

Finished Bifaces

Four groups of morphologically distinct bifaces are described. These bifaces are considered finished "functional" tool forms or "formal" tool types. All four groups have been recognized, described, and defined by previous researchers in south Texas. The effort here is concentrated on B1, the beveled knife, because it is the most numerous finished biface type from the site (although technically most Perdiz arrow points are finished bifaces) and also because of specific research design problems. The other three types of finished bifaces are comparatively rare at 41 JW 8.

(B1) Beveled Knives (N=13; Fig. 6,a-g)

Within the beveled knives category are two complete bifaces and 11 fragments representing eight additional tools. Two fragments (distal and proximal) fit together to form a complete tool; two fragments (distal and medial) fit together to form most of a tool; and two fragments (distal and medial) are obviously sections of a single tool, although they do not fit together. The remainder of the group consists of a proximal, a medial, and three distal fragments.

The beveled knife is an interesting tool form that is temporally restricted to a very brief time period in southern Texas, probably for only a 300-year interval between A.D. 1300 and A.D. 1600. Where found in single component sites, they occur only with the Toyah phaselike assemblage of Perdiz arrow points, ceramics, end scrapers, and flake drills. The research proposal for the 41 JW 8 work called for a special study of the beveled knife. Ken Brown's (Brown *et al.* 1982:55-63) recent work on the collection of these tools from the Choke Canyon Reservoir area, provides an excellent discussion of this tool type.

Brown notes that considerable confusion occurs in the archaeological literature with regard to beveled knives. The most widespread Late Prehistoric beveled knife form is a four-sided, diamond-shaped biface that is alternately beveled on all four sides. The 4-beveled forms ("Plains" or "Harahey" bifaces) "appear during the Late Prehistoric in the southern Great Plains and elsewhere in Texas, occurring with low frequency but with widespread geographical distribution" (*ibid.*:55). Brown cites the presence of these artifacts in numerous defined late cultural manifestations and notes that most of the occurrences are found "in the southern Great Plains or the Blackland Prairies, with few occurrences on the Edwards Plateau . . . , the eastern woodlands, or the Gulf coastal plain" (Brown *et al.* 1982:55).

The beveled knife form that does occur on the Gulf coastal plain of southern Texas in the Choke Canyon Reservoir area and at 41 JW 8 is a predominately 2-beveled biface that "has a short, convex-edged, 'proximal' portion that is rarely beveled" (*ibid.*). Brown terms this form the "quadrilateral 2-beveled biface" and notes that while some sites in central and northeastern Texas have occurrences of both forms, the 2-beveled form is the only Late Prehistoric beveled knife that has been found in southern Texas.

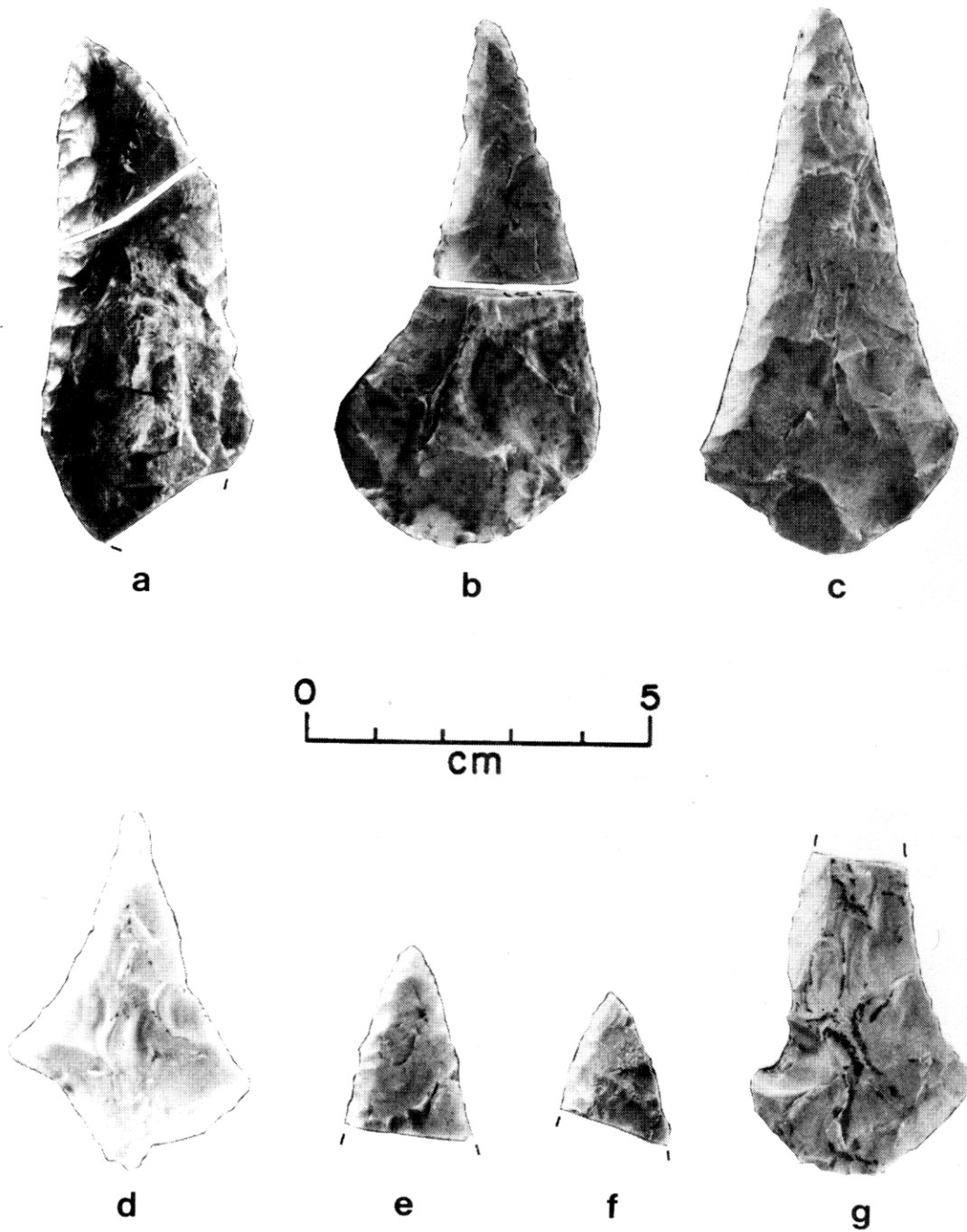


Figure 6. **Beveled Knives (B1)**. Lot numbers: a, 433; b, 131 (proximal) and 321 (distal); c, 320; d, 56; e, 248; f, 519; g, 157.

The 2-beveled form apparently begins as a well-thinned, large, ovate biface that has a slight distal bevel. Brown was able to trace the use history of the 2-beveled form by studying the comparatively large sample of the tools from the various Choke Canyon area sites (see Brown et al. 1982:Fig. 22). One of the most important aspects of this artifact form is that "the characteristic shape is a result of repeated rejuvenation, not the manufacturing process" (Brown et al. 1982:56). Brown argues that the beveling probably served to increase the edge angle for the purpose of "heavy-duty cutting as well as minimizing width reduction due to resharpening" (*ibid.*).

Significant aspects drawn from Brown's study of the beveled knife form indicate a frequent pattern of transverse breakage; no clear-cut evidence for hafting; an absence of covarying metric attributes; and the possibility of functional differences between different sections of the tool edge, suggested by the fact that the distal sections often had steeper spine-plane angles than the lateral corner sections. Also, the average spine-plane angle (49-53°) for the Choke Canyon specimens accords with the "sawing" and "carving" functions found by a study of exceptionally well-preserved artifacts from Hogup Cave (Wylie 1975), and the many Choke Canyon specimens were all apparently made of local materials.

Brown discusses the wear patterns he observed on the 2-beveled bifaces at some length. Interestingly, he found that most of the Choke Canyon specimens showed "almost exactly the same kind of edge damage sustained by unifacial scraping tools" (Brown et al. 1982:59), i.e., *en echelon* step flaking on the beveled side of the edge. Furthermore, Brown observed asymmetrical edge polish and abrasion occurring on the beveled side of the edge rather than the flat ventral side. He notes that if accepted uncritically, this wear would be interpreted as typical unifacial scraper wear and notes the similarity of the profile of a 2-beveled biface edge to the uniface in cross section. Brown suggests that the location of the wear is a function of the edge morphology and discusses his experimental efforts to produce analogous wear using beveled edge tools on heavy-duty cutting and sawing of hard materials (seasoned wood and dry antler). He argues that a steep working edge will not produce typical bifacial edge damage even when used in such a manner.

Brown noted considerable edge and facial abrasion and polish on the Choke Canyon specimens that he interpreted as evidence of considerable penetration during use. He also noted a variety of other wear patterns on some specimens, such as edge nicking and bifacially distributed edge damage (edge breaks, edge crushing, and step fracturing). He concluded that the Choke Canyon specimens did not demonstrate a single pattern of edge wear and appeared to have served more than one function.

Brown's conclusions merit repeating here as they are in part supported by the Hinojosa site assemblage (*ibid.*:61):

1. Quadrilateral 2-beveled bifaces are a distinctive Late Pre-historic south Texas tool form, clearly of local manufacture but occurring in contexts similar to those yielding diamond-shaped 4-bevel knives elsewhere in Texas. Limited evidence from Choke Canyon suggests close association with bison remains.

2. Intuitive assessments of these tools as cutting implements seems to be substantiated by microwear observations. In at least some cases there is evidence of penetration and application to yielding substances. However, significant variability of wear is documented even in the small Choke Canyon collection.

3. Most specimens demonstrate extended curation and maintenance of the working edge, in some cases probably followed by recycling into perforating or scraping tools. Patterned maintenance of this tool form is responsible for its distinctive shape.

The beveled knives from the Hinojosa site fit the 2-beveled tool description with one exception, a specimen with three beveled edges but otherwise similar to the 2-beveled form in outline shape. The 41 JW 8 specimens were examined microscopically and are discussed individually.

The atypical specimen mentioned (Fig. 6,d) was found on the surface in the plowed field (Lot 56). This specimen is very short (53.5 mm) and has three beveled concave edges. It is 36.3 mm in width, has a maximum thickness of 7.12 mm, and weighs 10.4 g. The artifact is made of a white chert. Like most 2-beveled quadrilateral bifaces, the blade is left beveled. The atypical third bevel occurs on one basal edge. The other basal edge is incomplete (an angular fracture, possibly caused by plow damage, removed a small wedge-shaped section), but appears to have been slightly convex, and is not beveled. The extreme end of the distal tip has been removed by a impactlike fracture.

Orienting the artifact as shown in Figure 6,d, each of the beveled edges will be described. The right (forward) edge has a spine-plane angle of 65° near the lateral corner and 55° toward the tip. Evidence of wear mostly occurs near the tip and near the lateral corner. The distal 2 mm has heavy edge rounding (abrasion) over heavy step fracturing; proximal from this point, the edge rounding is light or not present. The proximal 12 mm (from lateral corner) has moderate to heavy rounding, especially near the lateral corner, with apparent polish on the bevel surface.

The left (forward) edge has wear similar to that found on the right edge. The left edge is noticeably steeper and has spine-plane angles of 89-90°. The tip and proximal sections of the edge show heavy rounding over step fractures with possible polish on the bevel surface.

The right (basal) edge is not beveled but is slightly steeper on the upper face. The edge is bifacially retouched and has moderate rounding that mainly occurs on the edge projections. The left (basal) edge is beveled but does not show edge rounding. It appears to have been freshly resharpened.

The Lot 56 specimen is clearly a worn out tool that has been repeatedly resharpened to such a degree as to have severely concave edges and is very short. The wear consists mainly of edge rounding and some polish on the beveled edges, mainly concentrated at the tip and at the lateral corners. The virtual absence of wear in the central section of both forward edges is probably the result of a resharpening episode just prior to discard. The basal beveling on one edge and use wear on the other basal edge are unusual.

It should be noted that the basal bevel is not located on the same face as the opposing distal edge as is typical of "Plains" 4-beveled knives. The use of all possible tool edges underscores the fact that this tool was virtually exhausted at the time of discard.

The other intact beveled knife (Lot 320; Fig. 6,c) is made of a mottled gray, coarse grain chert. This artifact was discarded while still complete and apparently serviceable, although a flake has been removed from the distal tip. It is 80.6 mm in length, 37.8 mm in width, 8.9 mm in thickness, and weighs 21.2 g. The spine-plane angles range from 65 to 82° on the left edge (as oriented in Fig. 6,c) and 50 to 79° on the right edge. The artifact may have been discarded due to the steepness of the edges.

The left edge of the Lot 320 specimen is partially plow damaged and has step fractures along both aspects of the edge which are only partially use related. The edge is moderately rounded and polished. The ventral face has hinge and step fractures which may be plow damaged. Some polish can be seen along the edge and on the flake ridges 4-5 mm from the edge on the ventral face. The bevel aspect of the edge definitely has step fractures overlain by rounding and polish. The polish extends on the highest flake ridges to the bevel ridge (point where bevel begins on dorsal face) along most of the edge.

The right edge has a similar wear pattern but the wear is more pronounced. The entire edge is well rounded and polished. It is significant to note that this edge, like virtually all of the worn beveled biface edges from 41 JW 8, is evenly rounded with respect to the edge aspects. While more abrasion and polish occurs on the bevel aspect than the ventral aspect, the edge itself is evenly worn, in contrast to the end scraper edges which are consistently rounded toward the dorsal aspect. The prominent flake ridges on both aspects are rounded and polished well away from the edge.

The proximal edges of this tool are ground but not polished. This may be a hafting modification. Another possible indication of haft wear is the flake ridge rounding and polish observed on both faces of the tool between the lateral corners.

A distal fragment (Lot 321; Fig. 6,b) and a proximal fragment (Lot 131; Fig. 6,b) fit together to form a complete tool. Figure 6,b shows the two fragments slightly apart (the distal section should be reversed for a fit) but illustrates the asymmetrical shape of the complete biface. The uniquely shaped artifact is made of a yellow tan chert that is mottled with darker inclusions. The proximal section was recovered from the plowed field at least 5 to 10 m away from where the distal section was recovered during excavation. The break is a transverse snap fracture that probably dates to the site occupation. Both fragments have plow marks on both faces. The distal section has badly battered edges that appear to be the result of plow damage.

The blade edges of the proximal section are rounded and polished. The distal blade edges have unbattered sections that show moderate edge rounding and polish. It appears likely that some of the edge damage on the distal blade edges is the result of an attempt to resharpen the tool. The proximal edges are unmodified except for a 11-mm section that is rounded and polished.

A distal fragment and a medial fragment were recovered from the same unit-level (Lot 433; Fig. 6,a) that fit together and form most of a beveled knife. This artifact is made of a fine grain, gray brown chert that contains large, coarse grain, gray inclusions. Pink discoloration and the glossy nature of the fine grain chert suggest heat treatment. The coarser areas of the artifact are thick knots where removal attempts have ended in hinge fractures. The length is estimated to have been about 82 mm. It is 31.3 mm in width and 10.5 mm in thickness.

Light to moderate edge rounding and polish are present along the blade edges and at the lateral corners. Any wear present on the tip has been removed by unifacial flaking which left a step-fractured edge. The most worn section of the tool is on the right (as oriented in Fig. 6,a) edge about 20 mm from the tip.

A proximal fragment (Fig. 6,g) from Lot 157 represents over half of a complete specimen. Plow marks are visible on both faces and may be the cause of two recent flake removals on the left edge. The specimen is made of fine grain, tan chert. The spine-plane angle of the blade edges is steep, ranging from 70 to 88°. This fragment has very heavy and consistent wear on all intact sections of both blade edges. This consists of extreme edge rounding and extensive polish along the edges and on flake ridges for a distance of 8-9 mm from the edge on both aspects. The most pronounced ridge wear occurs on the bevel aspect extending past the irregular ridge that parallels the blade edge where the bevel begins. The proximal edges are ground but not polished. Little ridge rounding or polish was observed on the proximal faces.

Two fragments, a distal (Lot 284) and a medial (Lot 285), were found about a meter apart and at about the same elevation. They are both made of a mottled gray chert that has an uneven texture, and they appear to be fragments of a single tool. Both fragments have moderate to heavy edge rounding and polish. The distal section also has considerable wear away from the edge on both faces. The medial section has moderate ridge rounding and polish on the bevel aspect and light wear on the ventral aspect.

One medial fragment (Lot 255) was recovered that has little or no visible wear. This fragment is made of a white chert and is thermally fractured. It is 10 mm thick.

Another medial fragment (Lot 320) is a small section from near the tip of a beveled knife. The edges have a series of step fractures along the bevel aspect which are partially smoothed over and polished by wear. Flake ridge rounding and polish are obvious along the beveled aspect. It is made of gray mottled chert and is 5.5 mm in thickness.

A distal fragment (Lot 248; Fig. 6,e), made of light gray, fine-grained chert, shows considerable wear. The tip is rounded and polished as are both edges. Both edges show evidence of an attempt to bifacially sharpen the edge, but still retain noticeable bevels.

The final specimen (Lot 519; Fig. 6,f) is a small tip fragment that shows light to moderate edge rounding and polish.

In summary, the 41 JW 8 beveled knives and fragments have a very consistent wear pattern. This consists of an evenly rounded and polished edge that is usually accompanied by worn flake ridges that extend 4-9 mm from the edge on both aspects. The polish is comparatively light (in comparison to added or "corn gloss" polish) and follows the microtopography of the rounded surface rather than forming facets. No definite striations were observed. The heaviest wear along the blade edge usually occurs at or near the tip and near the lateral corners. The heaviest wear on the edge aspects consistently occurs on the bevel aspect. Very little additional edge damage was observed on the blade edges. The proximal edges show more variation. Several specimens have similar wear along the proximal edges as that seen on the blade edges. Other specimens have ground proximal edges.

The 41 JW 8 beveled knives are similar in most respects to the Choke Canyon collection (Brown *et al.* 1982). The most important difference is that a more consistent pattern of wear was observed. The development of extensively rounded and polished edges and flake ridges on most of the specimens appears consistent with use on soft yielding material such as meat and hide.

The similarity between the wear noted on the beveled knives and that noted on the end scrapers at 41 JW 8 suggests that contact with similar material produced the wear. The difference in wear between the two tool types is in location and morphology. The end scrapers have distal edges that are rounded by wear toward the dorsal aspect. The beveled knives have evenly rounded edges. This difference is interpreted as the difference between longitudinal and transverse usage motions. The other major difference is that the beveled knives have rounded and polished flake ridges on both edge aspects that extend well beyond the edge, while the end scrapers have little wear on the ventral aspect, and the wear on the dorsal aspect only extends for a few millimeters. This difference reflects the amount of contact with the yielding material and the direction of use.

A strong case cannot be made for hafting. Certain beveled knives have ground proximal edges or proximal facial wear that could be interpreted as haft wear, but others do not. Some of the proximal wear could have resulted from the use of a protective leather pad bound or held around the proximal tool end to protect the hand and to provide a better grip.

B2 Triangular Bifaces (N=3; Fig. 7,a-c)

Three triangular bifaces were recovered from 41 JW 8; two specimens are complete, and one is missing the distal tip. All three are comparatively thick bifaces with narrow triangular outline shapes, straight bases, and slightly convex blade edges. The blade edges have been resharpened on two specimens.

Triangular bifaces are the most ubiquitous bifacial artifact form in south Texas. Archaic assemblages are often dominated by triangular forms. These are traditionally referred to as dart points despite a general lack of any functional evidence. The B2 specimens from 41 JW 8 are much thicker and heavier than the small, thin triangular arrow points, A3. A microscopic examination of the B2 specimens showed wear patterns consistent with a tool