

How Prehistoric Humans Discovered Fire Making



Deborah Barsky

05-29-2024 ~ Of all the pivotal technologies discovered by humans, fire making was the one that gifted our species with power beyond all others.

An ancient Greek myth tells the story of [Prometheus](#), who, after molding humans out of clay and teaching them the fine arts of civilization, defied the Olympian Gods by stealing the secret of fire and offering it to humans. Prometheus paid dearly for this act of transgression that doted humankind with unprecedented technological know-how ultimately transforming their condition into one of great power.

The moral behind the Promethean archetype is a cautionary one, intended to warn us about the risks attached to the unbridled pursuit of technology that can inadvertently result in catastrophic scenarios. The Prometheus myth underscores not only the formidable power that individuals may come to possess by defying authority in the quest to develop science and technology but also suggests that anyone who does so will suffer the consequences.

It is significant that the Greeks chose fire as the subject to deliver this warning. Without a doubt, the capacity to produce and control fire stands out among the most transformative technological feats achieved by our prehistoric ancestors; one that ultimately consolidated human planetary domination. But how, when, and where did early humans harness the technologies necessary to master fire making? What does the archeological record tell us about how they finally

obtained the Promethean secret of fire making?

Like other milestones marking the human evolutionary pathway (like perfecting stone axes or mastering advanced hunting practices), the know-how required to make, use, and control fire evolved progressively, encouraged by human ingenuity and, probably also, by trial and error. Fire making techniques were perfected over time and transmitted socially, while different human groups explored the multifaceted revolutionary potential offered by controlling it. Before truly mastering fire making, early humans may have experienced a precedent phase during which they [used fire passively](#), gathering, preserving and even transporting brazes ignited by natural causes (lightning, spontaneous combustion, etc.), prior to learning how to actively generate and control it. In the meantime, curiosity led them to explore the mysterious properties of fire, while also inspiring them to seek ways to master its secrets.

While looking back in time, it is difficult to pinpoint exactly when our ancestors began to control fire-making technologies. Recognizing intentionally ignited and sustained fires in archeological contexts poses challenges since the simple presence of burned bones and stones or localized areas of charred soils are not sufficient to prove that hominins were actively producing fire. Before 1 million years ago, sparse evidence from [some African sites](#) could suggest that hominins were opportunistically harvesting fire from naturally kindled blazes; rather than practicing truly operative fire making. However, a multidisciplinary study from the [Wonderwerk Cave](#) in South Africa reports convincing evidence for intentional burning in a controlled archeological context dated to 1 million years old.

While such early signals of fire making are rare and difficult to recognize and interpret, globally, the [ability to set fire at will](#) is heralded as a major groundbreaking accomplishment attributed to the [Homo erectus](#) lineage who lived during the [Lower Paleolithic](#) period. This group of hominins is known to have produced an impressive array of tools belonging to the so-called [Acheulian industrial complex](#) that emerged in [Africa 1.75 million years ago](#). Fire making is not the only groundbreaking achievement marking the [1.4 million-year-long reign of the Acheulian peoples](#). Throughout this time, hominins invented and came to master highly complex technological achievements, documented archeologically in the form of stone and (sometimes) [bone tools](#). These technologies facilitated the expansion of *H. erectus* populations into Eurasia, where they continued to perfect and diversify the toolkits that afforded them adaptive advantages;

improving their ability to multiply and flourish.

Aside from their broadening cultural repertoire, parallel processes of social development (more difficult to recognize in the archeological record) were also taking place. Rising demography is manifest in both Africa and Eurasia from the exponential increases in the number, density, and variety of archeological sites: a phenomenon that must in turn have generated [more frequent interpopulational encounters](#), assuring reproductive viability and offering opportunities for cultural transmission at various levels. Acheulian hominins began to organize themselves into functional collective units that allowed them to more effectively share and exchange their newfound skills: a strategy that would ultimately favor their survival.

It is only after the 1-million-year mark that the global repercussions of the consolidation of fire-making technologies become more clearly visible in some archeological contexts outside of Africa. At the Acheulian site of [Gesher Benot Ya'agov](#), in the Jordan Valley, for example, compelling evidence some 780,000 years old confirms that hominins were not only *making fire at will* but were also deliberately [cooking fish](#). Meanwhile, as far away as China, but in a similar timeframe (800,000 to 600,000 years ago), there is proof in the famous multi-leveled Acheulian cave site of [Zhoukoudian](#) that individuals belonging to an Asian strain of *H. erectus* were also successfully experimenting with controlled burning in occupational settings.

Despite these rare and ancient occurrences, indications that hominins were actively generating and controlling fire became more ubiquitous only thousands of years later, toward the end of the Acheulian phase (after around 400,000 years ago), and then even more frequent as we move into the [Eurasian Middle Paleolithic and African Middle Stone Age](#). Technological and behavioral diversity multiplies exponentially from this time forward, as toolkits differentiate to form complex formal manifestations of culture. Importantly, dwellings (often in caves) become recognizable [provisioned home bases](#), where hominins returned regularly (or seasonally) over many generations. For the first time, organized living spaces can be identified within base camp settings that were structured around easily recognizable combustion structures, or hearths.

So, while *H. erectus* is credited with initiating the fire-making revolution sometime during the early phases of the Acheulian, it is only much later that the

[Pre-Neandertals](#) and other forms of [pre-modern and modern *Homo* thriving in Eurasia](#) at the end of this period began to more intensively experiment with the enormous potential offered by the Promethean gift of fire. Around 350,000 years ago, on the eve of the shift from the Lower to the Middle Paleolithic, the prevalence of hearths within prehistoric living spaces signals important changes taking place in hominin lifestyles.

Making fire was interwoven with many social, technological, and behavioral developments that triggered major changes that would shape humanity from that point onward. While (rather surprisingly) fire does not seem to have been a requirement for hominins expanding to [territories situated in higher latitudes](#), it would have helped facilitate their capacity to take root in areas dominated by harsh or unstable climatic conditions. In terms of hunting, fire-wielding hominins would have had huge advantages over other kinds of carnivores with whom they competed for resources; fire also guaranteed the safety and protection of their own communities.

Besides taking advantage of these benefits, our ancestors experimented extensively with fire over thousands of years and grasped the significance of its power to transform the properties of other materials available in the landscape. They eventually learned to use fire to improve their weaponry (like [heating flint](#) to improve its knapping quality) and to assemble composite implements by hafting pointed stone tools onto branches using adhesives prepared with heat—such as [tar](#) and [ocher](#). In addition, [cooking food must radically have transformed the hominin diet](#), reducing the likelihood of contracting bacterial diseases and parasites from meat and other foodstuffs, while opening up innovative pathways toward enlarging the paleo diet (boiling, smoking, drying, etc.).

But among all of the spectacular changes afforded to prehistoric humans by the mastery of fire perhaps the most important and most difficult to assess archeologically is the social impact it must have had. With fire, humans were finally able to dompt the darkness and linger with confidence into the night, gathered together in proximity to hearths that afforded them warmth, light, and comfort. This leads us to postulate a variety of socially related activities, like storytelling or other communal rituals. While it is impossible to measure the impact of this complex series of events that so indelibly affected human evolution, we can still discern how technology and culture were interwoven to catalyze the advancement of symbolic communication within the developing brains of our

ancestors, finally grouped into distinct territorial social units.

Later still, during the Middle and Upper Paleolithic periods, our human predecessors used firelight to venture into deep cave systems to perform [ritual activities](#) and create art on the cave walls, bringing it to life with the play of torchlight. Toward the end of the Paleolithic, humans continued to explore the powerful transformative qualities of fire, eventually learning to obtain and maintain the high temperatures necessary to transform clay into pottery and, later, to melt metal ores into usable items that would, once again, revolutionize the human story.

Even today, fire remains a powerful force whose symbolic meaning is deeply rooted within our collective unconsciousness. Though Prometheus was eventually delivered from his torment, his transgression still resonates as a lesson to humankind's defiant striving to master transformative technologies without heeding the looming dangers posed by the unforeseen consequences of such actions.

By Deborah Barsky

Author Bio: Deborah Barsky is a writing fellow for the [Human Bridges](#), a researcher at the [Catalan Institute of Human Paleoecology and Social Evolution](#), and an associate professor at the Rovira i Virgili University in Tarragona, Spain, with the Open University of Catalonia (UOC). She is the author of [Human Prehistory: Exploring the Past to Understand the Future](#) (Cambridge University Press, 2022).

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