

THE BEAR FACTS

For as long as I can remember, I have been attempting to contribute to the profession of Archaeology by replicating the stone tools of Ancient Man and simultaneously hoping to someday have an opportunity to put them to the "acid test" through actual use, thereby changing theory to fact.

On July 5th of this year, the Great Spirit of the Apache smiled on me and, with the aid of a large black male bear, the University of Arizona's Department of Anthropology field crew and Mr. Gene Seely, we were able to prove the superiority of stone tools over those of steel.

Site of this incident was on the Apache Reservation near Cibicu, Arizona where the University of Arizona is uncovering one of the great archaeological discoveries of recent years - the famous "Grasshopper" site - under the directorship of Dr. William Longacre and his assistant, Dr. James Ayers.

I had been invited to visit the site and, on what was to have been my last night in camp, a large black male bear - attracted by the compelling odor of banana bread being baked in the camp kitchen - wandered into camp and seated himself not far from my quarters. Although all the students attempted to "run off" the bear, nothing could induce him to leave without first sampling the delectable banana bread. Having the safety of his students in mind and knowing of the 270 calves killed by bear and lost to the Apache during the past year, Dr. Longacre went to the headquarters of Mr. Gene Seely, Cattle Manager for the Apache, and asked for his help in killing the bear. The bear population of this area of Arizona is excessive and in thirty-five days, Mr. Seely had killed and skinned twenty-seven bear (adding to his grand total of over 300), making him well qualified for the job that was ahead of him.

At 11:00 P.M. Dr. Longacre and Mr. Seely arrived back in camp in a four-wheel drive vehicle. The approach of the car was warning enough for the bear and he started running at a lively pace into the forest. The vehicle couldn't follow through the trees and over the rough terrain, so Seely, with a flashlight in one hand and a 30-30 carbine in the other, jumped out and followed in hot pursuit. Although the bear was running at an angle and away from the hunter, Seely fired only one shot, making a direct hit through the lung and an instant kill. Because of the lateness of the hour and the extremely low temperature, it was decided to leave the skinning of the bear until morning.

Longacre and Ayers had been lecturing for three days to the students about stone tools and I had been busy demonstrating manufacturing techniques by replicating the many types of blades, projectiles and knives, so we decided to enlist Seely's aid in skinning the bear with these stone tools to give the students a visual example of their function and, therefore, a comparison with modern steel knives. In the morning when Longacre proposed the skinning of the bear with stone knives, Seely, with his usual good grace and sincere interest, agreed to "at least give it a try."

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During the preceding days, my demonstrations had included, among other types, the making of the Meso-American polyhedral core and its very sharp blades. These we decided to use. With the aid of a chest-crutch, these blades are pressed off the obsidian core, so that their parallel edges break to infinity (or to the last molecule) and, therefore, they have a degree of fineness that make them extremely sharp. Two blade types were made; one with a single ridge and one with a double ridge, each the result of previous flake scars on the dorsal side of the blade.

Dr. Longacre was of the opinion that we should try several tool types, so we got together a little kit for Seely which included:

1. Obsidian polyhedral blades (both single and double ridge)
2. Obsidian bifacially pressure-flaked hafted knife
3. Obsidian percussion made circular knife
4. Obsidian backed flake*

*Made by removing a thick flake from a cobble by direct percussion. Much like a backed blade but without the refinement. It is a simple flake with a sharp edge, with the cortex left as backing to protect the hand. Same technique as those found at both Grasshopper and Vernon.

Mr. Seely was first handed the backed flake and, with much apprehension, started the initial incision under the lower jaws toward the stern of the beast. It sliced through and parted both hair and hide with the greatest of ease, requiring very little pressure from the skinner. In fact, care had to be taken to avoid cutting too deeply into the body cavity. Had the skinner's arm been longer, or the bear shorter, a single pass of the knife would have sufficed to open the bear from stem to stern. The next incisions were made from the first cut on the belly along the legs to the four feet. At this stage of the skinning, the backed flake was examined and no indication of removal of micro flakes or dulling was noted - the usual indication of function.

The backed flake was then put aside to try the polyhedral blades. These blades were wrapped at the end with adhesive tape to prevent the operator from cutting his hand. They served beautifully for severing the muscles from the skin. The amount of force necessary was trivial and the severing was accomplished with much ease considering the bear had lost its body heat and was in a state of rigor mortis. As the blades were more fragile than the bifacial tool, care was taken to avoid breakage and none was incurred. The blade with the single ridge is slightly thicker in section than that with two dorsal ridges. It has the same sharpness, but does not permit as deep a cut, and it was noted that the two-ridged blade would cut through the muscle tissue and into the hide if care was not used. At a later date, microscopic examination will reveal if any functional scars were produced from this use, however, no indication of dulling was noted.

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The backed flake was then used to split the pads of the feet for removal of the foot bones. Mr. Seely stated that he normally leaves the bones in the feet as it is such a time-consuming job to skin out the feet when using a steel knife. The pads are extremely tough, much like dried rawhide, and usually are impregnated with sand and dirt. The skinner said had he used a steel knife it would have required stopping at least twenty times to sharpen the knife.

The bifacially flaked hafted knife was used to remove the bones from the feet as well as for skinning the head. I had designed it much the same as a Rocky Mountain side-notched projectile point only on a larger scale. The knife had been retouched by pressure over the entire surface. The platforms were removed with the retouch, leaving a slightly sinuous effect and an edge that was slightly serrated and razor-sharp. This type of edge cuts fast and with the least amount of force. The shape of the tool was that of an elongated triangle with the notches expanded considerable toward the middle - or center - of the artifact. Notches were widened in this manner because we had to use sisal fiber for lashing as we had no rawhide or sinew which would have made the hafting more secure. This tool proved to be a favorite of Mr. Seely for it was easier to use in hard-to-get-to places such as the ears, nose, and when detaching the bones from the feet. Its hafting permitted him to operate in small restricted areas whereas he could not hold a flake knife by the fingers and still have cutting space. The hafted knife had a tip that would slip between the joints to cut the tendons and could be used in back of the foot bones to free them. It was most useful in skinning the head, as the jaws and head leave little room for the fingers to hold a smaller tool.

Because of the improper hafting, the knife came loose one time and had to be retied. A small portion of the tip of the knife was snapped off when cutting around and between the phalanges. However, the knife was still usable but would have been more functional and stronger had it been designed without such an attenuated tip.

The percussion flaked circular knife was difficult to hold for the edge was too irregular to cut cleanly and too sharp against the skinner's hand. Therefore, I altered the tool in just a few minutes by dulling one side with a pressure tool and unifacially pressure flaking the opposite side and slightly serrating the edges. Then it did a beautiful job of cutting through the very tough cartilage of the nose and in cutting the ears loose from the skull. ~~One~~ slice and the job was done! There was no need for a chopping tool. Mr. Seely said with stone tools he could have severed the skull from the body in just a few seconds. He also said that the stone knives saved at least an hour and a half skinning time over a steel knife.

Although we were not familiar with the use of stone tools, we can now perceive what can be accomplished with these simple cutting implements. We found them brittle from our misuse, but we found them sharper than any tool we have today. Of particular interest was observing the removal of the foot bones. It was noted that the worker must have more than a smattering of knowledge of anatomy to determine exactly which tendons to cut, and know which way the bones are directed to expose the ligaments without damaging the edge of the stone tool by cutting against the bone. During this operation, no bones were scratched or abraded by the stone tool. When one is familiar with using stone tools, they can be used indefinitely with just a minimum amount of pressure retouch for sharpening.

All tools used were made of obsidian from Glass Butte, Oregon with the exception of one polyhedral blade which was made of ordinary glass which has the same vitreous quality of obsidian. Had the tools been of heat-treated silicious material, they would have been much harder and tougher but not quite as sharp.

This experiment with stone knives may revise our thinking of the aboriginal and give us more respect for his weapons. It has shown us that Ancient Man not only made very functional tools, but also knew how to use them. When the aboriginal made his stone projectile points and minutely and carefully pressure retouched them, he had a weapon against which no living animal could defend himself. If an artifact is properly designed and sharpened, it can penetrate the vitals more easily than any steel point and with a minimum amount of force. However, the steel point or blade has the one quality of durability.

I am most grateful to Dr. William Longacre and the University of Arizona for affording me this chance to see my stone tools in action in the hands of Mr. Gene Seely, a skilled skinner.

Don E. Crabtree

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