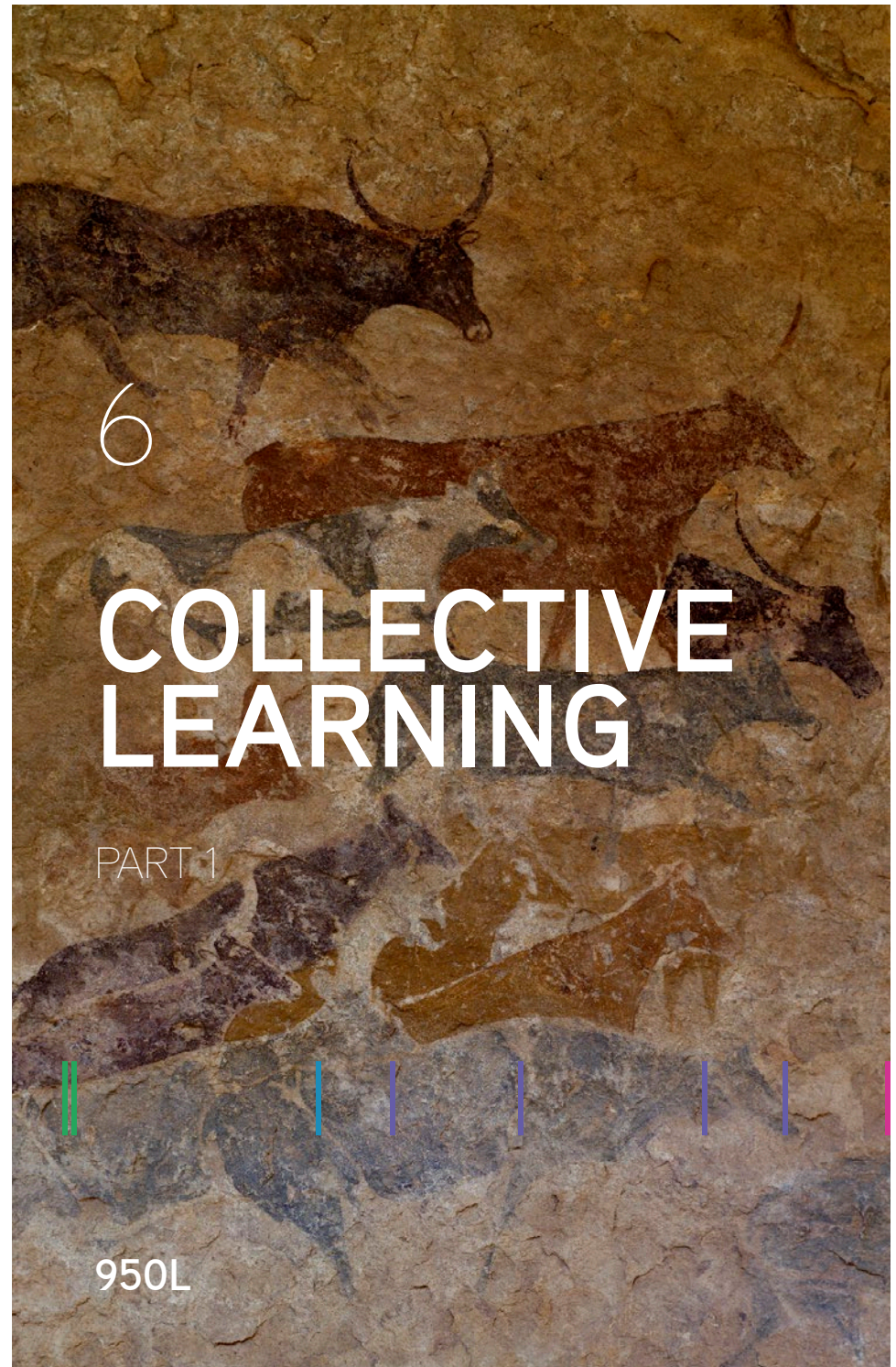




BIG HISTORY PROJECT



6

COLLECTIVE LEARNING

PART 1

950L

COLLECTIVE LEARNING

USING LANGUAGE
TO SHARE AND
BUILD KNOWLEDGE

By David Christian, adapted by Newsela

In the first essay of a four-part series, David Christian explains what collective learning is and why it makes us humans so unusual.



Collective learning relies on the sharing of information through networks

What is collective learning?

Look at the technology around you: your phone, your computer, your car. Think about how complicated it was to create these technologies. Now ask yourself: If, during your lifetime, you could never speak to another human being, how much of that technology could you dream up? How much of it could you actually build? No matter how smart and creative you might be, the answer is probably simple: “Not much!”

The same is true of other parts of human society. Religions, the law, literature, and the sciences all represent collective knowledge. Each of us is pretty smart, but all that makes up human culture is not the product of individual geniuses. Instead, all the creative things that define our species were slowly built up over time. They appeared as millions of individuals shared their ideas over many generations.

The power of information

A species with lots of information about its environment can take advantage of that environment. To feed herself and her cubs, a lioness needs to know where to hunt. If she doesn't have this information, she and her cubs will die. But if she can learn about the movements of, say, antelopes, she will have a steady diet and will prosper. Her hunting will probably result in more offspring.

But the lioness is still like a single computer. She has only as much memory as she can gather in her lifetime. Humans are more like linked computers, with unlimited memory to expand. Our ability to share knowledge means we can tap into a huge information network assembled by millions of humans, living and dead. No one person knows it all. Human knowledge is shared when necessary, and passed on and added to by each generation.

For example, before there was farming, elders passed on what they knew to younger individuals. They taught how to hunt and what seasons were best for particular foods. As a result, each human learned the knowledge that had been gathered by previous generations. In turn, each individual could add to that body of knowledge. Our species has a huge amount of information about the world. All that information equals a lot of power.

Collective learning empowers humans in another way, too, because individuals who share information can work together better. In fact, we humans now share information so well that we can work together in teams of people stretching across the entire globe. No other creature is capable of teamwork on this scale.

Sharing information doesn't give us power just over our surroundings. It also gives us power over other humans. Powerful individuals or groups are usually those with the most information. Well-connected individuals also have larger networks and can form larger and more powerful alliances. Information really is power!

Language and human history

If the sharing of ideas is so important, why don't chimps exchange ideas the way humans do? It's probably not because they aren't smart enough. The problem is in the sharing. Chimp language does not allow chimps to share enough information with each other.

To get an idea of how powerful human language is, try telling a friend how to play football without talking, writing, or drawing. With gestures you can really only exchange ideas about what is right in front of you. You need to be able to talk about the future and the past, and things that don't yet exist.

Think of the power of a simple phrase such as "pink elephant." By saying those two words, I can plant in your mind a picture of something that does not exist and never will. Chimp language cannot do such things, but humans regularly exchange word pictures. This ability for "symbolic language" has allowed us to cross a major threshold in our ability to communicate: that of collective learning.

Human language explains why we can share detailed ideas across generations. Over perhaps 200,000 years, humans have gathered a huge amount of technologies, rituals, stories, and traditions. These have combined to give us more powerful ways of dealing with our surroundings and with each other.

That's why I believe collective learning is the key to understanding human history!

When did collective learning begin?

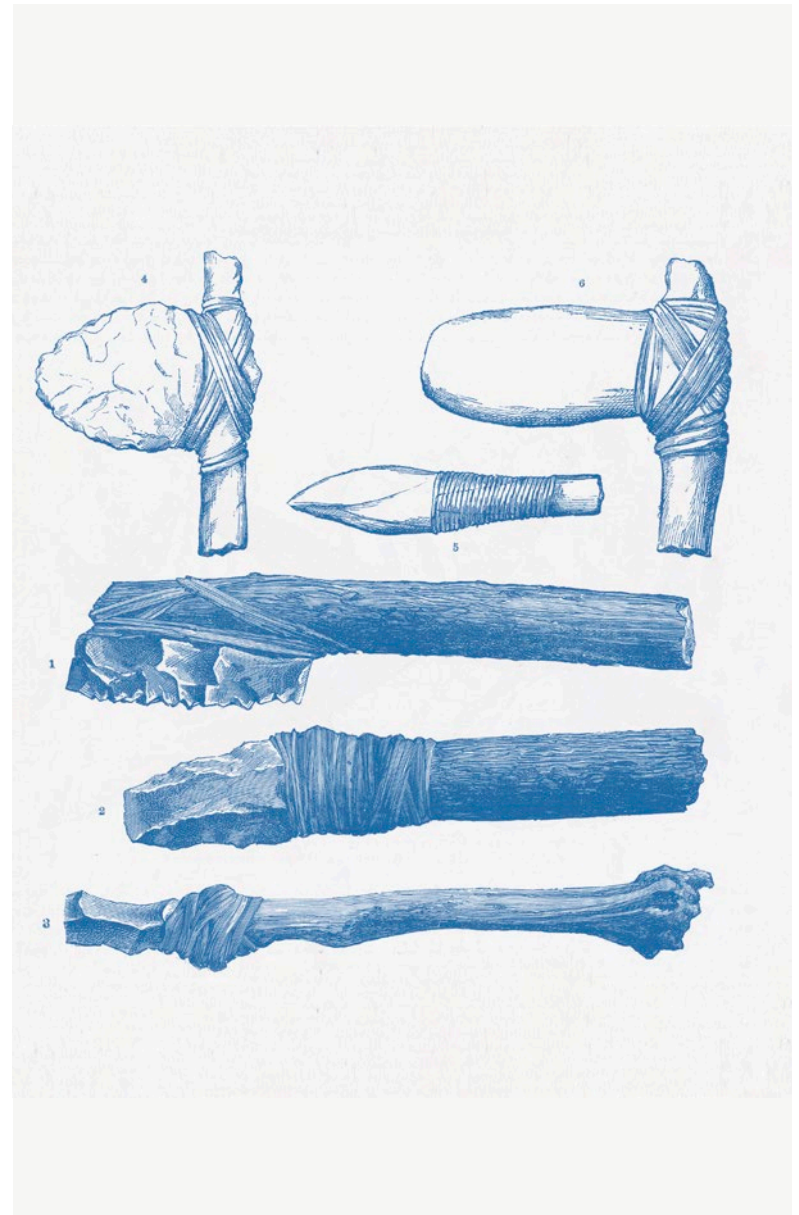
That's really a way of asking, "When did human history begin?" To tackle this difficult and important question, we need to think like an archaeologist.

If you were an archaeologist, what would you expect a species capable of collective learning to leave behind? One possible answer: technologies such as stone tools. That's exactly why Louis Leakey thought that we should regard *Homo habilis* as humans. As early as 2 million years ago, they were making simple stone tools. But there's a problem. Thanks to the work of Leakey's protégé Jane Goodall and other primatologists, we now know that chimps can make tools; for example, they use twigs to get termites out of termite mounds. In fact, lots of animals use tools, but none seem to build on new technologies over time as well as humans do.

On the other hand, by about 50,000 years ago, we know that some humans had migrated to Australia. To do so they must have crossed approximately 40 miles of open water. This meant they had great boat-building and navigational skills. At the same time, in Eurasia, new types of tools and new kinds of art started to emerge.

But collective learning likely goes back more than 50,000 years ago. At sites in Africa, there is strong evidence for innovative thinking and new technologies from 100,000 years ago or even earlier. Delicately made stone tools may have appeared 200,000 years ago.

We also find signs that people learned to attach stone blades to sticks. This technique, "hafting," is unique to humans and shows how collective learning works. As the use of small stone blades became common, we presume that these early humans knew how to use their sharp stone edges to shape wooden spears or digging sticks. We also know that hunters often used natural resins and fibers to carefully bind shaped blades to shafts, to form spears or arrows. Combine these ideas and you have a new technology: hafting.



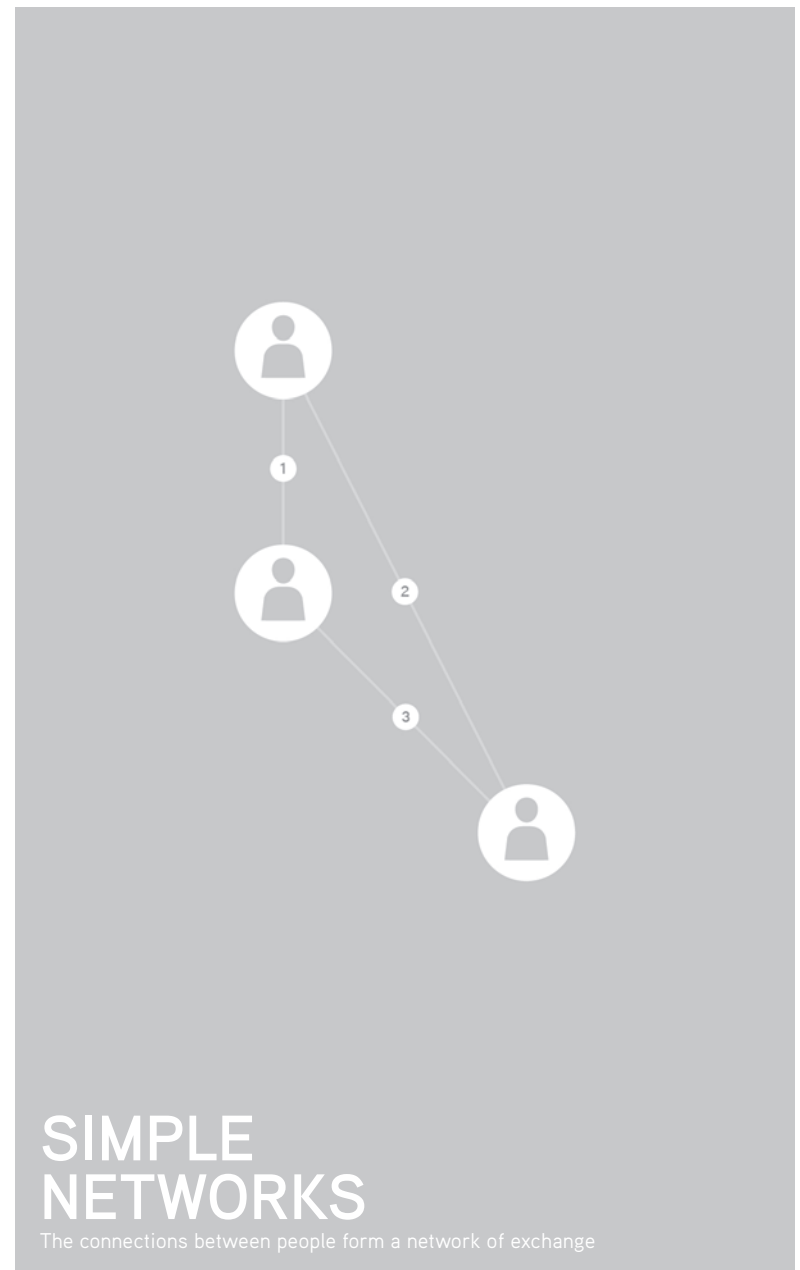
Hafted tools demonstrate that early humans learned collectively

A model of collective learning networks

Now we need to examine how collective learning works in different periods of human history. The diagram opposite is a very simple map of the relations between three people (or perhaps three groups of people). We will use it to help us think about how humans exchange information and how these exchanges have shaped human history. You can imagine this as a map of information exchanges or collective learning between individuals in a few small communities of foragers.

Could you draw a similar map of relations in your classroom? How similar would it be? You might find small clusters of close friends, but you would also find that some individuals have more links than others. And you'll find that some individuals have links that reach well beyond their own clusters of friends and well beyond the classroom. If you map all the links you'll find that it's the long-distance links that hold entire networks together and ensure that information can circulate through the whole network.

As the course moves along, we'll look more carefully at the relationship between networks and collective learning. We'll examine how this relationship affected human history.



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