evenly divided between the two lower and the two upper fifths.

Round Butt, tanged: Style 3 17 specimens. (Plate 1, rows 5 and 6)

These are also distributed from bottom to top with an absence in the 3rd fifth. A majority of 14 (82%) occur in the upper two fifths. This kind of point could be inserted into harpoon style H-8 and spear style S-11, both of which are most frequent in the upper two fifths (17 out of 22 of H-8 and 7 out of 8 of S-11 occurring in the upper two fifths). These bone heads have a gouge basin on the side of the end, rather than a slot in the end.

Round Butt, untanged: Style 4 7 specimens. (Plate 1, row 4)

Trends in Aleutian Chipped Stone Artifacts

These are distributed from bottom to top with an absence in the 3rd fifth. Four occur in the bottom fifth.

Table 1. Distribution Summary of Projectile Points
Percentages designate the proportions of each style to the totals
(last column) found in each layer

	Style 1	Style 2	Style 3	Style 4	Total
1/5	5 (36%)	1 (7%)	7 (50%)	1 (7%)	14
2/5	7 (37%)	4 (21%)	7 (37%)	1 (5%)	19
3/5	8 (100%)	0	0	0	8
4/5	21 (84%)	2 (8%)	1 (4%)	1 (4%)	25
5/5	6 (40%)	3 (20%)	2 (13%)	4 (27%)	15
	47	10	17	7	81

Table 1 illustrates an obvious shift of relative style frequency from the lower levels to the upper levels. The square butt points have clearly diminished in favor of the round butt points. Since spearheads, and harpoon heads with slots (S-5, H-3, H-5, H-6) are more common lower down, while those with gouges or basins (S-11, H-8, H-9) are more common higher up we can interpret the findings in the projectile points as an expectable conformity between square butt points and slots, and round butt points and basins, as well as a possible relation between tangs and slots as against no tangs and basins.

KNIVES

Chipped stone knives could be sorted into many more categories than those employed here. Only three categories, however, are sufficiently well defined and numerous to provide useful information in sequence analysis. The one common criterion is a bifacially chipped cutting edge. The tanged knives ("Eskimo crooked knife") are characterized by one edge being larger than the other, chipping over both surfaces, and a tang (Plate 2, upper). Chipped ulus (Plate 3, upper) could be further subdivided into curved-edge ("semilunar") and straight-edge varieties, both of which may have the back worked for hafting. Most certainly a number of these were intended for hafting in a long handle with the greatest width of the blade away from the butt of the handle. Hafted knives of this kind have been found by Helge Larsen at Platinum (Larsen, 1950). The third category of "tailoring" knives consists of those blades each of which has two edges which meet at a point, either at 90° or less. The blade as a whole may be either square or triangular (Plate 2, lower).

Table 2. Distribution Summary of Knife Blades

	Tanged	Ulus	Tailoring	Totals
1/5	15 (31%)	31 (63%)	3 (6%)	49
2/5	26 (54%)	19 (40%)	3 (6%)	48
3/5	15 (79%)	2 (10.5%)	2 (10.5%)	19
4/5	31 (69%)	10 (22%)	4 (9%)	45
5/5	14 (42%)	17 (52%)	2 (6%)	33
	101	79	14	194

The decrease in the ratio of tanged knives is of interest because this artifact has been an important one from the earliest occupation.

ADZE BLADES

All adze blades (Plate 3, lower) have been formed by chipping. The cutting edge is always bevelled to one surface, as with scrapers. Many of these blades show smoothing or polishing, especially on the outer surface (away from the handled side, i.e., the "wedged" edge). We found no way of distinguishing between polishing resulting from use, and possibly intentional polishing. Adze blades were hafted by means of a whalebone socket or headpiece with a basin, to which the handle had been attached. A category of chisel could possibly be constructed for those with narrower bodies and thinner edges. Thirty blades are made of cherts, the remaining 15 of andesites. They were distributed in the following numbers:

top 1/5	3 (7%)
2nd 1/5	7 (16%)
3rd 1/5	5 (11%)
4th 1/5	17 (38%)
bottom 1/5	13 (29%)
Total	45

The predominance of adze blades in the lower two fifths is matched by the similar distribution of bone socket pieces: six in the fourth fifth and one each in the third and second fifth. It may be noted here that the diminution of artifacts in the third fifth is common to knives, projectile points, sea-otter bone tools and other categories. There is a possibility that the nature of the deposits change at this time, and that they represent materials found in the refuse thrown out of houses rather than that found inside houses in large part.

Perhaps the most important point is the clear evidence that a heavy wood-working industry was known to the Paleo-Aleuts at the time of their entry into the Aleutian Islands. This industry consists of heavy stone mauls, bone wedges, adzes and various abrading tools.

LAMELLAR GRAVERS AND LAMELLAR SCRAPERS

The sorting criteria for lamellar blades, i.e., lamelles, are those previously set forth. (Laughlin and Marsh, 1954). A lamellar graver is characterized by retouching along both edges to form a sharp point or a snub-nosed tip on one end of the flake. All retouching is on only one face of the flake, that face being the non-core surface of the flake. A lamellar scraper is retouched along one or both edges of the flake, but without a definitely pointed or tapered working end. Again, all retouching is on the non-core surface of the flake. The retouching is usually confined to the edge so that the prismatic form of the original lamelle can be seen.

Table 3. Lamellar Tools (Plates 4 and 5)

	Gravers	Scrapers	Totals
1/5	1	3	4
2/5	4	2	6
3/5	2	4	6
4/5	14	12	26
5/5	14	13	27
		Total	69

The great predominance of lamellar tools in the lower two fifths has given a clue to the antiquity of the manufacturing site on nearby Anangula Island. The absence of polyhedral cores, whereas many were found at the manufactory, suggests that these flakes were manufactured away from the village. The existence of the Anangula manufactory makes it obvious that such flaking was done at such a site, but did not indicate whether or not such flaking was also done in village sites. At Anangula 753 lamelles and 16 polyhedral cores were found. The absence of cores here may simply be a sampling accident resulting from the small numbers involved. The paucity of polyhedral cores at other sites in Alaska where lamelles were found is also a matter of some interest.

Tools of the same general form as these, plus others of related form, all made on lamelles, may be seen in the categories of sidescrapers, endscrapers, graters and rare types of scrapers from Ipiutak (Larsen and Rainey, 1948: plates 16, 17, 18, 19 and text figures 24, p. 106 and 25, p. 108). Few unworked lamelles and no polyhedral cores were found at Ipiutak. If the people did not spend the entire year at Ipiutak they may, of course, have manufactured these tools elsewhere, or in a specialized manufactory such as the one at Anangula. Alternatively, we may raise a question concerning the manufacture of lamelles. No polyhedral cores of sufficient size to match the larger lamelles have been found. Does this mean that the larger lamelles were struck from ordinary cores, as occasional products in the manufacture of ordinary spall flakes? Large numbers of cores and flakes, both lamellar and non-lamellar, will be needed to deal definitively with this kind of question.

The form of these lamelles is the same for large and small ones with reference to the six sorting criteria employed. It is of considerable interest that the same kinds of tools were made of lamelles in the Ipiutak artifacts. The relation between size of lamelle and material, which was shown to be highly significant (Laughlin and Marsh, 1954) is again seen to apply here at Chaluka. Of the lamellar graters 69% were made of cherts, 17% of obsidian and 14% of andesite. Of the lamellar scrapers 41% are of cherts, 38% of obsidian and 21% of andesite. Chert was clearly favored for both these types of tools, though obsidian was apparently not as useful for graters as for scrapers.

This would be understandable if the function of the graters was cutting and carving which would subject obsidian to more cross strain and hence breaking, than would the action of scraping or sawing for which the scrapers may have been used. Since andesite produces poor lamellar flakes, this is perhaps why it was least favored, though being the commonest of the three types of stone it had to be used when the other two were not at hand.

Other categories of chipped stone artifacts which could have been included in this study, such as thrusting points, spall flakers, etc., are either too few in numbers, too nebulous in sorting criteria or otherwise unproductive of useful information.

Turning to the interrelations of the categories of chipped artifacts described here it is possible to see recognizable trends in their relative frequencies.

Table 4. Distribution Summary of Chipped Stone Artifacts

	Projectile Points	Knife blades	Adze blades	Lamellar gravers & scrapers	Totals
1/5	14 (20%)	49 (70%)	3 (4%)	4 (6%)	70
2/5	19 (24%)	48 (60%)	7 (9%)	6 (7%)	80
3/5	8 (21%)	19 (50%)	5 (13%)	6 (16%)	38
4/5	25 (22%)	45 (40%)	17 (15%)	26 (23%)	113
5/5	15 (17%)	33 (37%)	13 (15%)	27 (31%)	88
	81	194	45	69	389

The proportion of projectile points is relatively stable over the entire period of time represented by these five fifths (some 3-4,000 years), whereas there is a consistent increase in the proportion of knives. The decreasing trends are unmistakable in the adze blades and in the lamellar tools. The stability in projectile point proportions is especially interesting in view of the changes within the category of projectile points and the corresponding changes in the bone spear and harpoon heads. Knives have always been an important item in the tool inventory of the Eskimos. Their increase, coupled with the decrease in lamellar scrapers and gravers suggests the possibility that some of the functions of the lamellar tools were taken over by the knives, which can be very effectively used as scrapers. The use of wood for qayaqs, umiaqs and house planks makes the decrease in adze blades difficult to interpret with any plausible correspondences.

FLAKING TOOLS

There are three kinds of bone tools which were used in flaking stone. The most important early style flaker is made of a rib, most usually a sea otter and has a blunt, short bevel at the working end, with the point usually on the outer curve of the rib. There is much indication of abrasion on the end used for flaking. (Plate 6, upper). The new style of rib flaker (Plate 6, lower), possibly an awl instead of a flaker, has a sharper and longer taper, with the point usually on the inner curve of the rib, and appears to have been made from the rounder and more curved ribs of the sea otter. For this analysis 319 old Style I rib flakers, from the 1950 excavations only, are presented. Their distribution ends in the second fifth and they appear to be replaced by the new Style II, which begins abruptly in the second fifth and continues into the first fifth.

The second kind of flaking tool is the usual form found in other Eskimo sites (Plate 7, upper). It is cut or split from bone, often identifiable as rib, probably of whale. These split rib flakers become more common in the later deposits.

The third kind of flaker is made of the baculum of sea mammals such as sea lion, seal and sea otter (Plate 7, lower). They seem not to vary significantly in their distribution, though the numbers are too

small to justify any penultimate statements. Their use is known from ethnological sources. A boy was presumably not considered a marriageable man until he had worn one down to its base (Jochelson, 1936, p. 71).

Table 5. Distribution Summary of Flaking Tools

	Rib Flakers		Split Rib	Baculum	Total
	Style I	Style II	Flakers	Flakers	
1/5	0	17 (74%)	6 (26%)	0	23
2/5	9 (17%)	33 (64%)	8 (15%)	2 (4%)	52
3/5	35 (80%)	0	7 (16%)	2 (4%)	44
4/5	159 (94%)	0	4 (2%)	6 (4%)	169
5/5	116 (97%)	0	1 (1%)	3 (2%)	120
	319	50	26	13	408

Assuming that rib flaker Style II is the successor to Style I, there is then no significant decrease in rib flakers, but rather a clearly delineated change in form. Split rib flakers appear to have been gaining in proportion, though the numbers involved are small.

FLAKING TOOLS AND ARTIFACTS OF CHIPPED STONE

When the total numbers of chipped stone artifacts and of flakers are compared, two trends stand out: 1—There is a diminution in absolute numbers seen in the fourth, second and first fifth. As previously mentioned the third fifth contained less artifacts of all kinds, though the proportions of kinds of artifacts in it appear to agree with the lower and upper fifths. 2—There is an inversion in the proportion of flaking tools to chipped stone artifacts. The ratio of flakers to artifacts is 6:4 in the bottom two fifths. In the second fifth it is 4:6 and in the top fifth has become 2.5:7.5

Table 6. Summary Distribution of Chipped Stone and Flaking Tools

	Chipped Stone	Flaking Tools	Totals
1/5	70 (75%)	23 (25%)	93
2/5	80 (61%)	52 (39%)	132
3/5	38 (46%)	44 (54%)	82
4/5	113 (40%)	169 (60%)	282
5/5	88 (42%)	120 (58%)	208
	389	408	787

In summary of the sequence of the east end deposits of Chaluka, with reference only to the artifacts discussed here, it appears that there has been a real and significant change from the bottom to the top. This change consists of unequal diminutions in numbers and consequently changes in the relative proportions of the artifacts to each other. The most clear cut change is the replacement of Style I by Style II in the rib flaking tools, if indeed all the Style II artifacts are flaking tools. Equally dramatic is the sharp reduction in adze blades and in lamellar flake tools. The overall reduction in the numbers of chipped stone artifacts and of the related flaking tools presents a major trend in the prehistory of Chaluka. Reasons for these trends are easier to suggest than to prove. Possibly these figures

anticipate the introduction of grinding and polishing as seen in the ground slate blades found in the west end of this same midden. The age of the deposits represented by these five fifths may provisionally be estimated at from 3-4,000 yrs. ago to a time prior to the Russian contact which is approximately 1760 AD.

WEST END DEPOSITS

In 1952 excavations were made in the west end of Chaluka. The purpose was to secure some of the late materials. From the artifact inventory of the mummy caves, and shallow or surface collections, it was obvious that ground slate blades, shallow stone lamps, long single-piece sockets, circular labrets decorated with concentric circles and various styles of harpoon and spearheads ought to be found. The Aleuts of Nikolski had shown us where one of the first Russian parties had lived at this end of the midden. In addition, they had recovered late type artifacts in the process of digging garbage pits, baraboras and in reburying skeletons encountered in their digging operations.

An investigation of the topography of the site and surrounding area indicates that Chaluka was founded when the bay extended further inland, covering what is now a gravel terrace overlain with a shallow layer of soil. As the site expanded, and the gravel terrace was built up, the people moved slowly to the west, keeping a portion of the site on the bay. Only the western end of the site now fronts directly on the bay.

The projectile points confirm the shift from the earlier predominance of square butt points to the later predominance of round butt points. Of the total 19, 5 belong to the square butt styles and 14 to the round butt styles. The total number constitutes 27% of all these categories of chipped stone artifacts.

Knives are represented by 25 chipped blades and 14 ground slate blades. This total represents 55% of all the chipped stone artifacts. Probably all 14 ground slate knives were ulus. No projectile points or other artifacts of ground slate were found.

Eight adze blades were recovered. This represents an increase, numerically and proportionately, constituting 11% of all chipped stone artifacts.

Five lamellar scrapers were found, constituting 7% of all chipped stone artifacts.

The diminution in rib flakers seen at the east end is confirmed, for none of either style was found. However, 9 split rib flakers were recovered. Thus, the gain in proportion of split rib flakers appears to be continued into the contact period.

The presence of one lead pin in the side wall of a whalebone bucket is presumed to be reliable evidence of Russian arrival in the islands, if not at this particular site. The other kinds of late artifacts were found, and also skeletons of the Neo-Aleut variety. None of this kind of skeleton had been discovered in the east end. It is likely

that the west end deposits overlap in time with the uppermost fifth or two fifths at the east end. As a whole they were comparatively shallow, 2 m. at the deepest, and were interrupted with many burials, 15 in all. Thus it was not considered feasible to partition the deposits into fifths or even into halves, though the lowermost artifacts may be equable in time with the second or first fifth of the east end deposits.

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University of Wisconsin
Madison, Wisconsin

University of Alaska
College, Alaska

PLATE DESCRIPTIONS

- Plate 1. Projectile Points (3/5 natural size).
- Plate 2. Tanged Knives (upper), Tailoring Knives (lower) (1/3 size).
- Plate 3. Ulus (upper), Adze Blades (lower).
- Plate 4. Lamellar-flake Tools.
Gravers: 1, 2, 4, 5, 6, 7, 9, 10, 13, 14, 15, 17, 19, 20, 21, 23, 24, 25, 26, 28.
Scrapers: 3, 8, 11, 12, 16, 18, 22, 27.
- Plate 5. Lamellar-flake Tools.
Scrapers 1-12, and 14.
Adze blade (?): 13.
Graver: 15.
- Plate 6. Rib Flakers. Style I (upper), Style II (lower).
- Plate 7. Split-rib Flakers (upper: 2 rows) and Baculum Flakers (bottom).
Lower right is a fresh unworked sea-otter baculum. Next to it is a baculum partly made into a compound fishhook shank. The rest are flakers.













