A Quick History of Flintknapping

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Hi, I'm Allison

I am an archaeologist, and I am here to take you on a journey through time. Together we will try to understand how our pre-human ancestors learned to use and create stone tools.

AFRICA
2.73 MILLION YEARS
HOMO HABILIS

AFRICA AND EURASIA
300,000 YEARS
HOMO ERECTUS

AFRICA, EURASIA, AND AUSTRALIA
50,000 YEARS
MODERN HUMANS

AFRICA, EURASIA, AND AUSTRALIA, JAPAN
35,000 YEARS

AFRICA, EURASIA, AND AUSTRALIA, JAPAN, AND THE AMERICAS
26,000 YEARS

Shaping stone into tools also shaped our ancestors. They used their hands in new ways, causing new connections to form in their brains.

Cutting tools also made it easier to eat more meat. Over time, our ancestors developed bigger brains and nimble fingers. These new species walked completely upright and before long had wandered over most of the globe.

Stone tools also helped us solve problems we encountered in new environments.

Sharp blades allowed us to hunt and process animal skins and create clothing. Blunt or ground stone tools helped us cut trees, grind food, and even catch fish!

Stone tools are probably the first technology our ancestors mastered.

Since no one was actually there to record how flintknapping began there are a number of ideas floating around to explain how our ancestors *Homo Habilis* made the leap from using their teeth, nails, sharpened bones, and sticks to stone tools. However it happened, around 2.4 MILLION years ago, *Homo Habilis* began to deliberately make sharp tools by hitting one stone against another.

Hi! My name is Tim, and I am curious about what this means.

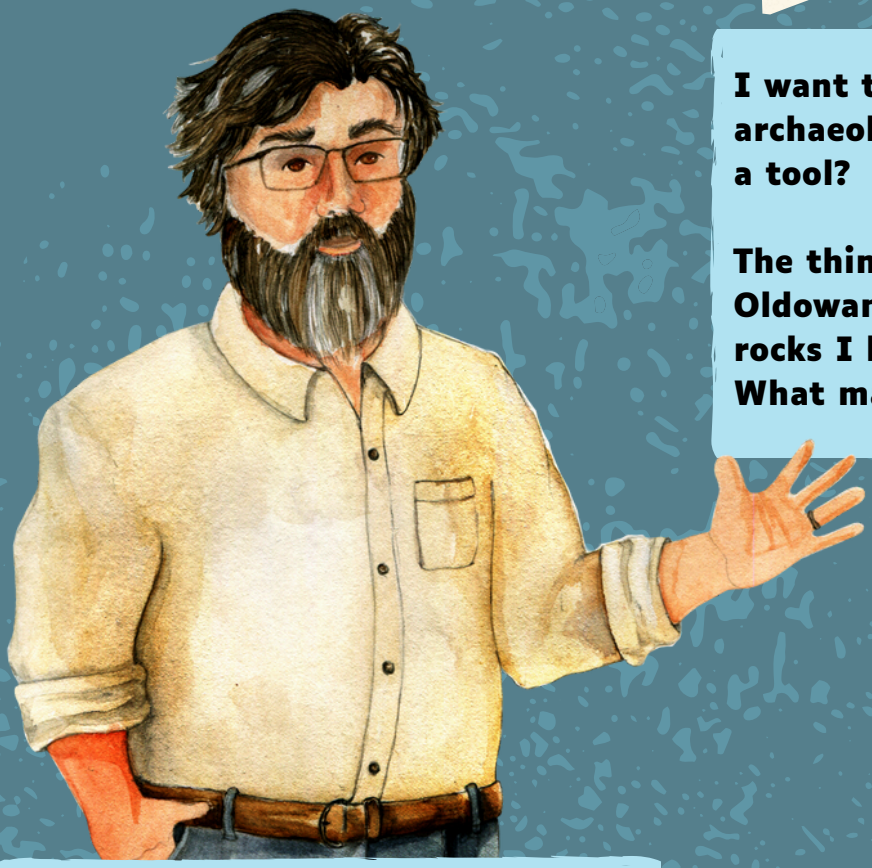
Were other materials used to make tools? What about wood, plant based baskets, or rawhide?

Hello, Tim. Lee here. It is possible that our ancestors did make other tools from sticks or bone, but they tend to rot away while stone doesn't. Stone can last for millions of years.

Good question though, thank you for asking!

In archaeology, the place or site, where a unique or "hallmark" artifact is found usually lends its name to the tool or technology. In this case, the intentional shaping of stone first occurred in the Olduvai Gorge region in Africa. Tools that date to this time and resemble this style are called the Oldowan (sounds like old-oh-wahn) Industry.

At first glance, this groundbreaking technology isn't really exciting. Oldowan tools are rough – little more than cobbles or pebbles that have had a few flakes removed. But it is important to remember that our modern perspective can blind us to the amazing work the Handy Man people did so long ago.



I want to know more about how archaeologists know that a tool is a tool?

The things I am seeing here in the Oldowan tradition look a bit like rocks I have seen out hiking. What makes these tools, different?

Great question!

We will talk more about how to identify deliberate flaking in Part Two of this booklet, but for now we can go over the key markers of intentional flaking compared to the kind of damage that happens in nature.

1 *All stones with a glassy structure will break in predictable ways so natural and man-made flakes can and sometimes do resemble one another.*

2 *Natural flaking tends to occur when rocks collide or fall. Humans can also create fractures in stone that look natural when rocks are tumbled to create gravel.*

3 *When rocks hit each other in nature it creates a random pattern of scarring.*

4 *When our ancestors began shaping tools the number of flakes and the way they were removed reveal deliberate action. Flintknapping is a complex process that requires the maker to think far ahead to be able to make a tool. These patterns aren't found in nature.*

We've already mentioned the Oldowan tradition, but now it is time to get a bit more specific. These pebble, or cobble, tools were not used as weapons at all! Mostly, they helped ancient peoples scavenge meat from other predator kills. They also let their users cut plants and sticks so they could make other tools.

Oldowan tools are made by removing a few flakes from around the outside edge of a cobble with another hard rock. This creates a sharp cutting edge.

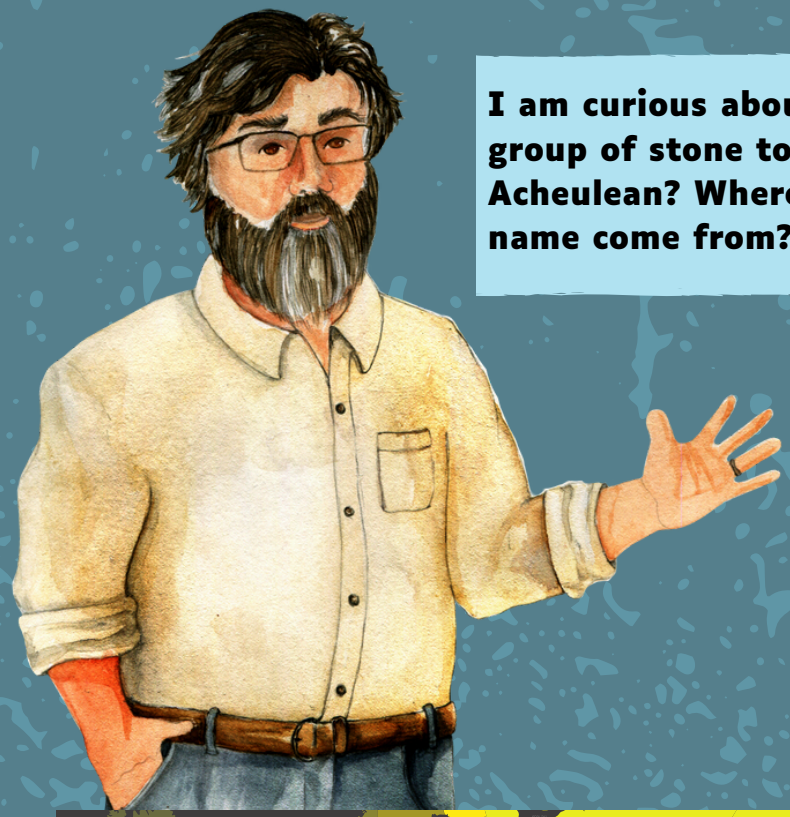
Around 1.76 million years ago, our ancestors did make a big leap forward. Here, they learned to create what is often referred to as a “handaxe” though that is probably not how those tools were actually used.

While the basic idea of removing flakes remained, how the flakes were removed changed. Rather than just using a harder stone – which is called hard hammer percussion- these new makers used softer tools.

In this era, they chose antlers or maybe even hardwoods to strike flakes from around the edge of a stone.

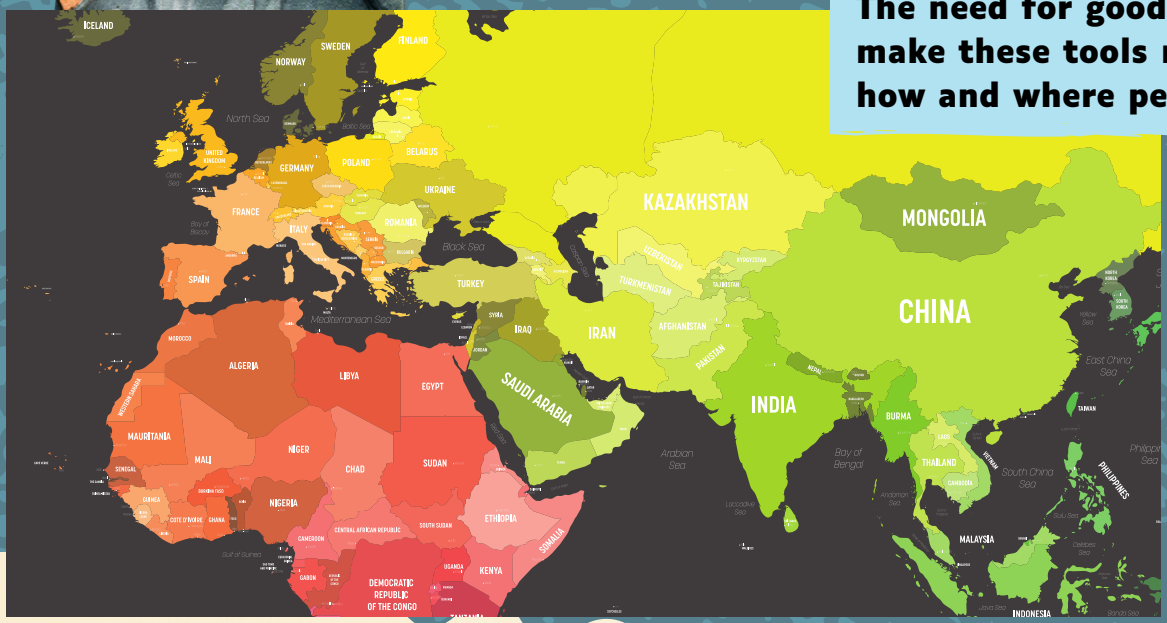
Acheulean creators also used the material struck from the handaxe. These pieces of waste material are usually called debitage – after the French for garbage or trash. The people in the Acheulean age realized that the debitage was also incredibly sharp and could be used as a cutting tool!

These makers also learned that you can sharpen the edge of a used tool. Like the way that we sharpen knives when they are dull, Acheulean makers figured out that removing a series of small flakes from the edge of a tool could make it sharp again. This is called “retouching.”

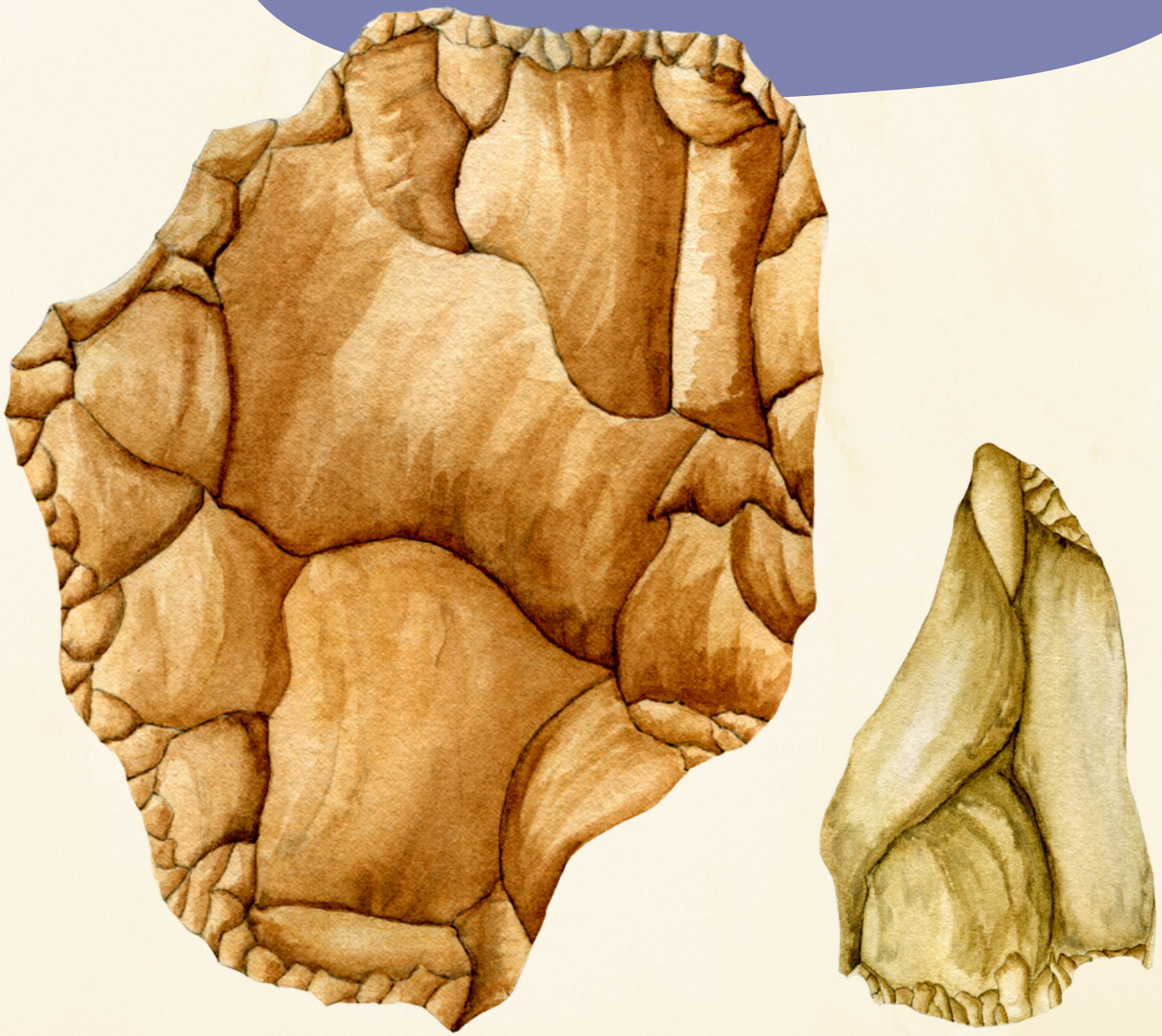


I am curious about why this group of stone tools is called Acheulean? Where did the name come from?

Hi Tim, thank you for asking. These tools were first found in St. Acheul in northern France. But this technology was actually used by all of our ancestors from India, Asia, the Middle East, and Africa to Europe. The need for good quality stone to make these tools may have influenced how and where people settled!



Around 325,000 years ago, our ancestors were still relying on the Acheulean technology, but some folks were trying out a new way to modify stone tools called the Levallois-Mousterian (sounds like lev-owl-wah and moos-tear-ee-uhn).



This particular method of making stone tools is exciting because it involves more than one of our ancestral groups. In Africa and the Near East, fully modern humans made tools that were identical in style and substance to those made by Neanderthals in Europe. Basically, this technology was used by all of our ancestors until about 40,000 years ago.

Whether fully modern human or Neanderthals, the makers of Mousterian tools showed evidence of more complex thinking and better use of their hands and eyes. The increased grip strength in Neanderthal and fully modern human hands made it possible for our ancestors to create a variety of stone tool industries that are grouped together under the Mousterian title.

Although handaxes were still being made in some locations, fine tools called “scrapers” or “blades” were the implements of choice.

Keep in mind, even though a tool is named something like handaxe or scraper, it might have been used for something entirely different!

Mousterian tools transitioned away from using a flaked cobble to the flakes removed from the cobbles. These flakes were then sharpened.

In some areas, creators carefully prepared what is called a “core” by removing parts of the stone they did not want or need. Then they would strike off a large flake for use. This is called the Levallois technique.

It is important because it reveals a lot about the Neanderthal or fully modern human’s ability to think and plan ahead. Using the Levallois technique allowed people to make tools that fit a pre-planned shape.

Hi Lee,

You mentioned flakes and blades are key pieces of the Mousterian tradition.

But what are they? How can you tell them apart?

Hi Tim,

"Flake" or "debitage" is a general term that refers to anything removed from a core.

"Blades" are a particular type of flake specifically made to be at least twice as long as it is wide with roughly parallel sides.

Blades, especially those made of obsidian, are incredibly sharp and have a cutting edge that is about 1 micron thick. A human hair is at least 50 microns thick!

That thin cutting edge is brittle and needs to be cared for, so it isn't always the best tool for a job. But it's just about the sharpest thing out there

Just as the Mousterian was ending, fully modern humans had settled most of the globe and were developing technologies beyond stone tools. Mousterian people might have been exploring art and carvings, but it wasn't until the Aurignacian period that cave art and even musical instruments were born. The Aurignacian started about 43,000 years ago and lasted until about 26,000 years ago. These dates are little slippery though because the Aurignacian includes other phases and tool technologies.

So far, we have focused on Africa, Europe, and parts of Asia, but haven't explored much beyond those continents. Before we move on to how stone tools are produced, we should do a little globe hopping to explore some other amazing technologies.

Let's start with Australia. Humans arrived on this continent between 48,000-50,000 years ago! At a site called Madjedbebe (sounds like mod-juh-beh-beh), the first Australians settlers left behind stone tools and animal remains.

These artifacts are about 21,000 years old and represent traditional tool styles and evolving technologies.

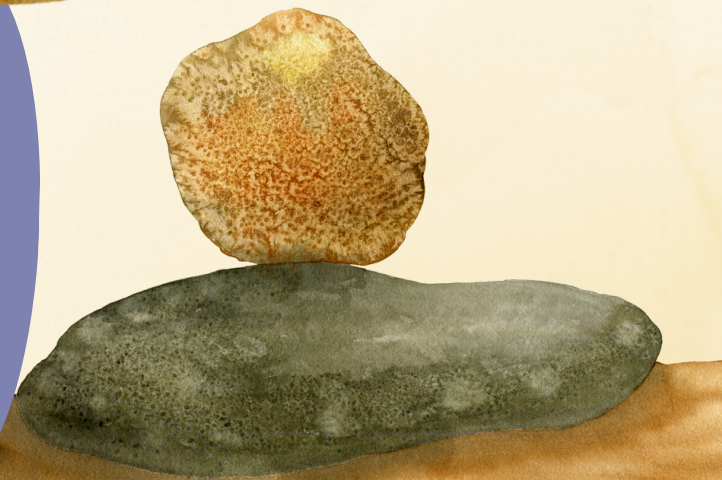
This flake (left) was removed from a core (right) and could have been used to prepare kangaroo hides for clothing.

Since Madjedbebe was first settled, stone tools have made it possible for many cultures to flourish across Australia through ice ages and droughts. Stone tools are often imagined as weapons, but they serve so many more roles. They grind food, prepare hides for clothing and homes, cut plants, prepare pigments for art – and so much more. The flake and core above look like those created by the Ngunnawal (sounds like Nuh-gun-a-wall) people who live in the southeastern region of the continent. The oldest archaeological site in the area is 25,000 years old!

We tend to think of anvils like this one as only being used to create other stone tools. But, this tool has a shallow area in the center that has been worn away. That means it was also used to grind plants into flour! This anvil looks like one created by the Ngunnawal people about 21,000 years ago.

In flintknapping, the term anvil refers to the stone used as a base to support a cobble that is being shaped - like we can see on the right.

Think of it as the way a blacksmith uses an iron anvil to support materials they are working on.



The next stop on our trip around the world is Japan. The actual date when people settled this island nation is not fully understood. Right now, the oldest reliable evidence of humans living in Japan is about 38,000 years ago.

In these ancient, or paleolithic, sites it is typical to see flaked stone tools but sites in Australia and Japan tend to include ground or polished stone as well. This technology didn't become common in other places until thousands of years later.

We've already talked about flaked stone tools. How are ground stone tools different?

Like a lot of things in archaeology, the clue is in the name. These tools are literally ground into a desired shape. Because it takes so long and so much effort to get a ground stone tool to its final form, some flakes might be removed to reduce the bulk of the material to be ground away. Once that is done, the stone can be worked against other stones to create mortars and pestles, net sinkers, axes, or even works of art like jewelry.

Like Japan, how long ago the American continents were settled is often debated. It was once believed that North America was peopled around 12,000 years ago but more recent studies have pushed that date back to approximately 16,000 years ago. New information from the desert landscapes of New Mexico show that some fossilized footprints there are at least 23,000 years old.

Archaeologists working in the United States tend to think stone tools developed in a specific order – beginning with Clovis points. These points are named after Clovis, New Mexico. They are found in North and South America. The oldest Clovis points are about 13,400 years old.

Now that we know people were here before the Clovis culture developed, archaeologists are trying to figure out the shape and age of other tools. Two archaeological sites in north-central Idaho dating to about 14,000-16,000 years old held leaf shaped stone tools that pre-date the Clovis culture.

Keep an eye on this research – the prehistory of the Americas is growing as we learn more.

I heard you use the term paleolithic. What does that mean?

Thank you for asking. Paleolithic literally means "old stone". Paleo means old and lithic means stone. The paleolithic era lasted from about 3.3 million years ago until 11,650 years ago when humans developed new technologies.

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Many of the images in this booklet were adapted from other well known images. We would like to thank the creators of those works.

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