

Digging Up The Roots Of Human Culture



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11-28-2024 ~ *What led humans on the unique path of cultural development? And can we do anything useful with newly reconstructed histories of this process?*

Culture is central to defining humanity. Throughout history, many definitions have been proposed to describe what we mean when we talk about *culture*, leading to considerable confusion.

The word “culture” was once reserved to designate the customs and behaviors of particular groups of people in specific regions and timeframes. In recent years, however, definitions concerning *what is and what is not culture* have widened considerably, to the point where “culture” is now used to describe the behaviors of numerous life forms. For example, it has become common to refer to culture when describing the social structures of [sperm whales](#) and [other animals](#), including [insects](#).

But while animal culture denotes behaviors that are learned and socially transmitted, human cultural practices go further, transforming these behaviors into coded systems that are reproduced within specific group settings. This explains the emergence of *tradition*—a key element of culture that seems exclusive to humans. Traditions provide abstract mechanisms through which humans *symbolically* assimilate the concept of identity over time.

This deeply symbolic derivation is only observed in humans. Human societies imbue culture with a network of meanings that can be shared and understood symbolically by individuals *belonging* to a particular social structure (family,

tribe, community, and nation). The further we go back in time, the more difficult it becomes to reestablish the abstract (contingent) connections that once linked these symbols to their meanings.

Over time, human culture has not only included the concrete manifestations of extrasomatic survival strategies but also encompassed abstract notions that are barely perceptible in archeological records.

The emergence of stone tools [more than 3 million years ago](#) marks the birth of culture in the human lineage. When the first *Homo habilis* remains were discovered at Olduvai Gorge, Tanzania, in the early 1960s, its name, which means *handyman*, was based on the idea that this hominin was the first toolmaker. This justified its placement at the root of the human family tree: the first species of the genus *Homo*.

However, this anthropocentric denomination proved to be short-lived. [As early as the 1970s](#), the probability that other genuses, like [Australopithecines and Paranthropus](#), were also making tools, came to light in some archeological records. This likelihood continues to be [supported by new data](#), including discoveries of sites yielding stone tools that predate the emergence of *H. habilis*.

Because [they were systematically made using techniques that had to be learned and shared communally](#), these activities meet the standard definition of culture used by cultural anthropologists. Furthermore, the repetitive technologies employed to make stone tools are defined as traditions, adding further weight toward culture. From this stage forward, for a period spanning almost the entire evolutionary trajectory of our genus (some 2.8 million years), stone toolkits provide virtually the only material evidence that catalogs [successive phases of human cultural evolution](#) leading to the present.

Ancient stone tools are essential for tracking cultures and their interactions. In studying them, we can see how [culture evolves on uneven pathways on a cumulative trajectory](#). As human societies grew and sharpened their technological capacity, their cultural repertoire expanded, a process characterized not only by the empirical remains of their material culture but also by increasingly elaborate symbolic behaviors that—we logically infer—mirror the emergence of human consciousness.

The complex interplay of inter- and intra-human population exchanges and the

capacity for learning, along with curiosity and inventiveness, have combined through time to create our species' current state. Despite the fragmentary nature of archeological records, studying ancient stone toolkits brings to light precious information allowing us to recognize culture in the deep past. Lithic specialists, for example, identify and describe the specific stylistic traits and chains of production in the toolkits, permitting scientific inferences that contribute to the knowledge about our cognitive evolution.

Archeologists combine “cultural” data with fossil genomics to track and compare hominin lineages and reconstruct the [2.8 million-year-old story of our genus](#). They are seeing a braided account of populations distinguished by their cultural manifestations and divided into groups with divergent species across continents. Today, however, with only one species of *Homo* remaining on the planet (*H. sapiens*), the supposed intra-human differences no longer have any biological foundation and have been laid bare for what they are: purely symbolic cultural constructions.

Parallels are drawn to compare human expressions of culture and analogous behaviors in other life forms. This is demonstrated in primate studies and has often been recognized in the pioneering work of [Jane Goodall](#) in Gombe National Park, Tanzania, during the 1960s, when she observed wild chimpanzees (*Pan troglodytes*) modifying branches and using them as tools to probe for termites in termite mounds. Some believe these observations could serve as a template for early hominin toolmaking behavior, a hypothesis supported by the [close genetic proximity of chimpanzees to humans](#) and their apparent physical similarities. [Primate toolmaking capacity continues to be explored](#) in the wild and in captivity, yielding probing results.

Interestingly, other animals, such as crows, practice surprisingly similar behaviors, also modifying leaves to probe into crevices to retrieve insects, and [even inventing compound tools](#). These “[crow tools](#)” are uncannily similar to those made by chimpanzees; the manufacturing processes, aims, and outcomes are also comparable.

Undoubtedly, there is a considerable gap separating the degree to which humans have developed material and immaterial cultures and the behaviors we observe in other animals. Through time, only humans have developed toolmaking into a fundamental adaptive strategy resulting in the techno-dependent species we have

become. More importantly, *only humans imbue their manufactured objects and behaviors with symbolically relevant identitarian meaning.*

Language is a central pillar in any discussion about human culture and its origins; its emergence has been linked to the evolution of stone tool technologies. As early *Homo* reaped the benefits of their toolmaking capacity, they also increased their ability to compete with other animals for resources *and* these advantages gave them more free time to develop innovative ways to expand their benefits. Through time, successive hominin ancestors invented new and increasingly complex toolkits, requiring individuals to spend more time learning to make them. This process eventually [came to depend on vocal communication strategies](#).

Paleoanthropologists have demonstrated that the [cerebral and anatomical configurations necessary for spoken language](#) could have resulted from [changes in craniofacial features](#) occurring over millions of years, as early hominins adapted to upright stature and bipedal locomotion. As hominins came to rely on specific kinds of stone tools, the conditions that *made language physically possible* also led to its selection and development as an advantageous adaptive culture-sharing strategy.

When we think about what is unique about human culture, we often consider technology as central to characterizing civilizations. Technologies have evolved over time to synchronize culture in a way that assimilates individuals into discrete (but potentially huge) collaborative social units; in doing so, it plays a vital role in the mental construction of both personal and shared identities.

Sharing culture and technological know-how creates a common sense of time. Museums, historical sites, and fictional history present the past through symbols of progress or failure and thus serve to chart a shared timeline. Although archeological records correspond to a series of sequential stages—advancing our species through a process of “progress”—there is no inherent hierarchy to these developments, either at the biological or the cultural levels.

For those educated within a cultural framework that explains prehistory as a linear and codependent set of chronological milestones—whose successive stages are understood by conjured logical systems of cause and effect—this outlook is going to take time to be accepted. It takes an intellectual leap to reject such hierarchical constructions of prehistory and to perceive the past as *a system of*

nonsynchronous events closely tied to the [shifting ecological and biological phenomena](#).

This endeavor, however, allows people to recognize and use the lessons offered by the past. Notably, the fact that complexity of modern human culture results from baseline learning processes bolstered through time by biosocial adaptations.

The long-term processes involved in human techno-selection have been compared to Darwinian natural selection: like biological evolution, technosocial innovations can emerge and persist, or remain latent in the human repertory. When specific conditions arise, they can be selected and, if successful, [be developed into defining aspects of the human condition](#).

At each stage of evolution, latent technological capacities exist within the structure of cultural variability; in different regions or time frames, they are selected, used, and refined, leading human groups to choose divergent evolutionary pathways. Refining these skills can even trigger technological revolutions; when the changes lead to positive results, they can set off wider cultural transformations in the populations that use them.

Culture evolves along diachronic trends. Distinct evolutionary stages occur (or not) in different areas of the world, sometimes in very divergent chronological frameworks. Humans have learned to adapt to rapid cumulative technological change by developing complex social behaviors as an adaptive response that favors the survival of our species. This process may have started gradually, but with the accumulation of breakthroughs, it continues in leaps and bounds into the present day.

Triggering a social response that could evolve in parallel to technological progress resulted in the emergence and sharpening of cultural traditions and identities, springboarding our genus toward exponential increases in social complexity. The archeological records and our own intuitive cerebral processes preserve the memory of our acquired anatomical and cultural developments. They are two sides of the same coin that evolved throughout human prehistory and beyond.

Like other primates, humans are social animals, and as individuals, we need to learn, imitate, and emulate “acceptable” behaviors within specific contexts. Culture represents the set of norms transmitted from generation to generation

and dictates how individuals must behave to maintain social balance. Humanity shares and exchanges culture, but over time, we have also learned to exploit the constructed sets of cultural norms that define the social unit we belong to and justify the exclusion of people living in less favorable situations. Humanity uses culture to invent differences between people with identical biological makeup, needs, and desires.

We have an increasingly useful 7-million-year-old global data set to better understand ourselves and how to survive and improve our well-being. With time, it will be increasingly recognized that using this information as a reference and planning tool is advantageous for practically every endeavor.

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