Archaeology Under the Microscope

Brittle flint and chert rocks break with sharp edges. Native peoples knew this. They hit or "chipped" flint and chert rocks in calculated ways to produce **chipped-stone tools**. These tools are ideal for slicing, cutting, drilling, engraving, and scraping tasks.

A flake tool

Archaeologists can figure out

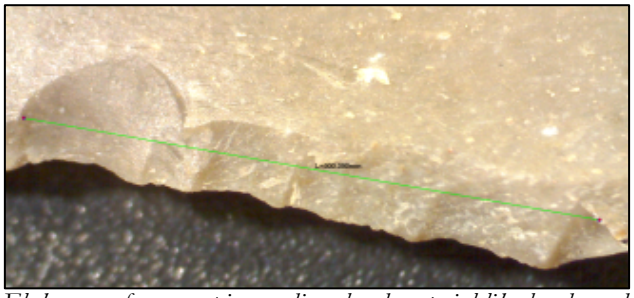
- *if* someone used a chipped-stone tool, and
- *how* he or she used it

by looking carefully at the tool's sharp edges under a microscope. This is called **microwear** or **usewear analysis.** By linking this information to the location where native people discarded a tool, an archaeologist can learn

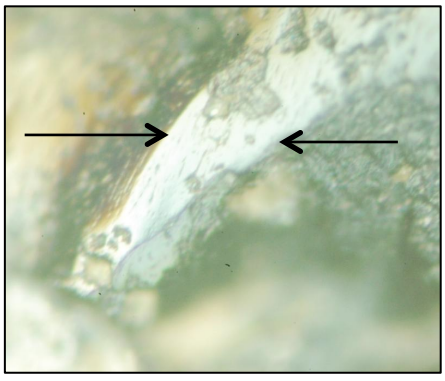
- *what* kinds of activities took place, and
- *where* the activities took place in the past.

There are two types of microwear analysis: low-power and high-power. **Low-power microwear analysis** (10-100x magnification) helps archaeologists identify the materials on which a tool was used. "Soft" materials include plants, soft wood, and meat. "Hard" materials include antler, bone, and stone.

Patterns of scratches and flake scars provide clues in low-power microwear analysis. A **flake scar** is the pit left behind on a tool's edge when a chip breaks off during use. The *shape* of a flake scar is linked to the hardness of the material on which a tool was used. The *pattern* of flake scars along a tool's edge can show the type of task, such as scraping, cutting, drilling, or engraving, for which a tool was used.



Flake scars from scraping medium-hard material like hard wood.



Information from **high-power microwear analysis** (greater than 100x magnification) complements the results of low-power analysis. **Polish** on a tool's edge is visible under high-power magnification. Each type of worked material (plants, wood, dry hide, soft hide, bone, and antler) leaves a different type of polish on the utilized edge of a tool. Soft plants and meat, for example, produce a weak polish that is not very bright. Hard plants, on the other hand, produce a bright polish over large areas along the tool edge.

The polish on the edge of this flake suggests someone used it to scrape wood.

Archaeologists use the information from both types of microwear analysis to figure out how native people used a tool: scraping dry hides, whittling wood, or cutting bone. We can figure out where prehistoric people prepared food by mapping out where they used tools to cut meat and scrape hides at a campsite or village. Archaeologists use the information from microwear analysis to learn as much as they can about the daily lives of prehistoric people.