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Opinion Piece: *Big History: We all need to know* Art Hobson

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He is also interested in physics literacy for the general public and has published *Physics: Concepts & Connections* (Pearson, 5th edition 2010), a physics-literacy textbook for non-science college students.

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During the past century, science has revealed enormous new realms of history: the universe's 13.8 billion years, Earth's 4.5 billion years, not to mention 5 million years of early human precursors following our divergence from the other apes, and *Homo sapiens*' 200,000 years. Yet world history courses begin at most a mere 12,000 years ago, following the transition from hunter-gatherers to settled agriculture.

Kids today need a grander take on who we are. They must figure out how to pull us through global warming, pandemics, our overpopulation burden, warfare in the nuclear age, etc., and into a more

secure future. In his book *The Future of Life*, the prophetic scholar and biologist Edward O. Wilson describes our era as the "bottleneck." Solutions to the bottleneck problems require new perspective: a planetary grasp of what it means to be human; an understanding of how we are situated in the universe. This requires some knowledge of millions of years of biological history and billions of years of cosmic history.



Around 1990, many colleges and schools began developing "Big History" courses that examine history from the Big Bang to the present. Rather than focusing only on human civilisation, such courses explore how humankind fits within the broader context of nature, drawing not only from historical texts but also from biology, astronomy, geology, archaeology and other sciences.

A few possible topics for such courses: How did the universe begin? How did the chemical elements arise from the deaths of stars? How was our solar system born? What is life? How did life begin? Is there life and intelligence on other planets? How did Earth arise and then change? How did

humans get here? What was life like during the long hunter-gatherer phase? How did the transition to farming proceed? Such topics might occupy the first one-third of a two-semester course, with the remainder devoted to world civilisation within the broader context of Earth's changing environment and resources.

As an easy alternative, existing world history courses could be broadened by adding a two- to four-week survey of cosmic and biological history at the beginning, plus occasional topics (e.g. our expanding population, climate change, other human impacts on the environment), during the remainder of the course. At a minimum, all world history courses should include biological history beginning with the divergence of humans from the apes, or perhaps beginning with *Homo sapiens*.

A Big History course would necessarily draw on a range of faculty talents. An educational campus is the perfect location for such an endeavour. Why shouldn't we use the broad array of talent available at educational institutions to pull such interdisciplinary courses together?

In 1989, David Christian of Macquarie University in Sydney, Australia, collaborated with colleagues from diverse fields to develop a course exploring history from the Big Bang to the present. According to the university's 2012 school catalog, the course "invites you on an immense journey through time, to witness the first moments of our universe, the birth of stars and planets, the formation of life on Earth, the dawn of human consciousness, and the ever-unfolding story of humans as Earth's dominant species. Explore the inevitable question of what it means to be human."

Christian's course caught the attention of software developer and philanthropist Bill Gates. According to Gates, "He really blew me away. ... It made

me wish that I could have taken big history when I was young, because it would have given me a way to think about all of the school work and reading that followed. In particular, it really put the sciences in an interesting historical context and explained how they apply to a lot of contemporary concerns."

By 2011, 50 university professors around the world had offered Big History courses. A secondary school pilot course was developed and taught to 3,000 kids in 50 high schools worldwide. In 2012, there were 87 schools, including 50 U.S. schools, teaching Big History. There are initiatives to make it a standard required course at universities throughout the world. Gates has used his funds to launch a free online version for high school students.

Such courses could help fill one of our planet's most crying needs: a scientifically literate human population that can figure out better solutions to our problems than, for example, the United States' fractured, evidence-free, anti-intellectual, and profoundly tragic approach to Covid-19. We need an intelligent, literate world population capable of governing itself peacefully and equitably for the happiness of all.

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