

Houqua firm obliged the British traders to make a series of concessions.

Wong highlights the ambitious and complex plans applied long term by the Hong merchants to expand their business in global networks. In the early nineteenth century, Houqua noticed the presence of American merchants competing with British in Canton. He soon chose to collaborate with them as a cushion against the pressure from the East India Company. The corporation gradually developed into a stable, safe, and trustful relationship. It was through this channel that Houqua made several bold investments in America, according to Wong; they proved quite profitable. In addition, the alliance provided the Hong merchants with a new way of protecting their fortunes from the exactions of the Manchu government. More importantly, while the Hong merchants lost their livelihood when the Nanjing Treaty abolished the Canton system, Houqua's descendants found that the interest paid on Wu Bingjian's American investments still provided them with a stable source of income. Wong's fine analysis clearly shows that at least one Hong merchant managed to play an active role not only in Canton but also in the global economy.

Wong has reconceptualized the role that the Hong merchants played in the global economy by scrutinizing overlooked long-term personal ties linking them and their American partners. Such an approach is fresh and persuasive. Still, by devoting so much attention to personal interactions, Wong runs the risk of underestimating the contribution of the Canton system itself. His analysis of the latter is not as strong or as sustained as the subtitle of his book hints. Furthermore, in this area he subscribes to the traditional view of the Canton system as nothing but an obstacle to foreign trade. In fact, the changes made to that system provided the

institutional channel through which the Hong merchants, including Wu, developed personal ties with Westerners. No matter how corrupt the Canton system was, it proved that the court was willing to give up direct control over overseas trade, unthinkable before the late Ming. Left to handle foreign trade, the Hong merchants dealt with foreign merchants as they saw fit. The Canton system, which worked efficiently until 1840, facilitated the creation of a corporation by the Hong merchants and their Western partners, a crucial prerequisite for the global success of Wu's firm.

In short, Wong's book brilliantly demonstrates that the Canton system and the Hong merchants, two groups much studied by previous scholars, remain a valuable mine from which historians can still excavate fresh insights advancing our understanding of the relationship between nineteenth-century China and the global network.

### Origin story: a big history of everything

*By David Christian New York:*

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Reviewed by Roger L. Albin  
University of Michigan, USA  
E-mail: ralbin@med.umich.edu

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Aimed at a general audience, this well-written and interesting book is part of an ambitious effort to develop the naturalistic equivalent of a creation-origin myth for the human species. Christian titles this effort 'Big History'. Prior products include a series of university-level textbooks, a successful Coursera Massive Open Online Course (MOOC), an impressive web-based secondary school curriculum, and

that sine qua non of successful public outreach, a widely viewed TED talk.<sup>1</sup> Christian's goal is nothing less than to situate humanity within the whole history of the universe, providing readers with an idea of how the universe evolved and their place within the natural world. As he points out, his efforts are analogous to the 'universal' histories emerging within a variety of intellectual traditions over the past few centuries. Drawing on knowledge from a wide array of disciplines, Christian presents an engaging and coherent narrative, but also one that exhibits some conceptual flaws.

A major theme of Christian's narrative is the emergence and evolution of complexity. The narrative begins with the undifferentiated universe following the Big Bang and concludes with the emergence of our complex industrial civilization. Christian presents this evolution as a series of implicitly ascending steps which he describes as thresholds. Initial conditions, starting with the immediate aftermath of the Big Bang, create states that Christian terms 'Goldilocks conditions', leading to the emergence of more differentiated, complex states. These thresholds include a staged series of physical-chemical, biological, and social changes (pp. 13–14). The stages are identified explicitly through the titles of successive book divisions: 'Cosmos', 'Biosphere', 'Us'.

In the domain of physical-chemical events, threshold 1 is the Big Bang itself. Threshold 2 is the emergence of stars, threshold 3 the development of higher elements as a consequence of stellar evolution, and threshold 4 the birth of our planetary

system. The physical-chemical thresholds are followed by a generously broad biological threshold 5 that includes the emergence of life on our planet, the birth of multicellular organisms and ensuing differentiation of life, the asteroid impact driven mass extinction at the end of the Cretaceous period, and the appearance of hominins. Threshold 6 is a transition from biological to social thresholds: the appearance of *Homo sapiens*. Threshold 7 is the emergence of agriculture-sedentism and threshold 8 is the Scientific and Industrial revolutions fuelled literally by use of non-organic energy. Christian tentatively proposes a threshold 9 (in Part IV, 'The future'): the development of a sustainable human civilization.

Christian is a thoughtful and skilful pedagogue. The individual thresholds selected and their sequence make a logical and compelling narrative structure. His descriptions of the dynamics of each threshold and the intervening processes are excellent. His breadth and depth of knowledge are impressive and he is a lucid writer, explaining many complex phenomena in concise, clear paragraphs. Many of the topics he discusses are active areas of investigation and he appears to be impressively current in terms of major recent findings. Some additions would probably improve this book. Christian relies almost exclusively on written descriptions. Adding well-chosen images, charts, or diagrams would enhance exposition of some of the more complex concepts. There is, for example, a fairly successful description of the remarkable chemistry of water. Addition of a simple figure would enhance the description and facilitate use of water chemistry as an example of the often conceptually challenging idea of emergent properties. Christian's Big History Project website contains a number of excellent examples of creative graphics that could have been incorporated into this book. A more extensive and ambitious

1 David Christian, Cynthia Brown, Craig Benjamin, *Big history: between nothing and everything*, New York: McGraw-Hill Education, 2013; David Christian, *Maps of time: an introduction to big history*, Berkeley, CA: University of California Press, 2011, <https://www.coursera.org/learn/big-history>; <https://www.bighistoryproject.com/home>; [https://www.ted.com/talks/david\\_christian\\_big\\_history](https://www.ted.com/talks/david_christian_big_history).

bibliography would also enhance the utility of this book for curious readers.

Christian's model has a major misleading feature. Through discussion of the concept of entropy and repeated mentions of the continually increasing total (but not local) entropy of the universe, he attempts to avoid a teleological model. Aspects of his exposition, however, have strongly teleological implications. His emphasis on increasing complexity at the passage of each threshold endows his model with an unjustified progressive quality. The argument for increasing complexity is based to a considerable extent on the emergence of life on our planet and subsequent emergence of human intelligence and our complex societies. These are the only known examples of life, intelligence, and complex societies and it is impossible to conclude anything about universal trends from single examples.

While Christian does not believe that humans are the crown of creation, the emphasis on increasing complexity and other aspects of his discussions point implicitly towards an anthropocentric teleology. Our history is a tiny fraction of the total duration of the universe but the sections on humanity account for approximately half of the total text. How is the emergence of farming, which led to the widespread replacement of complex ecosystems by human-organized monocultures, an example of increasing complexity? In what way would his proposed

threshold 9, a sustainable human civilization, represent the next step in increasing complexity?

The anthropocentric and teleological aspects of Christian's model reflect his objective of developing a naturalistic creation-origin story for humanity. He is explicit that his model is an alternative to prior religious-mythological concepts. Christian is aiming to provide a scientifically accurate account of the development of humanity and to satisfy deep psychological needs. His goal is to construct a universal creation-origin story free of sectarian or ethnic chauvinism. Christian is also justifiably worried about the near future and sustainability of our industrial civilization. He views his Big History Project as a useful educational tool to understand and mitigate humanity's impact on our planet.

This is a very ambitious and idealistic agenda. Can it be successful? This will depend on the ability of his model to fulfil human psychological needs. There are qualitative differences between Christian's model and traditional accounts. There is no afterlife, no immanent supernatural entities to entice or bargain with in pursuit of advantages, and no transcendental entities guaranteeing that the universe is interested in individual fates. Christian's model is intellectually powerful, but even with its anthropocentric and teleological components it still embodies an austere view of a universe indifferent to humanity.