

Just How Special Are Humans?

with Eric Priest, Celia Deane-Drummond, Joseph Henrich, and Mary Meyers, "Introduction to Symposium on 'Just How Special Are Humans?'" ; Eric Priest, "Human Uniqueness: Debates in Science and Theology"; Joseph Henrich, "How Culture Made Us Uniquely Human"; Agustín Fuentes, "Distinctively Human? Meaning-Making and World Shaping as Core Processes of the Human Niche"; Cristine Legare, "The Cumulative Quality of Culture Explains Human Uniqueness"; David Reich, "Human Uniqueness from a Biological Point of View"; Alan Mittleman, "The Mystery of Human Uniqueness: Common Sense, Science, and Judaism"; Jan-Olav Henriksen, "Experiencing the World as the Evolved Image of God: Religion in the Context of Science"; Jennifer A. Herdt, "Responsible Agency: A Human Distinctive?"; Celia Deane-Drummond, "Tracing Distinctive Human Moral Emotions? The Contribution of a Theology of Gratitude"; and John Behr, "Nature Makes an Ascent from the Lower to the Higher: Gregory of Nyssa on Human Distinctiveness."

DISTINCTIVELY HUMAN? MEANING-MAKING AND WORLD SHAPING AS CORE PROCESSES OF THE HUMAN NICHE

by Agustín Fuentes

Abstract. Part of the task in studying human evolution is developing a deep understanding of what we share, and do not share, with other life, as a mammal, a primate, a hominin, and as members of the genus *Homo*. A key aspect of this last facet is gained via the examination of the genus *Homo* across the Pleistocene. By at least the later Pleistocene members of the genus *Homo* began to habitually insert shared meaning into and onto their world forming one of the bases of contemporary human abilities to develop a distinctive human niche and human culture. Meaning-laden cultural dynamics constitute the core of a ubiquitous semiotic ecosystem, which in turn structures the architecture of the complex niches and niche construction processes that characterize humanity today. Here, I offer a summary of Pleistocene evolution of the genus *Homo* and an argument for when and how that extensive and distinctive capacities for shared meaning-making and a particularly dynamic niche construction emerged.

Keywords: belief; culture; genus homo; human evolution; human niche; meaning-making; niche construction; semiosis

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Humans represent an extremely small percentage of all the life on this planet. Yet, despite being such a tiny part of the great diversity of living things, humans are among the most significant forces affecting ecosystems and all other life on this planet (Steffen et al. 2011; Ellis 2015; Estrada et al 2017; Ripple et al. 2019). Why and how this came to be are two of the most pressing questions one can ask about what it means to be human. I suggest that extensive and distinctive capacities for shared meaning-making and world shaping (as a form of niche construction) are at the heart of the answers to these queries.

I recently argued (Fuentes 2017a, 2018, 2019), following many others (Montagu 1965; Deacon 1997, 2016; Hodder 1998; Coward and Grove 2011), that the human capacity to move between the reality of “what is” and the possibilities of “what could be,” socially, psychologically, and technologically, signifies a distinctive evolutionary context for the genus *Homo* (humans).¹ The human capacity to imagine, to be creative, to hope and dream, to infuse the world with meaning(s), to share those meanings with others, and to cast our aspiration far and wide, limited neither by personal experience nor material reality, is one of the key factors enabling our lineage to develop a distinctively human niche that has proven remarkably successful, in an evolutionary sense² (Fuentes 2016, 2017a, 2019). This capacity is, of course, connected to the emergence of a particular mode of human culture in the later Pleistocene (the epoch from ~2.5 million years ago until ~12,000 years ago) genus *Homo* (Tomasello 2001; Laland 2017; Sterelny 2021), but it is not simply a cultural by-product or the outcome of having cumulative cultural capacity. Here, I argue that the distinctive manner by which humans create meaning and infuse it into the local, regional, and currently global, ecological, and social dynamics is a core element in the human niche actively affecting evolutionary dynamics for humans and a multitude of other species in our shared ecologies.

To be clear, making such an argument for distinctiveness of specific dynamics in the human niche does not imply that humans are separate from the organic world, or its processes. I am not making a human supremacy or exceptionalism argument. I do not suggest that humans are “outside of nature,” nor have humans been “granted” a particular role or mode of dominion regarding the natural world. Humans, as organic life forms on this planet, are deeply and substantially linked to all other life and interact with the same basal suite of evolutionary and ecological processes as all other living beings.

Humans are animals, mammals, primates, and hominoids (the group generally called “apes”). Evolutionary processes create continuities, descent with modification (ala Darwin 1859), such that all forms, especially those sharing recent common ancestors, share much in their DNA, development, and biological form and function. However, evolution also results in the creation of discontinuities. Evolutionary science defines lineages as

such by their distinctive modifications relative to ancestral and related forms. So, humans are indeed mammals, primates, and hominoids, but we are also hominins, a distinctive hominoid lineage of which we are the sole remaining representative. While it is clearly the totality of our evolutionary history that made humans human, the specifics of the last few millions of years, the Pleistocene evolution of the hominin genus *Homo*, represent particular patterns and processes that are central to understanding aspects of human distinctiveness today (Galway-Witham et al. 2019; Kissel and Fuentes 2021). In this essay, I review core facets of the human niche that emerge during the Pleistocene and offer a particular frame involving shared meaning-making and belief as a significant and distinctive aspect of human evolution.

THE HUMAN NICHE IS THE EVOLUTIONARY CONTEXT FOR ASKING “WHAT DOES IT MEAN TO BE HUMAN?”

Given the realities of evolutionary ancestor-descendant relationships (descent with modification), humans are not unique in the world, no organism is. But genus *Homo* are quite distinctive in contemporary and recent history (the Pleistocene, Holocene, and the Anthropocene) in regard to the patterns and processes of cognitive, behavioral, ecological, and technological developments and impacts relative to most other organisms (Fuentes 2017a, 2017b; Anton et al. 2014; Ellis 2015; Foley 2016; Henrich 2016; Herrman et al. 2007; Heyes 2018; Read 2012; Whiten and Erdal 2012; Tomasello 2014; Marks 2015; Laland 2017).

In understanding human evolution, the focus is traditionally on morphology and material remains, as the fossil and archeological record is our primary source of data and basis for inference. There is a materiality to bodies and their interactions with one another and a materiality of histories and patterns and processes of these interactions, but there is more than the material involved in human experience (Kissel and Fuentes 2018). Perceptions, ideologies, linguistic articulations, and semiotic landscapes all matter in any serious understanding of what makes us human. Thus, the context for engaging human evolution must be anthropological, comparative, and recognize the distinctiveness of the contemporary *human niche* (Fuentes 2015, 2016, 2017b).

In contemporary evolutionary and ecological theory, a niche is the structural, temporal, and social context in which a species exists. A niche includes the “space, structure, climate, nutrients, and other physical and social factors as they are experienced, and restructured, by organisms and via the presence of competitors, collaborators, and other agents in a shared environment” (Fuentes 2015; drawing on Wake et al. 2009). Thus, the building, modifying, and destroying of niches (niche construction) are central processes and evolutionary dynamics of interest when modeling

and seeking to understand the distinctive trajectories of any given lineage (Odling-Smee et al. 2003). Niche construction is the building and reshaping of niches by organisms and the mutually mutable interactions between organisms and environments (Odling-Smee et al. 2003). Niche construction emerges from modes of organism-environment interfaces and subsequent feedback with organisms modifying their own niche and, in the process, potentially affecting the evolutionary pressures acting on them and on their descendants. Because most ecological systems consist of multiple overlapping niches, niche construction can also create changes in the ecological/evolutionary dynamics of unrelated populations sharing the same landscape. Niche construction can restructure the flow of energy and material dynamics in ecosystems creating a pattern of ecological inheritance that, in association with natural selection and other evolutionary processes, can contribute to changes over time in populations and environments. Given all of this, contemporary niche-construction theory invites the consideration of the niche of humans and human ancestors as a synthesis of ecological, biological, and social landscapes rather than treating them as discrete spheres (e.g., Dean et al. 2012; Fuentes 2015; Laland et al. 2007; Fuentes et al. 2010; Gamble et al. 2011; Kendal et al. 2011; Marks 2012, 2015; O'Brien and Laland 2012).

The *human niche* is the spatial and social sphere that includes the structural ecologies (including other species), social partners, and the larger local groups/populations of humans (Fuentes 2016). But for the genus *Homo*, at least since the mid-to later-Pleistocene, the niches occupied, structured and interacted with also include perceptual, and conceptual, contexts of human individuals and communities—the ways in which the structural and social relationships are perceived and expressed via behavioral, semiotic, and material aspects of the human experience (e.g., Deacon 1997, 2016; Fuentes 2014, 2015; Kuhn 2014; Kissel and Fuentes 2018; Peterson et al. 2018, 2021; Rosanno 200; Sterelny 2021, see also Ingold 2022). These dynamic human niches are the context for the lived experience of members of the genus *Homo* and their communities, where “kinship” and social and ecological histories are shared and lived, where members of the genus *Homo* created and participated in shared knowledge, social and structural security, and development across the lifespan. The human niche is demonstrably a hypercomplex socio-cognitive, cultural niche with distinctive assemblages of features and characteristics relative to many other animals' niches (Fuentes 2017a; Hermann et al. 2007; Whiten and Erdal 2012; Tomasello 2014). This human niche is the context in which human evolutionary processes act (Fuentes 2015, 2016; Fuentes and Weissner 2016).

The contemporary human niche developed across the Pleistocene and in the process facilitated a suite of morphological, behavioral, cognitive, and ecological dynamics that in turn enabled the Holocene and

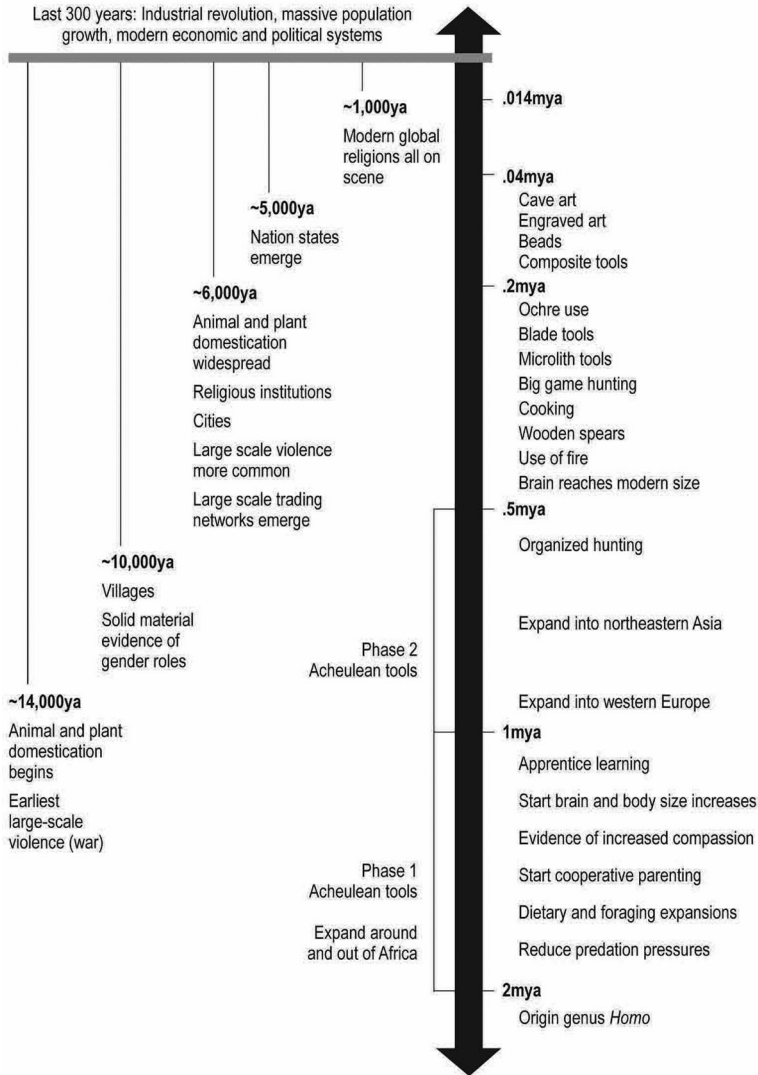


Figure 1. A timeline of the initial emergences of key elements in the human niche, as evidenced in the fossil and archeological record and paleoanthropological interpretations of those materials (from Fuentes 2018 and 2019).

post-Holocene (Anthropocene) alteration to the human niche(s) and global ecologies. Figure 1 outlines the emergence of key patterns in behavioral, ecological, and material contexts for populations of the genus *Homo* across the Pleistocene and into the Holocene (the last ~2 million years).

First and foremost, there is abundant evidence that hypercooperation and intensive collaboration become basic social and ecological processes for the genus *Homo* and a central structuring facet of the human niche from the early-mid Pleistocene (Fuentes 2017a, b; Foley 2016b; Galway-Witham et al. 2019; Hrdy 2009; Anton and Snodgrass 2012; Anton and Kuzawa 2017). Over the course of the Pleistocene, there is substantive evidence for the emergence of cooperative parenting (Hrdy 2009; Gettler 2010; Kramer 2010; Rosenberg 2021), caretaking, and emotional commitment to others as a central process in, and core social dynamic of, human behavioral ecology (Spikins et al. 2018, 2021; Hrdy and Burkart 2020). By the end of the Pleistocene, the social dynamics of the genus *Homo* are characterized by extensive and complex suites of social and demographic ecologies and intergroup relations across space and time including exchange of bodies, genetic sequences, ideas, concepts, and materials (Brooks et al. 2018; Fuentes 2017a, 2019; Galway-Witham et al. 2019).

Across the Pleistocene, the genus *Homo* expands on previous tool using capacities in the hominin lineage via augmented innovation in the manipulation of extra-somatic materials (stone, bone, wood) and an accumulation of material cultural complexity (observed archeologically in material remains). This is likely manifested and diversified via an autocatalytic process involving feedback between creativity and transmission (including ratcheting) (Tomasello 2014; Fuentes 2017a; Stout and Hecht 2017). Living in a landscape in which stone tools are ubiquitous (Foley and Lahr 2015) combined with the teaching and learning needed to develop the lithic technologies from at least the Acheulean forward creates particular ecological and cultural material inheritances that act as “structuring structures” (Bourdieu 1977) on bodies and minds that are evolutionarily relevant to *Homo* cognitive, ecological, and social experience (Foley and Lahr 2015; Galway-Witham et al. 2019; Jablonka and Lamb 2005; Stout 2011; Stout and Hecht 2017; Sterelny 2012). Across the Pleistocene, there is a coevolutionary interdependence between the ecological, cognitive, and neural systems, and skill transmission in *Homo* (Iriki and Taoka 2012; Sterelny 2012; Stout and Hecht 2017) with the development of a “language ready brain” at some point in the mid-later Pleistocene and the eventual emergence of language (at least in contemporary humans’ immediate ancestors, Arbib 2011; Scott-Phillips 2015). These dynamics are almost certainly related to a substantial augmentation neurological dynamics and complexity, but not necessarily language capacity, in both large-brained (>1000cc) (early *Homo sapiens*, Neanderthals) and small-brained (<800cc) (*Homo naledi*, *Homo floresiensis*) *Homo*.

In all, across the Pleistocene, the genus *Homo* develops a distinctive socio-cognitive niche (Fuentes 2017; Tomasello 2014; Whiten and Erdal 2012) that creates a ubiquitous semiotic ecosystem (Deacon 2016) via the ongoing development of a human culture (Henrich 2016; Laland 2017).

This series of processes and changes to bodily form, behavior, and ecological dynamics in the genus *Homo* is both the baseline and the backdrop illustrating processes and capacities, and tendencies, that set the core context for explanatory proposals in regard to what and why the last remaining members of the genus *Homo* (we humans) do what they do today. The dynamics of this niche also set the stage for understanding the infrastructures of the Holocene and post-Holocene (Anthropocene) explosions in demography, behavioral, and cultural diversity, material complexity, the manipulation of other organisms (domestication), and the creation of diverse modes of extra somatic information transfer/technology. Clearly such an evolutionary context and history is not only a suite of material parameters and biological developments: the process of a distinctive *human culture* is also a central factor.

HUMAN CULTURE IS DISTINCTIVE

Evolutionary theorists have long recognized that our species is distinctive, in part, because of our capacity to learn across time and generations and to use that knowledge in dynamic and cumulative manners. Humans accumulate “culture” via shared knowledge, learned techniques, symbols, rituals, and technology. The genus *Homo* adapted (and adapts), not just through processes of natural selection and multiple other forms of genetic change (e.g., Schroeder and Ackermann 2023), but also through finely tuned innovation, increasingly sophisticated communication, new forms of organization, accessing distinctive locally available environmental resources, altering the environment, and developing complex skills that are shared and passed on within social groups (and beyond). The scope and dynamics of this cultural capacity means that human behavior, material culture, and forms of adaptation vary widely and allow our species to inhabit an expansive range of ecological and behavioral niches (Laland 2017; Fuentes 2017; Henrich 2011, 2015; Montagu 1965).

Evolutionary theorists recognize the importance of this cultural capacity, but many model culture as analogous to genetic biological inheritance (Lewens 2015). Alternatively, the definition of “culture” in cultural anthropology has been contentious for almost the entire history of the discipline, in part because of the complex relations anthropologists have observed among technology, economy, concepts, symbols, language, customs, psychological factors, habits, and even physiological traits (Baldwin et al. 2006; Kroeber and Kluckhohn 1952). What is important is that “Culture” in anthropology is not restricted to “the mind” to mental contents and constructs. Anthropologists demonstrate that public symbols, embodied culture, culture as practice, material culture, and a host of other elements outside the mind are central processes in human culture. But humans are not the only creatures to have culture.

When “culture” is defined as behavior transmitted via social facilitation and learning from others which endures for long enough to generate customs and traditions, many species have culture (Ramsey 2013). For several animal societies, research demonstrates that cultural behaviors are numerous, diverse, and central to daily lives. In such cases, we can accurately describe such animals as having cultures (Whiten 2019). There are chimpanzee cultures, orca cultures, corvid cultures, and so on. In many of these complex social species, culture and cultural evolution are significant phenomena in that they emerge from evolutionary processes and develop such that they may supplement genetic transmission with social transmission and can play central roles in shaping the behavior, ecology, and even biology, of populations (Whiten et al. 2012; Whiten 2019). So, to state that culture is of evolutionary importance does not invoke a uniquely or even distinctively human frame.

However, while many other animals have complex societies, and cultures (Whiten et al. 2017; Whitten 2019), it is critical to place human societies, and *human culture*, in context. To define culture as information that is socially transmitted between individuals or groups such that it brings about changes in behavior and/or patterns of tradition facilitates comparison of lifeways across species but it fails, dramatically, to encompass many critical processes and structures of *human culture* (Tomasello 2001; Fuentes 2017a, 2019; Henrich 2011, 2016; Laland 2017). The patterns and processes that characterize human cultural behavior, human society, include many components that are measurably different in scale, impact, structure, and causality from most other species’ use of social traditions and behavioral variations and in what we call their *culture*.³ For humans, lived experiences include massive extra-somatic material creation, manipulation, and use (tools, weapons, clothes, buildings, towns, etc.) and extensive ratcheting of processes and productions, both technological and cognitive/social. Humans deploy development and augmentation of cultural processes via accumulation, innovation, widespread sharing of ideas, items, and symbols, and the creation of ideologies, histories, and beliefs. Humans enact all of this via language, explicit teaching and mentoring, and extensive and dense extra-somatic recording/storage and dissemination of knowledge. Humans today initiate, shape, and are shaped by interfaces between themselves, other animals, and landscapes on scales and with a level of structural and technological complexity greater than in other organisms (Fuentes 2019; Henrich 2016; Laland 2017; Stout and Hecht 2017; Tomasello 2014). Humans can do, and *do* do, many of these things because of a total and complete immersion in a distinctive kind of culture, a human culture in a particular niche, a human niche. Human culture is distinct in many ways, but one of the key manners by which it functions is via ubiquitous, large-scale and dynamic meaning-making capacities, including a central capacity for belief (Fuentes 2019). I suggest that this is

one of the specific aspects of humans that emerged as a distinct evolutionary dynamic across our lineage during the Pleistocene.

MEANING-MAKING AND BELIEF IN THE HUMAN NICHE: KEY PATTERNS OF DISTINCTION

Humans are immersed in a remarkably complex and rich mode of semiosis, the creation and use of signs, material and nonmaterial. A sign is anything that communicates a meaning, that is not the sign itself, to the interpreter of the sign. *Meaning-making* is the capacity to create novel utterances, materials, and actions such that they convey more than just sound, shape, color, movement; they create a sense of something that is more than the material and perceptual context at hand: they carry meaning. For example, a figurine of a half human-half animal, a colored amulet, a red pigment intentionally smeared across one's body or face—all are early examples of how materials can be used to represent more than their physical characteristics. Humans, as Deacon (1997) notes, are animals immersed in a ubiquitous semiotic ecosystem which they themselves, at least in part, create (Fuentes 2019).

Humans communicate with and through signs, their socioecology is replete with them and the creations and imposition of cultural meanings onto the world is a major component of the contemporary human niche (Fuentes 2016) and human evolution (Henrich 2016; Laland 2017; Tomasello 2014). There is material evidence that over the terminal Pleistocene specific material signs such as beads, engraved ochres, and pendants were produced by members of the genus *Homo*, and it is highly unlikely that they functioned without a culturally laden meaning being given to them. Over at least the last 500,000 years, there are a number of material remains indicating that meaning-making cultural action in the genus *Homo* increased and became a central facet of their niche by the late Pleistocene (Brooks et al. 2018; Dapschuskas et al. 2022; Kissel and Fuentes 2021; Malafouris 2013; McBrearty and Brooks 2000; Shea 2011).

In an archeological context, “meaning-making” is primarily inferred via the presence of materials interpreted as “symbols.” But a “symbol” is something that stands for something else and whose meaning is agreed on by the community constructing it. Whether a material object is a symbol or not can only be accurately assessed within a particular set of culturally accepted meanings, those under which it was created (Kissel and Fuentes 2017a, 2018). Without access to the actual Pleistocene *Homo* cultural contexts of the meaning-makers, one cannot know the meaning any material from the Pleistocene that may be a “symbol.” For example, despite our ability to imagine many possibilities, it is not actually possible to know what the figure referred to as the Venus of Willendorf meant to the people who made her.

However, there is an alternative approach to the reliance on “symbol” in assessing meaning-making in the Pleistocene, one that offers insight into the processes without requiring us to understand the specific contents of the meaning of the item or action of interest (Kissel and Fuentes 2017a, 2021). One can ask not what these objects meant to early humans, but rather how the objects were able to mean something to those groups who made and/or used them. Such an approach enables researchers to avoid the debate about whether something is or is not symbolic and move to a more focused assessment of the processes of creating such an object and how that might inform us about the perceptual and behavioral dynamics (the culture) of earlier members of the genus *Homo*. I suggest this is critical to assessing whether or not the increase in certain types of materials and ochre use in the later Pleistocene is meaning-making and can assist in developing better models for why that might be the case and what it can tell us about the dynamics of the human niche.

In earlier work (2017a, 2018), Marc Kissel and I draw on Peircean semiotics theory (Peirce 1998), to bypass the traditional sign trichotomy of “symbol, icon, index” used in much archeological analyses and use another of Pierce’s proposed trichotomies of sign vehicles: qualsign, sinsign, and legisign, as a framework for assessing meaning-making, not symbolic status, of sets of materials associated with *Homo* in the Pleistocene.

Briefly, a qualsign signifies something through the quality it has (e.g., “redness” of a red cloth). A sinsign is a sign vehicle that uses essential facts to convey meaning; a weather vane showing the direction that the wind is blowing. The legisign does the most work here. It is a sign vehicle that is based on convention. If one finds, in the archeological record, multiple examples of the same type of constructed/manipulated item that conveys or evokes similar or identical sensations, then the items can be recognized as reflecting a convention (a shared practice) amongst the group or groups making it. Multiple instances of an item that conveys or evokes similar or identical sensations materially reflects intentional creation of items with the same or similar characteristics, and thus likely, with the same intended impact. These items can be termed replicas of a legisign. We can assume such a legisign meant something to those who made it because of the evidence of repeated actions on material substances evoking the same sensory responses, across space and time. However, it is not possible to know the actual meaning of the legisign, that is, we cannot know its meaning as a symbol. However, the presence of legisigns in the archeological record is evidence of shared meaning-making behavior and thus specific deployment of a human imagination in the perceptual, intentional and generative modalities—an intentional engagement with materials creating emotional/cognitive meaning and responses (Abraham 2016; Fuentes 2019).

Returning to the Venus figurine as an example, it is well established that between ~18,000 and 30,000 years ago, across much of western, southern,

and eastern Europe, multiple instances of very similar figurines were made. The figurines are not identical but they have multiple features in common, including shape, texture, size, and manner of creation. One could argue that the figurines are replicas of a legisign. Their occurrence and distribution suggest that geographically and temporally distinct groups of humans were intentionally creating material objects eliciting a set of shared sensations and/or mutually understood meaning(s). Legisigns offer material evidence of meaning-making (Kissel and Fuentes 2017a, 2017b, 2018). Making legisigns enables a distinctive mode of sharing of imaginative possibilities, and concepts, ideas, and sensations, via the construction of material *and* perceptual worlds. I suggest that this capacity and practice becomes a key process in the human niche, one that is core to how humans are in the world and thus what it means to be human (Fuentes 2019).

Material evidence for creativity and imagination, the cornerstones of human meaning-making, are identifiable early in the Pleistocene in evidence of the innovations reflected in consistent stone tool making and use. The transition to more complex tool forms from the Oldowan to the Acheulean technologies reflects substantive cognitive, behavioral, and communicative augmentation (Stout 2011; Stout and Hecht 2017). The middle Pleistocene archeological landscape is replete with evidence for the extension into frequent use of wood and bone for tool production, and a rapid and extreme expansion in geographic range demonstrate the emerging *human* capacity for successful interface with new ecologies via innovation, experimentation, and communication (Galway-Witham et al. 2019; Kissel and Fuentes 2021). From the latter quarter of the Pleistocene evidence of the first instances and subsequent ubiquity of the use of fire, more complex foraging strategies, and the creation of meaning-laden objects emerges across many locations for the genus *Homo* (Dapschaskas et al. 2022; MacDonald et al. 2021; Kissel and Fuentes 2018, 2021). All of these behaviors and patterns appear to emerge in concert with (and stemming from) increasingly high intensity of cooperation and increasingly complex information transfer (Foley 2016; Fuentes 2017a, 2017b; Galway-Witham et al. 2019; Sterelny 2012; Tomasello 2014).

The material evidence of meaning-making, as assessed via likely legisigns and diversity of nontool material items, picks up in pace and density in the last 300,000–400,000 years and becomes combined with, what appears to be increasingly complex and dynamic, demographic and social processes in many populations of the genus *Homo* (Brooks et al. 2018; Dapschaskas et al. 2022; Foley 2016; Fuentes 2017a; Kissel and Fuentes 2021; Malafouris 2013; Potts et al. 2018; Sterelny 2017). This ratcheting up is loosely temporally associated with the first appearances of fossils that can be classified as *H. sapiens* based on cranial morphology; however, many of these examples (the use of ochres and pigments, possible burial of dead, perforated shells, etc.) are not specifically associated

with hominin fossils. In the cases where early (400–125,000 years ago) specific archeological evidence of meaning-making is found in association with identifiable fossils, it is distributed across multiple of the groups that make up the genus *Homo* during this time period, for example, *H. sapiens*, *H. naledi*, *Neanderthals*, *Denisovans*, and so on (Kissel and Fuentes 2021). Given these data, the issue of taxonomic and possible phylogenetic relationships (*H. sapiens*, “modern humans,” “Neanderthals” “archaic sapiens,” etc., see Wood 2010; Wood and Boyle 2016) between early creators of meaning-making is not currently clear. Also, we now know that many populations of the genus *Homo* contributed behaviors, genes, ways of life and other aspects to contemporary humans (*H. sapiens sapiens*) (Ackermann et al. 2016; Scerri et al. 2018). At present, we have no way of separating, behaviorally, these early meaning-making member of the genus *Homo* as specific contributors to elements of key distinctive capacities of contemporary humans. Nor can we state that one sub-lineage (ours, however it may be constructed) was the only one capable of performing such behavior.

Evidence of meaning-making expands dramatically in the last 80,000–125,000 years (Dapschaskas et al. 2022; Kissel and Fuentes 2018, 2021; Wadley 2013) and explodes in complexity over the last 12,000 years. This final explosion is wholly attributable to contemporary *H. sapiens*, as by 20,000 years ago, there are no other forms of *Homo* extant. More connections, more materials, more abilities and modes to communicate all act to solidify the core role of meaning-making processes in the human niche as they feed back in on themselves and related cognitive processes, augmenting the capacity to engage with more than the “here and now” to develop novel ideas and concepts, share them, and convert them in material reality (Fuentes 2017a, 2019).

This stage of taking various material aspects of the world and mixing, reshaping them to create things anew, expanded the human niche paving the way for the capacity for more extensive meaning-making, and eventually belief, to develop.

HUMAN BELIEF AND HUMAN EVOLUTION

The anthropologist Maurice Bloch (2008) notes that there is a critical transformation in the human lineage as members of the genus *Homo* transition from beings who engage in transactional sociality (as do most animals), even if in a very complex manner (as in many primates and cetaceans, for example), to the kind of beings that add a suite of transcendent⁴ relationships to their mode of social interactions. Over the course of their evolution, humans become simultaneously transactional and transcendental beings. I recently purposed the use of the term “belief” in the context of human evolution to represent the capacity that emerges

in the human lineage to develop mental representations to see and feel and know something that is not immediately present to the senses, and then to invest, wholly and authentically, in that something so that it becomes one's perceptual reality (Fuentes 2019). Humans develop rules and guidelines for how and why to live, replete with explanations and understandings about themselves, other beings, the world around them, including unseen agents and processes unseen, and by believing in them, they are *real* in the human experience. This human capacity is often associated with religious behavior and religions (Purzycki and Sosis 2022), but is also evident in aspects of a range of other human contexts and processes, such as economic and political systems, human love and hate, and other forms of social and perceptual commitments (see Fuentes 2019).

The human capacity for belief is possible, sharable, and demonstrable via the human processes of meaning-making. Once the abilities, practices, and processes outlined above are core components of the human niche, humans began to apply the capacity for meaning-making, creating explanations and understandings of the larger elements in their world, even those that were beyond the grasp of human capacity to physically or materially manipulate or change. Storms, floods, earthquakes, volcanoes, eclipses, and even the deaths of companions provided contexts for the infusion of meaning and the augmentation of cultural complexity via belief and behavior. The sharing, perceptually and experientially, of these events and their meanings takes on cultural salience, and thus perceived realities, which can then have substantive impact on lives and evolutionary dynamics. By at least the later Pleistocene, members of the genus *Homo* began to habitually insert shared meaning into and onto their world, one of the bases of contemporary human culture. These meaning-laden cultural dynamics constitute the core of human ubiquitous semiotic ecosystem that in turn structures the architecture of the complex niches and niche construction processes that characterize humanity today.

Meaning, imagination, and belief, are as central to the human evolutionary story as are bones, genes, and ecologies (Deacon 1997, 2016; Fuentes 2017a, 2019; Tomasello 2014). The developmental processes of the human body and brain evolve as a system that is always in concert with, and mutually coconstitutive of, the linguistic, socially mediated and constructed structures, institutions, and beliefs that make up key aspects of the human niche (Downey and Lende 2012; Fuentes 2016, 2017a, 2017b; 2019; Kissel and Fuentes 2018). In this brief essay, I argue that humans live, learn, and evolve within a distinctive cultural context and a particularly dynamic and distinctive niche. Cultural concepts, meanings, and beliefs become embodied neurobiologically, physiologically, cognitively, and experientially, in humans, co-shaping anatomy and behavior, which in turn interfaces with, and potentially reshapes, the very cultural processes

shaping them (Downey and Lende 2012; Fuentes 2019; Stout and Hecht 2017; Tomasello 2014).

Part of the task in studying human evolution is the seeking of a more robust understanding of how humans *are* in the world. What we share, and do not share, with other life, and how to best understand and model human engagement, as a mammal, a primate, a hominin, and as *H. sapiens*. The patterns and processes of the human niche across the Pleistocene are key factors of such a study. I suggest that this mode of integrative approach is critical if we are to have an effective understanding of the impact of the human niche, and human beliefs, on global and local ecologies in the twenty-first century (Ellis 2015; Ripple et al. 2019).

NOTES

1. Here, I use the term “distinctive” as opposed to “unique” as it reflects a more appropriate evolutionary frame given the central patterns of descent with modification.

2. For example, growth and expansion of the demography of the species and ability to succeed across an amazingly wide range of ecologies and environmental contexts.

3. This is not to state that there are not complex and dynamic cultural processes in cetaceans, other primates, a number of mammals, and even bird species. But it is to state that they are not as complex, materially laden, ecologically impactful, symbolically and ideologically perfuse, hypercumulative, and linguistically dense as those of contemporary humans.

4. Here, I use a Kantian notion of transcendence (from *Critique of Pure Reason*, Project Guttenberg) summarized as the human capacity for recognizing that which is beyond the limits of all possible experience and knowledge.

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