

Essay-review of Christian's *Maps of Time: An Introduction to Big History*  
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**Maps of Time: An Introduction to Big History**

DAVID CHRISTIAN

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In their graceful volume *The Discovery of Time*, Stephen Toulmin and June Goodfield observed that one of the most distinctive features of the modern scientific view of the world is that it is a *historical* picture. 'In the whole history of thought no transformation in men's attitude to Nature—in their "common sense"—has been more profound than the change in perspective brought about by the discovery of the past' (Toulmin and Goodfield 1965). While particular accounts of the history of the Earth, or human society, or the solar system, or the physical cosmos have often been written and published, relatively few authors have tried to present a historical picture of the world and the universe in their entirety. *Maps of Time: An Introduction to Big History* is an attempt to do just that: to give a comprehensive account of the development of the universe and our human world as we understand them today. David Christian provides us with a one-volume 'creation myth' (as he himself calls it) that begins with the Big Bang and carries right on through to the acceleration of human 'collective learning' on the Internet at the beginning of the third millennium.

*Maps of Time* opens with a fulsome foreword by William McNeill ('This is a great achievement, analogous to the way in which Isaac Newton in the seventeenth century united the heavens and the Earth under uniform laws of motion', xv), and then proceeds through 15 chapters that are grouped into six parts: 'The Inanimate Universe', 'Life on Earth', 'Early Human History: Many Worlds', 'The Holocene: Few Worlds', 'The Modern Era: One World', and the final single-chapter part, 'Perspectives on the Future'. Helpful summaries and suggestions for further reading conclude each chapter, and two appendices treat 'Dating Techniques, Chronologies, and Timelines' and 'Chaos and Order'. More than 90 black-and-white tables, diagrams, and illustrations appear throughout, and 48 pages of endnotes along with 31 pages of bibliography point the reader to many other sources, most of them secondary or tertiary. Christian is a good writer, and the prose is everywhere smooth and clear.

This is the second volume in a series published by the University of California Press called 'The California World History Library', and as the series title suggests, *Maps of Time* is a product of what is sometimes called the 'Big History' or 'World History' movement. Reacting against popular scepticism toward 'master narratives', Christian and his fellow 'big historians' seek to create a new class of grand histories that incorporate not only the history of human society, but also of the Earth, its life, and the universe as a whole. Those who adhere to Robin Collingwood's notion of what 'history' is—the study of the thought of past human agents (Collingwood 1939)—will generally be uninterested in the Big History movement, with its emphasis on physical and environmental forces and statistical trends. Those who adhere to the 'Great Man' theory of history will be interested even less: in *Maps of Time* hardly a single political or military leader is mentioned, nor are any figures from art, philosophy, or literature. But those with a broader view of historical inquiry—one which encompasses the whole of what William Whewell called the 'palaetiological' disciplines (O'Hara 1996)—will find much in Big History, and in *Maps of Time*, that is congenial to them. The notion that cosmology and geology, the history of the solar system and the history of social institutions, have something to offer one another is not a new idea, but it is one that has been too infrequently explored.

The early chapters of *Maps of Time*, covering the history of the physical universe, emphasize the importance of gravity, not just as an organizing force but as a force that led inevitably to the generation of all the elements in the periodic table through the creation, destruction, and recycling of stars. The later chapters on human evolution and society develop the interesting notion of 'social gravity' (245), a force that has drawn individuals together and has led to the emergence of villages, cities, and states. Social gravity has enabled human beings to engage in 'collective learning', a process that has gradually consolidated the 'many worlds' of early human history into 'few worlds' during the Holocene and finally, in our own late sliver of time, into 'one world'. The idea of energy flows, along with the 'waltz of chaos and complexity' (511), provides another of the volume's organizing principles: star formation gave rise to energy flows that allowed nearby planets to support life; energy flowing from within the Earth drove the movements of continental plates and so determined the history of the Earth's surface; and the ability of humans to harness energy flows by means of

technology permitted them to extend their influence over one another and over the biosphere as a whole.

Specialists in any of the particular fields covered by the volume may find rough spots in the treatment of topics they know well. In the chapters on evolution, for example, too much emphasis is placed on *classification* as opposed to *phylogeny* (121–22), perhaps as a result of the secondary sources Christian relied upon; Erasmus Darwin was Charles Darwin's grandfather, not his uncle (86); and I do not think many evolutionary biologists would agree that '[m]ost animal species don't have histories as we usually use the word; once they have evolved, they tend to remain in their original niche until they vanish from the fossil record' (143). Given the scope of the effort, however, a charitable reading is appropriate, and I think it is fair to regard this volume as something like the first edition of a continuing work.

A paradoxical aspect of *Maps of Time* is that although it is an introduction, it cannot really serve as an introductory *history* text, since readers must already be in possession of a good deal of prior knowledge about the past in order to appreciate many of the examples given. A beginning student encountering the brief section on the French Revolution, for instance, who does not already know what the French Revolution is, what took place during it, and who was involved, will not find any of that information in the text. The French Revolution is described not in its particularity, but as an example of processes that resulted in the strengthening of states, and that led eventually to modern bureaucracies 'with a scale, a power, a wealth, and a reach that would have been inconceivable in the premodern world' (428). The book's subtitle should be taken seriously: it is not an introduction to *history* but an introduction to the special genre of *Big History*.

A work as ambitious as *Maps of Time* calls for an equally ambitious philosophical underpinning, and it is here that my greatest concerns arise. The 'elephant in the room' of Big History is teleology, and although Christian offers occasional brief warnings that, for example, one should not think of the origin of human language as inevitable (148), there is no sustained attempt to analyze the teleological implications of Big History as a genre. Like many works that draw on 'complexity science', *Maps of Time* has a neo-Spencerian feel: the universe as a whole is undergoing a sort of cosmic evolution from primitive homogeneity to complex heterogeneity. If we are to be neo-Spencerians, we should perhaps keep in mind the admonition of the great nineteenth-century anti-Spencerian Chauncey Wright, who saw that

teleology is a subtle poison, and lurks where least suspected. The facts of the sciences which Dr Whewell called palaetiological, like the various branches of geology, and every actual concrete series of events which together form an object of interest to us, are apt, unless we are fully acquainted with the actual details through observation or by actual particular deductions from well-known particular facts and general laws, to fall into a dramatic procession in our imaginations. The mythic instinct slips into the place of the chronicles at every opportunity. (Wright 1878)

When Christian says that '[t]he placing of the Earth within the universe is by no means random' (55), I suspect he does not truly mean that the Earth was *placed*, but uncritical readers might come away thinking otherwise. Christian quotes the clever remark that

‘Hydrogen is a light, odorless gas which, given enough time, changes into people’ (27)—and it is so clever I would have used it too—but readers should understand that the word ‘people’ could just as well be replaced by ‘nematodes’ or ‘amethyst crystals’ or ‘helium clouds’ or ‘dead planetoids’. If we regard *Maps of Time* as a first edition, later editions would be strengthened—as would the Big History movement as a whole—by explicitly incorporating some of the more careful analyses of teleological reasoning in science (Mayr 1976), and by deploying clear distinctions between processes that are teleomatic (such as star formation), teleonomic (such as organismal development), and classically teleological (such as intentional behaviour on the part of humans).

In *Maps of Time*, David Christian has given us a well-written book, full of interesting facts, and with ideas to argue for and against in every chapter. It should provoke lively discussion across a whole range of academic disciplines. Surely no author could wish for more.

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