

6.4

MIGRATIONS & TECHNOLOGICAL CREATIVITY

0:12–1:02 Humans have been on this planet for about 250,000 years and for most of that time, we lived in Africa. But then, soon after 100,000 years ago, humans began to move out of Africa in a series of migrations that took them eventually all over the world. In so doing, humans had to use collective learning to come up with all sorts of adaptive strategies as they moved into environments that they had never experienced before.

THE PALEOLITHIC
ERA

Today, I want to consider the Stone Age with you, this Paleolithic era, by asking four questions. Firstly: how did humans survive in the ice ages? Secondly, what do we know about the chronology and geography of these migrations? When did humans leave Africa and where did they go? Thirdly, let me give

you some examples of Paleolithic life ways, how humans actually lived. And finally, let's consider the question of impact humans had on the environment during the Paleolithic.

Firstly, this question of ice ages. Over the last two million years or so, the Earth has been subjected to about 20 different ice ages, each lasting around 100,000 years. The last two of these occurred during the Paleolithic era at the very time that humans began to migrate out of Africa. Great ice sheets covered large surfaces of the Earth, and even where there wasn't ice, forests died out, there was frozen tundra, and dry deserts. Imagine trying to survive in an ice age, conditions far worse than you can see me standing in right now.

The most important adaptive strategy humans came up with was the controlled use of fire. We know it from evidence in Africa that humans were probably using fire about 130,000 years ago at the Klasies River mouth site. Then we've got very good evidence from the Kalambo Falls in Zambia of controlled use of fire to cook animals, to harden tools and so on, between about 110,000 and 60,000 years ago. So fire, a critically important adaptation.

At the same time, humans came up with much better clothing, with tightly stitched seams, with far more impressive technology — much better spear points and so on.

1:02–2:35

ICE AGES

And even more impressively, the ice ages may have driven humans to adapt art. Symbolic art begins to appear on cave walls during the ice ages. And also, we assume that complex symbolic language also appeared at this time as an adaptation to these extreme conditions.

2:35–3:14

MIGRATIONS

So in terms of the chronology and geography, we have evidence of humans leaving Africa about 90,000 years ago, 90,000 BP. By 60,000 BP — that means “Before Present” — humans are living in East Asia and Southeast Asia. 10,000 years later, they’ve made ocean crossings, across sounds like you can see behind me here, to Australia. By 35,000 years ago, humans are living in the Ukraine.

And then, extraordinarily, humans move into Siberia at the coldest part of the last ice age around 20,000 years ago. These same humans, these mammoth hunters, then made the final great human migration across the Bering Strait land bridge and into the Americas about 15,000 years ago.

3:14–5:12

LIFE WAYS

In terms of Paleolithic life ways, we lived in very small groups, ten, 20, 30 at the most. We lived as foragers, scavenging fruits, berries, roots, insects, dead animals, and so on from the environment. The use of hunting is somewhat controversial.

How sophisticated was human hunting during this period? It’s hard to say. A lot of it appears to have been opportunistic — that is, scavenging animals that others had killed — but some of it was clearly very intentional. The Klasies River mouth site again shows us that about 100,000 years ago, humans were driving elands into specially laid traps.

Three examples: the Inuit people learned to use fire inside dwellings made of ice. They constructed sturdy canoes and hunting tools using animal bones, animal hides and so on. They’ve followed this life-style for tens of thousands of years successfully. Humans living in North America came across very hard stone. Folsom points, clovis points, these were so effective tied onto a spear shaft that they’re probably responsible for the annihilation of the mammoths and other large mammals in North America. The sand bushmen of the Kalahari even today give us some insight into how humans in desert climates survived. The women gathered using very simple digging sticks and bags. The men hunted with very simple bows and arrows with poison tipped on the arrows. Three examples.

These small groups would occasionally get together with other groups to exchange gifts, ideas, marriage partners. In Australia, these gatherings were called corroborees, so a lot more collective learning would go on here. But having said that, even as humans spread across the landscape, populations remain small, there’s no increase in densities, and within these small human groups, collective learning was still very slow. In fact, we estimate that

humans probably met less than 500 other humans during their lifetime during this long Paleolithic period.

5:12–5:59

ENVIRONMENTAL IMPACT

The final question is what impact did these small groups of humans have? The traditional view is that they lived in harmony with nature, but that view is changing. We have evidence from Australia, from Siberia, from North America, of fire stick farming where aboriginal people set fire to huge tracts of bush land for tens of thousands of years.

In so doing, they radically altered the environment of an entire continent, turning much of Australia into a desert, essentially. The other example of human impact comes from the extinction of large animals. As humans moved into environments where no human had been before, very quickly all the large animals go extinct. Up to 75% of all the large animals in North America go extinct. In Australia, the figure is 85%.

5:59–6:43

PACE OF COLLECTIVE LEARNING

So in the Paleolithic era, this era of amazing migrations, we see the extraordinary creativity of humans having both constructive and destructive impacts on the environment. Humans moved all over the planet, used fire, used tools and so on, proved that no environment was beyond them, but the climate and the small size of these human communities meant that the pace of collecting remained slow. Only with the waning of the last ice age and increases in the sizes of human population densities did human cross the next level of complexity that comes with agriculture.