

WORLD PREHISTORY

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Summary

World prehistory begins with the emergence of our genus in eastern Africa about two million years ago. About 200,000 years later our ancestral species, *Homo erectus*, left Africa and colonized Eurasia. For the next million years *Homo erectus* and related species lived as nomadic hunters and gatherers, moving slowly into all corners of Africa and Eurasia. Members of our species, *Homo sapiens*, evolved about 200,000 years ago, probably in eastern Africa, and quickly spread across Eurasia, replacing the *Homo erectus* and related peoples already living there. Our ancestors developed many new technologies and behaviors for hunting and gathering, including ocean-going fishing craft which they used to colonize Australia and the Americas.

At the end of the last ice age, about 15,000 years ago, our ancestors began to settle into small communities and experiment with the domestication of plants and animals. This period of experimentation was short but profound. Sedentary life emerged and along with it social classes and hierarchical political organization developed. By about 8000 years ago powerful leaders had emerged in several parts of the world, and by 6000 years ago civilizations, characterized by large cities with powerful rulers, a supporting bureaucracy and military force, and specialized production of goods and services, began to appear across the globe.

1. Introduction: What is World Prehistory?

Prehistory refers to the time period in the past that is known to us primarily through the debris left by ancient peoples—it is the time before written history allows us to know ancient peoples through their own words. Our genus has been around for at least two million years, and written history for less than 5000 years. Thus most of the human past falls into the realm of prehistory. This chapter provides a simple overview of this vast epoch of our human past. Other chapters in the EOLSS provide more detailed interpretations of specific human species, time periods, places, and prehistoric peoples.

2. The Emergence of *Homo*.

World prehistory begins with the emergence of our genus, *Homo*. While *Homo* is characterized by a number of specific physical traits, two are perhaps the most important—bipedal locomotion and a relatively large brain. Our bipedal ancestors evolved in northeastern Africa about 8 million years ago. By about 4 million years ago a number of bipedal hominin species were living in northeastern Africa, including *Ardipithecus ramidus*, *Kenyanthropus platyops*, *Australopithecus anamensis*, and *Australopithecus afarensis*.

2.1. Early *Homo*

The time period just before the emergence of *Homo* is one of great diversity in hominin species. Even within species there appears to have been a relatively high level of diversity, which may reflect an adaptive radiation of hominins to dynamic environmental conditions. *Homo* emerged out of this diversity, perhaps one of many lineages developing through the ongoing adaptive radiation of hominins.

The first members of *Homo* emerged shortly before 2 million years ago, and ranged across all of eastern Africa. Remains of early *Homo* have also been found in the Republic of Georgia and perhaps in southern China. The primary difference between early *Homo* and earlier hominins is the size of its brain, which was slightly larger than 600 cc. Its dentition was also somewhat smaller than earlier hominins. Minimal postcranial skeletal material has been found for early *Homo*, but what has been found suggests the skeleton of early *Homo* was much like that of other contemporary hominins.

2.2. Early *Homo* Culture

In addition to bipedalism and a large brain, a fundamental characteristic of our genus *Homo* is our complex behavior—our culture. A key aspect of culture is the habitual use of tools. The earliest identifiable stone tools found so far come from East Africa and date to about 2.8 million years ago. The most complete collection of early stone tools comes from Olduvai Gorge, Tanzania and dates to about 1.6 million years ago. This stone tool assemblage, referred to as Oldowan, includes core tools, consisting of a single edge produced by removing a few, large flakes, and the flakes themselves, which were also used as tools. Core tools were used to break open bones to extract marrow and to

chop through tough animal joints. Flakes tools were used for cutting and scraping meat from bones, and for other general cutting tasks.

Analysis of cut marks on bone from Olduvai Gorge suggests that scavenging, not hunting, was the major meat-getting activity of the hominins living there at the time these stone tools were made. Although most of the bones are from medium-sized antelopes and wild pigs, even large animals such as elephants and giraffes seem to have been eaten. The artifact and animal remains also suggest that the hominins moved around during the year, as most of the Olduvai sites appear to have been used only in the dry season.

Two concentrations of stone tools and animal bones at Olduvai have been interpreted as home bases, perhaps with simple structures. But some archaeologists think these early sites with many animal bones and tools may just have been places where hominins processed food but did not live. Whether or not early *Homo* used home bases as living sites is unclear.

2.3. Homo erectus

Homo erectus emerged very shortly after early *Homo*, probably about 1.8 million years ago. *Homo erectus* had a long, low, and thickly walled skull, with a flat frontal area and prominent brow ridges. The skull also had a unique pentagonal shape when looked at from the back. The brain averaged around 1,000 cc, and was larger than that of early *Homo* but smaller than the average brain of modern humans. Cranial endocasts suggest that the *Homo erectus* brain was organized more like the brain of modern humans than like that of early hominins.

Homo erectus had relatively small teeth compared to earlier hominins, and *Homo erectus* was the first hominin to have third molars that were smaller than the second or first molars, as in modern humans. The molars also had an enlarged pulp cavity (taurodontism), which may have allowed the teeth to withstand harder use and wear than the teeth of modern humans. The *Homo erectus* jaw was lighter and thinner than earlier hominins, and the face was less prognathic.

While the skull of *Homo erectus* differed from that of both earlier and modern hominins, the postcranial skeleton was practically indistinguishable from that of modern humans. For example, the almost complete skeleton of a *Homo erectus* boy found at Nariokotome, Kenya, suggests that he was about five and a half feet tall and about 8 years of age when he died, and researchers estimate that he would have been over six feet tall had he lived to maturity. Thus *Homo erectus* in East Africa was similar in size to Africans today who live in a similar open, dry environment.

3. The Human Conquest of Eurasia

An important aspect of the emergence of *Homo erectus* was the movement of populations out of eastern Africa. It seems likely that cultural innovations were the key to allowing *Homo erectus* to move into new environments. *Homo erectus* would have

encountered new climates, sources of raw materials, and plants and animals upon leaving Africa. All animals adapt to such changes through natural selection, but natural selection takes a relatively long time and requires physical changes in the adapting organisms. *Homo erectus* was able to adapt to new environments very quickly and without apparent physical changes. This suggests that the primary mechanisms of adaptation for *Homo erectus* were cultural rather than biological.

The controlled use of fire might have been a crucial cultural innovation that allowed *Homo erectus* to adapt to colder climates. But fire can only warm people when they are stationary; it does not help when people are out collecting food. To be mobile in colder climates, *Homo erectus* may have also begun to wear animal skins for warmth. Some *Homo erectus* tools look like the hide-processing tools used by more recent human groups, and it seems unlikely that *Homo erectus* could have survived in the colder locations where they have been found, in Eastern Europe and Asia, without some form of clothing. And if *Homo erectus* was wearing animal skins for warmth, they must have been hunting. *Homo erectus* could not have depended on scavenging to acquire skins—the skin is the first thing predators destroy when they dismember a carcass. *Homo erectus* would have had to kill fur-bearing animals themselves if they wanted intact skins and furs for clothing.

3.1. Lower Paleolithic Tools and Culture

The stone tool traditions of *Homo erectus* are traditionally called Lower Paleolithic. These stone tool traditions involve core tool techniques, like the earlier Oldowan tools, but Lower Paleolithic tools tend to be larger and made according to standardized designs or shapes. Oldowan tools have sharp edges made by a few blows, whereas Lower Paleolithic toolmakers shaped the stone by knocking more flakes off most of the edges. Many of these tools were made from very large flakes that had first been struck from very large cores or boulders. One of the most common tools in the Lower Paleolithic tool kit is the so-called hand axe, which is a teardrop-shaped, bifacially flaked tool with a thinned sharp tip. Other large tools resemble cleavers and picks. There were also many kinds of flake tools, such as scrapers with a wide edge.

Early Lower Paleolithic tools appeared to have been made by blows with a hard stone, but later tools are wider and flatter and may have been made with a soft hammer of bone or antler. This soft hammer technique of making stone tools was an important innovation. Tools made by a hard hammer technique, rock against rock, have limits in terms of their sharpness and form, because only large and thick flakes can be made with a hard hammer technique. Flakes created by soft hammer flaking are much thinner and longer than hard hammer flakes, and the toolmaker generally has better control over their size and shape. This means that thinner and sharper tools can be made, as well as tools with complex shapes. Hand axes can be made with either technique, as their shape is simple, but those made using a soft hammer have much thinner and sharper edges. Use-wear analyses of hand axes suggest that they were used for a variety of tasks, including animal butchery, woodworking, and digging.

Lower Paleolithic sites were usually located close to water sources, lush vegetation, and stocks of large animals. Some camps have been found in caves, but most were in open areas surrounded by rudimentary fortifications or windbreaks. Several African sites are marked by stony rubble brought there by *Homo erectus*, possibly for the dual purpose of securing the windbreaks and providing ammunition in case of a sudden attack. These presumed base camps display a wide variety of tools, indicating that the camp was the center of many group functions. More specialized sites away from camp have also been found. These are marked by the predominance of a particular type of tool. For example, a butchering site in Tanzania contained dismembered hippopotamus carcasses and rare heavy-duty smashing and cutting tools. Stone tool quarries and workshops are also encountered with some regularity. They are characterized by tool debris and are located close to a source of natural stone suitable for tool making.

4. The Emergence of Modern Humans

Most paleoanthropologists agree that *Homo erectus* evolved into the direct ancestors of our species, *Homo sapiens*, although there is some disagreement about how and where the transition occurred. The oldest *Homo sapiens* remains come from Ethiopia and date to around 160,000 years ago, and there are additional remains from Africa that date to around 100,000 years ago. Africa, then, appears to have the oldest modern human remains. In addition, there appears to be strong evidence from studies of modern human mitochondrial DNA and the Y-chromosome for an East African origin of modern humans and the subsequent expansion across the world.

4.1. The Spread of Modern Humans

Archaeological evidence and DNA from modern and ancient humans paint a complex picture of the spread of modern humans across the earth. Modern humans appear to have first left Africa some time before 75,000 years ago, and moved in two directions, one across southern Asia and the other into central Asia. These two lines of migration crossed paths repeatedly, and some of these early migrants apparently interbred with archaic humans (*Homo erectus* and related species) already living in eastern Asia. About 50,000 years ago modern humans began to slowly move into Europe, and also to back-migrate into Africa. Both Australia and New Guinea were colonized by this time. Finally, modern humans began to move into northern Asia by 30,000 years ago, and crossed into North America by about 15,000 years ago.

Several hominin species in addition to *Homo erectus* appear to have existed during the time period when modern humans were spreading across the world, including *Homo neanderthalensis*, *Homo floresiensis*, and the Denisovian hominins. The most well-known of these are the Neanderthals, who lived primarily in Europe and the Middle East between roughly 100,000 and 30,000 years ago.

4.2. The Neanderthals

The Neanderthals (*Homo neanderthalensis*) did not look that different from modern humans—while they had sloping foreheads, large brow ridges, large, flattened

braincases, large jaws, and nearly absent chins, all these traits can be found among modern humans (although some very rarely), and Neanderthals might go unnoticed in a modern city. Neanderthal skeletons, however, do indicate that Neanderthals made very strenuous use of their bodies—their bones are robust, there are frequent breaks, and joints show excessive wear (by modern standards).

Recent studies of Neanderthal mitochondrial and autosomal DNA suggest a distant relationship between modern humans and Neanderthals, with the two species splitting more than a half million years ago, and experiencing little interbreeding. Archaeological findings from Europe and the Near East also seem to indicate that Neanderthals and modern humans rarely interacted. It has been known for decades that both modern human and Neanderthal fossils are found in the same locations in parts of the Levant, but recent improvements in dating technology and newly discovered fossils have even more clearly demonstrated that the two kinds of hominin coexisted. In fact, several caves in the Mount Carmel region of Israel contain both modern human and Neanderthal occupations. The fact that these two groups of hominins co-inhabited the Near East for perhaps as much as 30,000 years and did not routinely interbreed or share much in the way of tool technology strongly suggests that the two were sharply segregated. And finds in Europe seem to corroborate that assessment. As early modern humans began moving into Europe, they appear to have displaced populations of Neanderthals already living there. Sites with tools thought to be associated with Neanderthals disappear throughout Europe as sites with tools thought to be associated with modern humans expand their range.

The period of cultural history associated with the Neanderthals is traditionally called the Middle Paleolithic and dates from about 300,000 years to about 40,000 years ago. For Africa, the term Middle Stone Age is used instead of Middle Paleolithic. The tool assemblages from this period in Europe are generally referred to as Mousterian. Compared with a Lower Paleolithic assemblage, a Middle Paleolithic tool assemblage has a smaller proportion of large core tools such as hand axes and cleavers and a bigger proportion of small flake tools such as scrapers. Middle Paleolithic flake tools were often “retouched” by striking small chips from one or more edges. Some of the tools were thinned or shaped on one side only, and may have been hafted or attached to a shaft or handle. Middle Paleolithic toolmakers also employed the Levalloisian method in which they first shaped a stone core and prepared a “striking platform” at one end. Flakes of predetermined and standard sizes could then be knocked off the core.

Most of the excavated Middle Paleolithic camp sites in Europe and the Near East are located in caves and rock shelters. The same is true for the excavated Middle Stone Age camp sites in sub-Saharan Africa. In eastern Africa, open-air sites were located on floodplains, at the edges of lakes, and near springs. Many open-air sites have been found in Europe, particularly Eastern Europe. The occupants of the well-known site at Moldova in western Russia lived in river-valley houses framed with wood and covered with animal skins. Bones of mammoths surround the remains of hearths and were apparently used to help hold the animal skins in place. Remains of wolf, arctic fox, and hare, probably all killed for fur rather than meat, have also been found.

Some Neanderthals appear to have been deliberately buried. At the Le Moustier site in France, the skeleton of a boy 15 or 16 years old was found with a beautifully fashioned stone axe near his hand. At the La Ferrassie site, also in France, five children and two adults were apparently interred together in a family plot. These finds, along with several at Shanidar cave in Iraq, have aroused speculation about the possibility of funeral rituals. Some scholars have argued that other Shanidar burials are actually the remains of people who were trapped under rock-falls within the cave and killed—they were not deliberately buried at all, but rather buried accidentally.

Neanderthals may have taken part in other rituals as well, but, like funeral rituals, the evidence is ambiguous. At Drachenloch cave in the Swiss Alps, for example, a stone-lined pit holding the stacked skulls of seven cave bears was found in association with a Neanderthal habitation. One theory for this unusual feature is that it was used in rituals to appease or control cave bears. Cave bears were enormous, dangerous, and directly competed with Neanderthals for prime cave sites. However the evidence is not completely persuasive. At this point, we cannot say for certain whether or not Neanderthals engaged in ritual behavior.

4.3. *Homo floresiensis*

Homo floresiensis has only been found on the Indonesian island of Flores, where they lived between roughly 100,000 and 50,000 years ago. All specimens of *Homo floresiensis* are tiny (they stood perhaps one meter tall), and have very small brains, on the order of 380 cc. The structure of the brain, however, seems closely related to that of *Homo erectus*, as do the structures of the skull. Thus *Homo floresiensis* appears to be a tiny version of *Homo erectus*. *Homo floresiensis* even made tools that look similar to those made by *Homo erectus*. Although they were small in stature and had very small brains, *Homo floresiensis* seems to have been culturally and intellectually similar to *Homo erectus*.

The body of *Homo floresiensis* also seems to resemble *Homo erectus*, or perhaps even early *Homo habilis*. The *Homo floresiensis* wrist is not like that of modern humans or Neanderthals, but resembles that of the great apes and early hominins. Similarly, the *Homo floresiensis* foot resembles that of *Homo erectus* and earlier hominins more than that of modern humans. *Homo floresiensis* appears to be a dwarf version of *Homo erectus* that evolved under the unique environmental circumstances of island Indonesia.

4.4. Denisovan Hominins

Little is formally known about the Denisovan hominins, thus they have not yet received a species designation. The Denisovan hominins were identified through the analysis of DNA from a well-preserved finger bone found in Denisova Cave in southern Siberia. The DNA shows marked differences from both modern human and Neanderthal DNA, and may represent an early splinter population of Neanderthals or a remnant *Homo erectus* population that survived in central Asia until perhaps 30,000 years ago.

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Biographical Sketch

Peter Neal Peregrine received his Ph.D. in anthropology from Purdue University (1990). He is currently Professor of Anthropology and Museum Studies at Lawrence University (1995-Present) and a member of the External Faculty at the Santa Fe Institute (2012-Present). He has served on boards and task forces for the American Anthropological Association, the Society for Cross-Cultural Research, and is past-president of the Society for Anthropological Sciences. He is a Fellow of the American Association for the Advancement of Science. His research interests include cultural evolution, cross-cultural research, and origins of complexity, and he has taught and conducted research on every continent. Recent publications include “Grand Challenges for the Study of Cultural Evolution”, with J. Brewer, M. Gelfand, J.C. Jackson, I.F. MacDonald, P.J. Richerson, P. Turchin, H. Whitehouse, D.S. Wilson. *Nature Ecology & Evolution* 1, 0070, 2017. DOI: 10.1038/s41559-017-0070; “Political Participation and Long-Term Resilience in Pre-Columbian Societies.” *Disaster Prevention and Management* 26(3), 2017 DOI: 10.1108/DPM-01-2017-0013; and *Archaeological Research: A Brief Introduction, 2nd Edition*. Routledge, 2016.