



Our ancient ancestors depended upon their skill to craft tools from stone. The nearly lost art is being revived by modern craftsmen, and the tools are proving to be as useful as they are beautiful.



STONE POINTS: REVIVING AN ANCIENT ART

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Have you ever needed a knife while in the field and unfortunately discovered that yours was at home? You probably didn't realize that a natural material lying at your feet could have solved your dilemma. With the right knowledge and a few minutes of work, you could have created a functional tool in the tradition of primitive man.

Historically, stone was the tool of choice as early man hunted game in the harsh environment. America's earliest inhabitants relied on readily available natural resources, and they utilized their surroundings to the fullest. Most of their time was spent hunting animals such as the extinct mastodon or mammoth. And tools were needed for defense against dangerous beasts such as the saber-toothed cat, American lion, or short-faced bear. The stone tools left behind not only remind us of the difficulty of this existence, but they help us understand the intricate skill required to survive in prehistoric North America.

Modern people share a common attribute, regardless of all differences: our ancestors knew how to manufacture and use these stone tools. The process of chipping stone tools is now called

flintknapping, which means "to break flint." The term originated in Germany to describe the early craft of gunflint production. The spark produced from flint on steel was used to ignite powder in flintlock rifles. And the process to create gunflint is similar to that used in making primitive spearheads, knives, and arrowheads.

I began flintknapping as a hobby long after my boyhood days of roaming plowed fields looking for arrowheads. With each lucky find, I was astounded that stones were made into such sharp, thin, and beautiful tools. I wanted to better understand this skill that was nearly lost to the ages and for the past seven years, I've been learning the art of flintknapping.

As Europeans settled America and moved westward, their steel tools quickly won the fancy of American Indians. However, this was not because of steel's sharpness. Economics, not performance, drove stone points from the marketplace. Steel was easier to obtain and maintain and was more durable than stone. Flint was hard to find and gather and took meticulous processing to fracture into a tool. The art of knapping began to die.

In 1911, anthropologists discovered a starving native in the hills of northern California, and curiosity about this ancient skill was rekindled. The Indian, named Ishi, was invited out of his wilderness home where he had managed to survive using primitive weapons, including obsidian-tipped arrows. Dr. Saxton Pope and Art Young, for whom the modern bowhunting record keeping organization is named, learned their legendary bowhunting skills from this primitive bowyer. Fortunately, Ishi still knew how to fabricate sharp stone implements and shared this knowledge with the



scientific community. Since then, many people, myself included, have become attracted to this nearly lost tradition.

Methods used in flintknapping rely on basic physics. A point can be fabricated from a wide variety of materials, but all must contain sufficient amounts of microscopic silica to be fractured with any control.

To understand this, consider what a BB does when it hits a glass window. A small piece of glass, known as a Hertzian cone, blows away from the point of impact. If you were to measure the cone, you would notice it always forms an inside angle of 100 degrees. Early man learned through trial and error that if a stone was held at a certain angle and struck sharply, razor-edged flakes could be produced from the parent rock and used as tools. The process was continually refined to allow the fabrication of astonishing weaponry. But learning was slow. It took native people thousands of years to improve their tools and techniques.

It's difficult to describe the knapping process within the limits of a magazine article. The best way to learn is to watch someone in action. Several quality videos, Internet sites, and events called "knap-ins" are possible learning sites. You will learn more in an hour from someone who is experienced than in a year on your own. Further, this craft requires perseverance. Don't expect to fabricate beautiful sharp blades in a short time. It takes hands-on experience and constant practice. Experience can often be measured by the amount of stone you've broken before success shines through.



Modern tools for an ancient craft. The author uses all of the above tools to craft beautiful stone points in the same fashion as prehistoric hunters. The spear point above is a stunning example of the author's work. This large piece was knapped from obsidian.

Demonstrating his skill for a captivated audience of school children, the author displays his simple tools: a knapping tool made from a dowel with a copper cap and a piece of leather to protect his leg. Notice, too, that he is wearing safety glasses. Never knap without them. The arrow point below was knapped from flint found along an eastern Kansas highway.



In knapping's simplest form, two types of flaking methods are used: percussion and pressure. Percussion flaking is the method where an implement such as another stone, a fresh antler, or copper billet is struck directly onto the edge of the parent rock to remove flakes. I personally use copper caps glued onto dowels of various sizes, mainly for economy and availability compared to higher priced antlers. However, in experienced hands, soft billets, like those made of antler, produce the flattest, thinnest, and widest flakes compared to those made by harder materials such as stone or copper.

Pressure flaking is mainly used to shape and sharpen a nearly finished piece. Tools can be as simple as an antler tine or

can be constructed from a wide variety of modern materials. I made mine from a section of broom handle with 3/16" copper wire in one end that can be replaced when necessary. Whatever material is used, it must be stiff enough to with-

stand direct pressure needed to "push" the flakes off the thin stone. Also, an abrader such as a piece of sandstone is used extensively to keep the tool edges dull and stiff and allow the tool's energy to remove flakes. Heavy pads protect legs and hands from cuts during this process.

It might be easier to learn with materials besides stone. Several man-made materials fracture easily and are readily available and inexpensive. These include glass or porcelain from items like old televisions, bottle bottoms, or even toilet tanks. Experience gained on this material will help you learn what to expect before you pick up a stone containing natural cracks, fossil inclusions, and crystal pockets. Such aberrations complicate the learning phase.

Kansas has only a few



natural sources of material with knappable qualities. However, in the areas where the material occurs, it can be seen within road cuts and comes in a variety of shapes and sizes. Even so, these sources of stone are usually fractured due to the blasting from construction. It is important to note that an average 4-inch blade usually comes from a core stone that is nearly as large as a cantaloupe, and may take an hour or two to produce. Smaller arrow, or bird, points can be made from small flakes in as little as 15-20 minutes. You might not find stone pieces along roadsides big enough to make larger tools.

Quality stone is more likely found on gravel bars of streams and creeks that drain the roadway area. Streams have a great natural ability to break up



cracked material, leaving solid stone to work with. Raw stone – that found in nature – does not flake as easily as stone that has been heat-treated. “Found” artifacts of gorgeous red and orange material were transformed from a grainy, bland, off-grey character to their glossy colorful states within a campfire. Color change, however beautiful, was incidental to the purpose of making the stone easier to flake.

The signed pieces of art displayed below are the result of not only hours of knapping, but also represent years of learning. A skilled craftsman working with good material can put a sharper-than-razor edge on these points. The arrow point at left was made from a piece of flint.

For those with neither the time nor ability to gather native material, many varieties and grades of stone can be purchased by mail order or at knap-ins. Cost ranges from 50 cents to \$5 per pound.

Most consider stone work merely a recovered art, as arrowheads, spears, and knives are seldom used beyond decorative purposes. However, the use of stone has remained scientifically viable. Recently, it surfaced in modern medicine. Eye surgeons discovered that



the sharpest material known was obsidian, a natural glass developed only under special environmental circumstances within buried lava flows. When properly cleaved, obsidian can provide an edge of impeccable sharpness only one molecule thick and 500 times sharper than a new razor blade. This important finding has growing implications for specialized

surgery.

Flintknapping is a connection with the past that continues to produce usable tools. Before you try your hand at this razor-edged hobby, though, there are additional cautions. First, an unavoidable effect of knapping is that you are going to bleed. To help prevent cuts, you should wear leather gloves when starting. Second, eye pro-

tection cannot be over stressed. One airborne razor-edged chip can cause instant blindness. Safety goggles should be worn by both worker and bystanders. Third, all knappable materials produce microscopic silica dust. If inhaled, these sharp particles irreversibly affect your lungs by cutting the thin tissue, scarring and creating a disease called silicosis. The disease inhibits oxygen from getting to the bloodstream while eventually causing secondary problems including pneumonia. This dust can be avoided by working outside in a breeze or with a fan that will carry it away. You should also shake out your clothes and hair before returning indoors, and shower after each session to prevent exposure to others. Silicosis was actually considered the first industrial disease.

With proper precautions, transforming large, bland blocks of stone into sharp, useful, and beautiful works of art becomes a rewarding and tranquil pastime. Also, friendships gained with others of the same interest allow you to trade material as well as stories. Maybe you'll try knapping. However, if you feel after your first few attempts you are a failure and can't comprehend why a modern human couldn't easily duplicate a primitive point, don't take it too harshly. Just go to the refrigerator and pull out a steak and be glad that you don't have to worry about surviving solely on stone tools. Then the next time you see an authentic arrowhead, you can appreciate the skill and labor required by our primitive ancestors' hands. ♡



The author displays a few of his creations. One byproduct of learning to flintknap was that he also learned about archeology and how ancient people crafted their tools.