

Philosophical Questions Raised by Big History

Barry Wood
University of Houston

Correspondence | barrywood1940@yahoo.com

Citation | Wood, Barry. 2022. "Philosophical Questions Raised by Big History." Review of *Cosmosapiens: Human Evolution from the Origin of the Universe*, by John Hands. *Journal of Big History* 5 (1): 109-112.

DOI | <https://doi.org/10.22339.jbh.v5i1.5160>

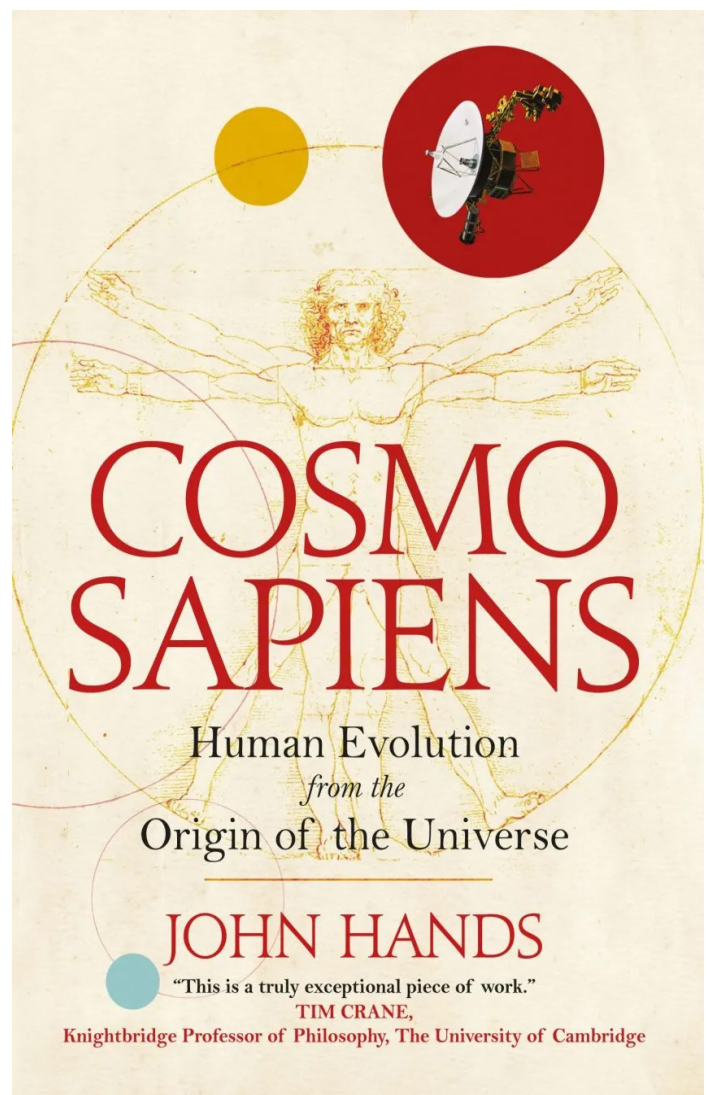
Hands, John. 2015. *Cosmosapiens: Human Evolution from the Origin of the Universe*. New York: Overlook Duckworth.

Considering the territory explored in John Hands's 674-page tome, *Cosmosapiens*, one might conclude that his aim was to examine the entire Big History narrative from Cosmos to Humanity.

The book is subtitled *Human Evolution from the Origin of the Universe*. However, Hands's extensive bibliography omits any works by founders of the International Big History Association (IBHA): David Christian; Cynthia Stokes Brown; Fred Spier; or even Eric Chaisson, who has been peripherally associated with IBHA. Nor is there any mention of the Big History movement. If anything, this book demonstrates that examination and presentation of the 13.8-billion-year history of the Universe is occurring on many fronts outside the IBHA.

Hands does not utilize the kind of structure found among big historians: Fred Spier's hierarchy of "domains," David Christian's "thresholds," or Tyler Volk's "cosmogenesis" events. His book unfolds in three parts: The Emergence and Evolution of (1) Matter, (2) Life, and (3) Humans. Despite the occurrence of "emergence" within the titles of his three parts, emergence itself is limited to a definition (199, 633), albeit a comprehensive definition. Despite various attempts to explain emergence, it is easily understood as marking an imagined disjunction bridged where reality itself is continuous and needs no bridges. Hands's treatment is comprehensive when it comes to dealing with the broad outlines of the cosmic narrative and how it has developed through three states of human thinking: primeval, philosophical, and scientific.

Hands's treatment is more balanced than most of our own big history productions, which tend to focus on the specialized field of the writer. Astronomer Eric



Chaisson's *Cosmic Evolution* (2001) and *Epic of Evolution* (2006) work with a seven-era structure, but his emphasis is primarily on the cosmic; his treatment of humanity is rather strictly limited to our increasing

consumption of energy. *A Most Improbable Journey* (2016) by the geologist Walter Alvarez, though subtitled *A Big History of Our Planet and Ourselves*, focuses primarily on the middle ground of historical geology. David Christian, a historian, weights *Maps of Time: An Introduction to Big History* (2004) toward human history with extensive treatment of changes in human organization since the Agricultural Revolution. The limitations big historians recognize concerning the single-discipline emphasis of the departmentalized academy affects them as well. The task of equal emphasis across half a dozen component disciplines remains a formidable challenge for big historians. Hands, a journalist, succeeds rather well in ranging across the entire spectrum of big-history data. His strategy is to outline the accepted mainstream narrative while interspersing it with philosophical questions that point to things unanswered within the accepted story or to weak spots in current theory. This book review is titled “Philosophical Questions Raised by Big History” because such questions are where the value of *Cosmosapiens* lies.

The broadly accepted view of beginnings is the Big Bang theory, which appears to be supported by a broad range of data, beginning with Edwin Hubble’s discovery of the expanding universe. A reading of Steven Weinberg’s *The First Three Minutes* (1993) or Alan Guth’s *The Inflationary Universe* (1997) is likely to inspire confidence in the standard story of cosmic origins. The elegance of the origin story leads us to skirt the profound mystery of how the Universe was once compacted into what is called a “singularity” that, to revert to mythology, is just as puzzling as the theological doctrine of *creatio ex nihilo* (creation out of nothing). Hands addresses these kinds of problems by exploring alternate theories, for instance, the so-called Big Crunch that postulates that a contracting Universe preceded the Big Bang, which he describes as a “cyclical bouncing universe.” The analogical relation between such a Big Crunch and black holes that swallow matter to the point of disappearance poses the possibility that black holes are offspring of our Universe that are giving birth to other universes beyond our ken. He calls this “multiverse conjectures.” All such possibilities re-

main conjectures, thus pointing to Hands’s thirty-nine numbered conclusions to the book. The first of these reads: “It is almost certain that the empirical discipline of science will never be able to explain the origin of the matter and energy of which we consist” (582).

In treating Guth’s theory of a brief, extremely rapid expansion during the Big Bang as an explanation for minor density variations in the cosmic microwave background (CMB), he quotes Guth’s remark that “a theory of this sort is contrived with the goal of arranging the density perturbations to come out right” (117). This points to problems where, as Paul Steinhardt and others have noted, the standard model is fundamentally untestable and thus must be considered as scientifically flawed or incomplete.

The subsequent derivation of large structures—galaxies and stars—from density ripples in the cosmic microwave background became a mainstay of the overall narrative almost as soon as the Cosmic Microwave Background Explorer (COBE) sent back its images in 1989. A certain will to believe was evident when George Smoot declared it was “like seeing the face of God” and Steven Hawking called it “the discovery of the century, if not of all time” (81). A more cautious look at the evidence suggests that this “attitude of belief rather than reason” requires caution and perhaps correction: various theorists have argued that “one in 100,000 . . . is far too little density variation for gravitational instability to cause *any* structures to form” (117)—a claim equally difficult to prove.

The hypotheses of dark matter and dark energy provide additional evidence of problems we normally avoid contemplating. In order to account for the observed behavior of massive galaxies, for instance, dark matter amounting to as much as ninety percent of all matter, comes to the rescue. The similar introduction of dark energy accounts for an accelerating expansion of the Universe. In some ways, these resemble the fudge factor Albert Einstein introduced into his equations to account for divergence in cosmic behavior, which he later acknowledged as his greatest mistake.

Hands’s enumeration of problems all through the cosmic narrative points to the typical way big

historians (and most cosmologists) deal with these. They look at the standard model presentations, including such “explanations” as dark matter and dark energy, recognizing the cognitive barrier they present to understanding, and then adopt a “good-enough-for-now” acceptance. In order to “get on” with the story, cosmologists and big historians have to bypass many profound mysteries without hesitation or regret.

Hands explores the various theories proposed for the origin of life. Decades ago, Stanley Miller and Harold Urey attempted to produce life by subjecting a gaseous mixture to an electric current. Amino acids were produced but nothing more. Later, it was realized that their gaseous mixture probably did not match the early Earth atmosphere. No subsequent experiments have yielded better results. Experiments based on Darwin’s “warm little pond” as a likely environment for life’s origin have not been successful, and no scientific evidence for intermediate steps between inanimate matter and living cells has emerged. The theory that life originated elsewhere and was brought to Earth as bacterial spores from outer space pushes life’s origin elsewhere but begs the question of where and how life originated somewhere else. “As with the emergence of matter,” Hands suggests, “it is very probably beyond the ability of science to explain the origin of life” (245).

In *Vital Dust* (1995), more than thirty years ago, Christian de Duve, who explored life’s origins at length, set forth his view that the origin of life could have happened only once. His argument was that the first living cell would have immediately consumed any upstart followers. Such a conjecture can never be proved; it remains just as hypothetical today as then. When Hands concludes that “[i]t is highly probable although not certain, that life emerged only once on Earth, and that all living things on the planet evolved from this one event” (582), it appears that Hands, too, has stepped outside the rigorous scientific framework so evident throughout *Cosmosapiens*.

In evolutionary theory, it has long been recognized that Darwin’s pioneering *Origin of Species* (1859) and *Descent of Man* (1871) were seminal studies but had limitations that subsequent evolutionists have been at

pains to explore. Hands takes time to detail such limitations: while natural selection and sexual selection have great explanatory power, they have important limitations—not surprising considering that Darwin’s books were opening volleys for a very complex theory. These limitations have since been addressed by new understandings of group selection and social cooperation, areas that Edward O. Wilson (often considered as the Darwin of the twenty-first century) explores in *Sociobiology* (1975) with sophisticated additions in *The Social Conquest of the Earth* (2012), both early enough for Hands to have assimilated. Significantly, the only Wilson work in his bibliography is *Consilience* (1998), which bypasses evolutionary theory in favor of pontificating on “the unity of knowledge.”

In his treatment of what he calls “complexification,” Hands acknowledges the still influential idea of intelligent design argued repeatedly by Michael Behe and others, noting the “uniformly hostile” response of evolutionists, though he does not mention the famous “creation science” court case—*Edwards v. Aguillard*, 482 U.S. 578 (1987)—in which the judge chastised intelligent design advocates for wasting court time and resources on an untenable theory. Superficially, it might seem that a discussion of intelligent design is out of place in *Cosmosapiens*, a book so rigorously scientific in its approach; but, as Hands points out, intelligent design or creationism are examples “arising from a more general problem, the inability of science to explain certain phenomena” (233). However, the position creationists have adopted fails: “The proposal that the first cell is irreducibly complex and could only have been caused by intelligent design is not supported by evidence; it is not falsifiable and so is not a scientific explanation” (245). This inability of science to explain everything accounts for surprising conversions: the scientist Fred Hoyle, who eventually adopted the idea of a superior intelligence behind evolution, and the well-known atheist philosopher Anthony Flew, who converted late in life to deism. The inability of science to explain everything defines the crevice, or multiple crevices, that provide openings for the 1998 wedge strategy of creationists to

establish intelligent design as the ultimate explanation for the existence of life (cf. “The Wedge Document”).

Hands’s treatment of emergence theory is up to date and fully in line with scientific recognition of emergence as a so-far unexplained but obvious feature of the Universe from the fusion of elements to human innovation. Erich Jantsch’s emphasis on the “self-organizing Universe” along with Stuart Kauffman’s “self-organizing complexity” and James Lovelock’s “Gaia hypothesis” are acknowledged as significant contributions to his evolutionary emphasis.

Hands’s three-part treatment of human cognitive development provides his main taxonomy for organizing human evolution. Rather than the traditional standard that treats the Agricultural Revolution some twelve thousand years ago in terms of a change in human interaction with their environment, Hands sees it as developing from a change in human cognition. He proposes the development of property, settled life, and the establishment of cities and states as emergent from changes in human thinking.

Primeval thinking sees the world animated by a spiritual force or spirits prior to the emergence of polytheism or monotheism. Philosophical thinking, marked by an inward focus on selfhood, emerged in Europe with the Greek philosophers—Thales, Plato, and Aristotle; in India with the Upanishadic sages and Shankara; in China with Lao Tzu and Mencius. Scientific thinking coalesced with Copernicus, Galileo, and Bacon, with scattered precursors in Classical times. The disciplines of the modern academy are the result of rigorous scientific thinking. A mixture of philosophical with scientific thinking motivates a few, such as the late Steven Hawking and Steven Weinberg, who yearned for a unified theory of everything. In some sense, big historians are part of this trend as they seek to produce a unified history or origin story of the human adventure.

Of particular interest is Hands’s chapter on origin stories. These have been recognized among big historians, often with examples quoted, and David Christian made a forceful link in both *Maps of Time* (2004) and *Origin Story* (2018). Well-known origin stories include Hesiod’s eighth-century BCE *Theog-*

ony, Lucretius’s first-century BCE *De Rerum Natura* (*On the Nature of Things*), and Ovid’s first-century CE *Metamorphoses*. Hundreds have been published from oral stories collected from tribal people around the world with ancient printed versions from the Hindu *Rig Veda* and *Upanishads* (1500-800 BCE) and the Japanese *Kojiki* (712 CE). Recognizing the continuity between mythic origin stories and modern scientific accounts—the difference being a shift from narrative knowing to empirical evidence—is fundamental for an understanding of Big History.

Cosmosapiens is an impressive work, most notably in the coverage it attempts. It is a worthwhile book for big historians because it explores the many tributaries of the central narrative. It is valuable as a primer for reviewing the main currents and episodes across the full territory of Big History. For introducing Big History to the beginning student, the book may be too difficult because the primary pedagogical emphasis for the big history educator is communicating the sense of a continuous narrative that connects the distant origins of things with today’s human situation. Meandering into the byways of unanswered questions and philosophical problems with the standard theory might best come later; a firm grasp of the big history mainstream should precede the many philosophical issues raised by the direct historical route. *Cosmosapiens* has its place in a survey of Big History, but one needs to find a well-paved route through the countryside before venturing into off-road dust storms along the way.