Virginia Commonwealth University

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Dept Soc/Anthro
20 Apr 77

Dear Don,

I am returning your photos of that Laurel Leaf along with some xerox copies in case you ever need to sent them out again. Thanks a million. Now I can finish up that paper right.

I am also enclosing some tables from my thesis, which I am finishing up: Variability in the Early Stages Of Manufacture of Virginia Fluted Points: An Experimental Study. AENA said once that they wanted to publish it. I hope it might be of use as a textbook in flintworking and as a catalog of biface forms for lithic analysts. But I don't know. It's 300 pages long.

Well, I sure can't type. But it's a far site better than my writing.

It looks like things might work out for me working with the Pamunkey Indians. If only we can get some participants in our field school. So far no one has signed up. But if it's right, it will work out.

Have a good spring and take it easy this summer. We need you around a long time. I have many things to learn from you yet. I hope to get away for an extented visit some year. By the Way Francois is coming for a few days visit the end of the month.

Best regards,

Errett

~~Etxerr~~ (Can't even spell my own name)
Errett Callahan (there)

Telephoned 4/27/77

Table 9

TENTATIVE TECHNOLOGICAL DEFINITIONS OF THE EARLY STAGES OF MANUFACTURE OF CLOVIS-LIKE BIFACES AS BASED ON EXPERIMENTAL FINDINGS

	Stage 2	Stage 3	Stage 4
1. width/thickness ratio	core reduction: 2.00-3.00± flake reduction: variable, may exceed 6.00	3.00-4.00±	4.00-5.00±
2. optimum edge-angles (spine plane)	$55^{o} - 75^{o}$	$40^{o} - 60^{o}$	$25^{o} - 45^{o}$
3. nature of cross-section	thick lenticular to hexagonal to irregular	lenticular (bi-convex)	flattened (thin lenticular to hexagonal)
4. rate of narrowing during fabrication	becomes narrow at more rapid rate than becomes thin	becomes narrow at about same rate as becomes thin	becomes thin at more rapid rate than becomes narrow
5. nature of lineal edge offset	relatively wide (Table 2,B.4)	relatively moderate (Table 2,B.5)	relatively close (Table 2,B.6)
6. nature of flake scar interval	widely to variably spaced	closely to semi-regularly spaced	closely to quite regularly spaced
7. nature of flake scars	high degree of variability in flake and scar morphology; extensively to moderately gouged, "hollow ground" scars	moderate degree of variability in flake and scar morphology; moderately to minimally gouged scars	low degree of variability in flake and scar morphology; minimally gouged scars
8. nature of opposing flake scar contact	less than 50% of biface width except at ends	50-70% of biface width; scars just contact or slightly undercut at center	50-100% of biface width; scars undercut up to entire width
9. nature of most feasible percussor	may be hard to soft stone hammer	may be medium heavy billet	may be medium heavy to light billet
10. degree of regularity of outline (plan)	irregular outline (Table 2,B,4)	semi-regular outline (Table 2,B,5)	rather regular outline (Table 2,B,6)
11. nature of platform preparation	non-existent to minimal preparation	moderate to extensive unless positioned at ridges on opposite face; prepared individually	moderate to extensive preparation; platforms prepared individually or whole edge at a time

Table 9 (continued)

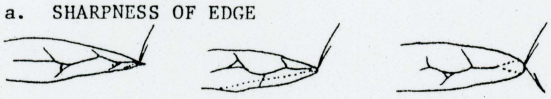
	Stage 2	Stage 3	Stage 4
12. relationship of platform to center plane	high degree of variability above or below center plane (wide offset)	moderate to minimal degree of variability above or below center plane (moderate offset)	low degree of variability above or below center plane (minimal offset)
13. nature of reduction emphasis	strong emphasis on lineal edge, weak to non-existent emphasis on surface and outline	strong emphasis on surface, weak emphasis on edge and outline	strong emphasis on surface, moderate emphasis on edge and outline
14. degree of concentration during fabrication	success with considerable degree of interruption and conversation	success with moderate degree of interruption and conversation	success with minimal degree of interruption and conversation
15. correlation of biface weight to weight of completed product (of 5 stages)	core reduction:5-10 times finished weight; flake reduction: variable	3-5 times finished weight	2-3 times finished weight
16. degree of trim	weak to non-existent degree of trim between flake removals	weak to moderate degree of trim between flake removals	extensive degree of trim between flake removals
17. pace of working (work tempo)	minimum pause between flake removals	moderate pause between flake removals	considerable pause between flake removals
18. work time (Clovis bifaces)	2-5 minutes (4.30 min. experimental av.)	2-10 minutes (5.58 min. experimental av.)	10-25 minutes (17.87 min. experimental av.)
19. number of flake removals (Clovis bifaces)	12-24 flakes (19.8 experimental av.)	6-12 flakes (9.2 experimental av.)	12-24 flakes (16.2 experimental av.)
20. relation to Old World Paleolithic forms	Abbevillian handaxe-like	Acheulean handaxe-like	refined trade blank-like

Table 10

PLATFORM PREPARATION VARIABLES IN BIFACIAL REDUCTION OF FLAKED STONE TOOLS

Errett Callahan

a. SHARPNESS OF EDGE

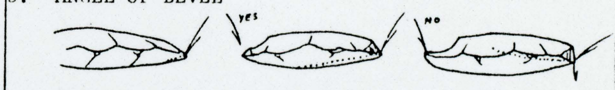


TOO SHARP
Edge may collapse or release small flake. Dull by abrading perpendicular and/or parallel to lineal edge with coarse abrading stone.

CORRECT
Dull only enough to prevent collapse of platform. Correctly dulled, flake should release with first strike.

TOO DULL
Excessive resistance, causing billet to glance off without releasing flake. Reflake so as to reduce thickness of edge.

b. ANGLE OF BEVEL

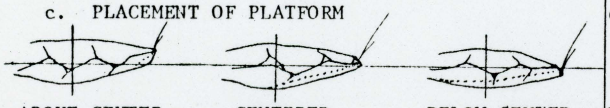


TOO LOW
Edge may collapse. Rebevel to steeper angle.

CORRECT
Bevel to 60°-70° so edge points slightly downward and flake releases on first attempt.

TOO STEEP
Force may glance off. Rebevel to lower angle. Avoid continued striking.

c. PLACEMENT OF PLATFORM

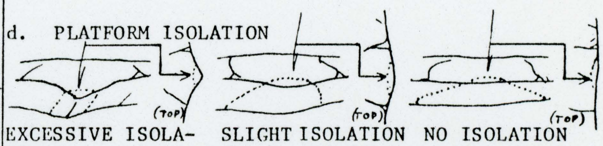


ABOVE CENTER
Flake may be short or biface may break. <u>A major cause of fracture</u>. Lower platform.

CENTERED
Flake may travel to center. Less chance of fracture. Ideal for primary thinning.

BELOW CENTER
Flake may span up to entire width of biface. Minimum chance of fracture. Ideal for secondary thinning.

d. PLATFORM ISOLATION

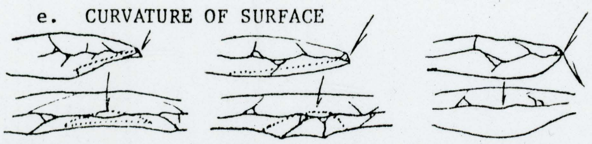


EXCESSIVE ISOLATION
May produce narrow flake of little mass. Reduce isolation.

SLIGHT ISOLATION
May produce most massive flake of predictable attributes.

NO ISOLATION
May expand to wider than long and terminate in hinge fracture. Increase isolation.

e. CURVATURE OF SURFACE

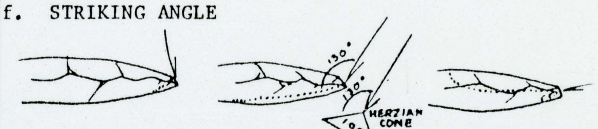


CONCAVE TO FLAT
Force may dissipate and flake may step or hinge upon encountering greater mass. Round off overhang.

SLIGHTLY CONVEX
Allows for optimum removal of mass with least resistance.

OVERLY CONVEX
Excessive resistance, preventing flake removal. Lower platform or remove hump from another direction.

f. STRIKING ANGLE

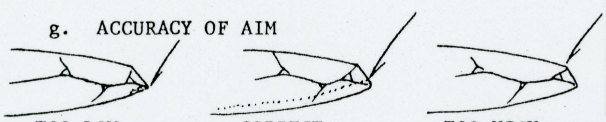


TOO STEEP
May release short flake or glance off platform. Lower striking angle.

CORRECT
Strike at 130° to expected flake scar for optimum results. Alternately, strike perpendicular to center plane (but not to platform).

TOO STRAIGHT IN
May split biface with overshot or deeply hinged flake or may produce partial cone and crushed edge. <u>A major cause of rejection</u>. Raise striking angle.

g. ACCURACY OF AIM

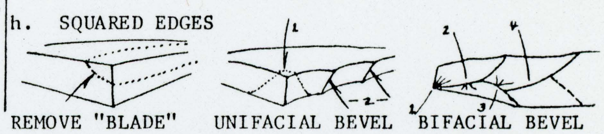


TOO LOW
May either fail to release flake, crumble platform, or yield flake smaller than desired. Aim higher.

CORRECT
Ideal contact point is about 1/8" back from edge. Correct platform attributes help assure correct release despite slight inaccuracy of aim.

TOO HIGH
May either fail to release flake, or break biface in two. <u>A common cause of fracture</u>. Aim lower.

h. SQUARED EDGES



REMOVE "BLADE"
Strike so as to remove an elongated flake down one or more corners.

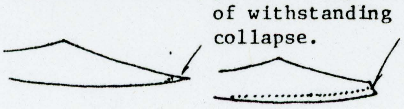
UNIFACIAL BEVEL
Or bevel by striking a series of flakes perpendicular to edge, flip over, then strike perpendicularly at center of ridge.

BIFACIAL BEVEL
Or work alternately from face to face, maintaining a centered edge.

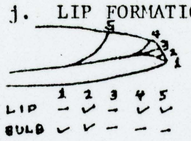
Grinding Hard Hornstone

i. THINNESS OF EDGE

On excessively sharp and thin edges such as flakes or blades, remove excessive thinness so as to create a beveled platform capable of withstanding collapse.



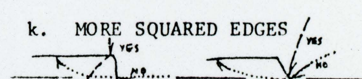
j. LIP FORMATION POSSIBILITIES



All forms are possible with all load types but ratios of occurence vary.

Lips tend to occur more often when crack split is delayed as with softer percussors.

k. MORE SQUARED EDGES



SQUARED EDGE **BEVELED EDGE**
Strike roughly perpendicular to center plane, not to platform, to avert aborted fracture planes.

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Table 1

EARLY STAGES OF MANUFACTURE

A GUIDE TO GENERALIZED BIFACE REDUCTION

ERRETT CALLAHAN

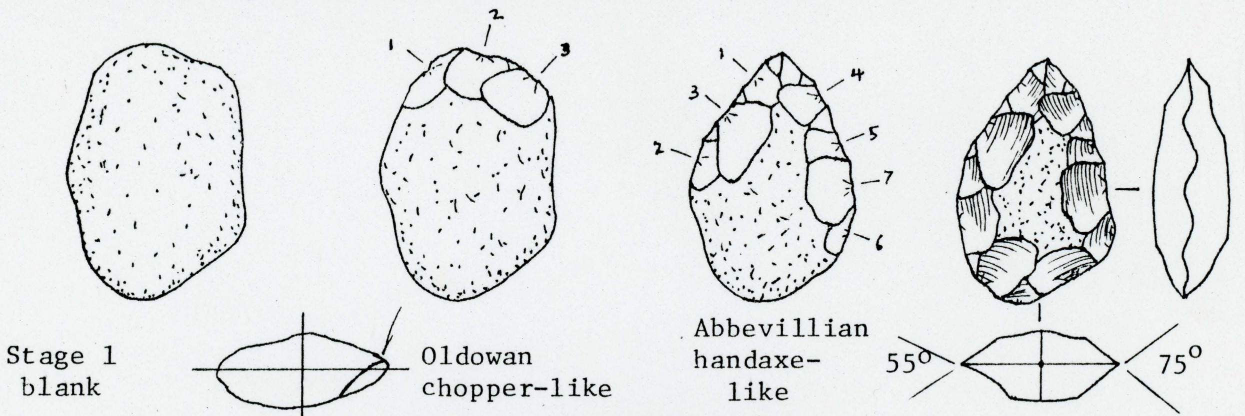
STAGE 1 - OBTAINING THE BLANK

Obtain the raw lithic unit: flake, cobble, nodule, chunk, etc.

STAGE 2 - INITIAL EDGING

Create bifacially worked, circumferential, roughly centered edge-angles of between 55°-75° so that the biface has a width/thickness (w/t) ratio in excess of 2.00.

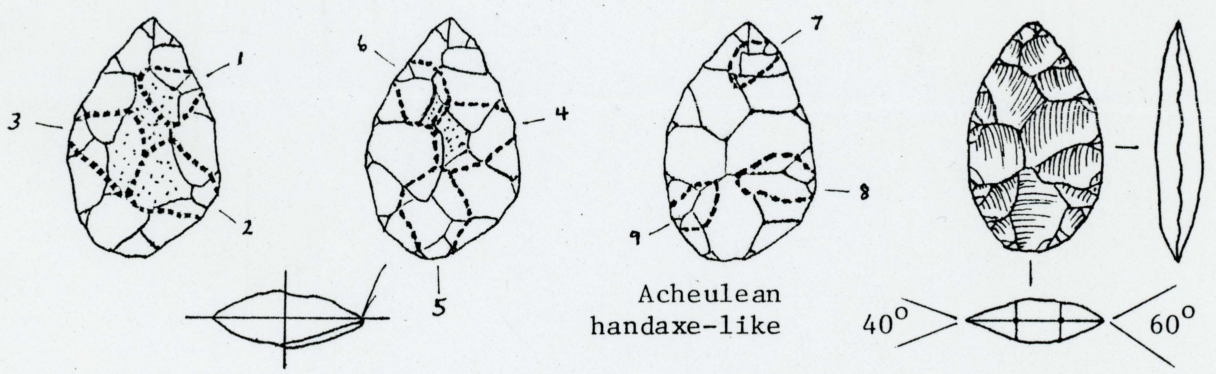
a



STAGE 3 - PRIMARY THINNING

Create a lenticular cross-sectioned biface with a w/t ratio of between roughly 3.00-4.00 and with aligned, centered edge-angles of between 40°-60°. Work from the most prominent convexity to the least, eliminating major humps, ridges, hinge or step-fractures, and concavities so as to make flake scars to contact in the center.

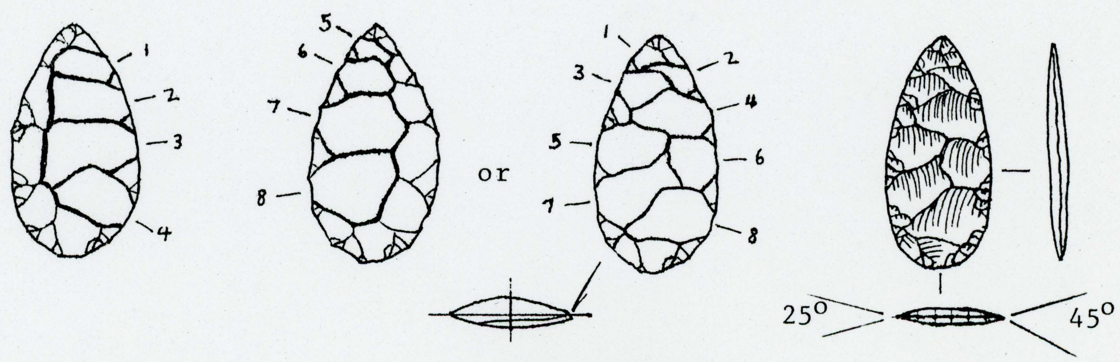
b



STAGE 4 - SECONDARY THINNING

Create a biface with a flattened cross-section, with a w/t ratio in excess of 4.00, and with aligned, centered edge-angles of between 25°-45°. Flake so that flake scars travel beyond the center line and considerably undercut previous scars from the opposite margin. Generalize the contemplated shape, possibly working in patterned manner as from tip to base, etc. Prepare edges for hafting (notching, fluting, etc.) or utilization (edge adjustment, serrating, etc.) in later stages.

c



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