Book Review

■ Cameron Gibelyou and Douglas Northrop, *Big Ideas: A Guide to the History of Everything*. New York: Oxford University Press, 2020. Pp. xxi + 438. Notes and Index. $29.95 (paper).

In *Big Ideas: A Guide to the History of Everything*, Gibelyou and Northrop ask us to reflect on the interpretative frameworks we use to shape universal histories, those interdisciplinary narratives that stitch together our knowledge of science and the humanities from the Big Bang to the future. Their rich and insightful work demonstrates in a compelling way that although the narratives of universal histories, including Big History, draw upon the best scientific and historical evidence, the interpretive paths these histories take reveal worldviews that can obscure, reify, and depart from the evidence. By identifying and discussing the variety of worldviews that underpin interpretive frameworks, Gibelyou and Northrup make a powerful argument that universal histories become more reliable, explanatory, and useful for understanding "everything" when we rigorously inform them with interdisciplinary methods and a pluralism of worldviews. The authors model this very point with their own seamless collaboration from disciplinary backgrounds in physics and history.

A glance at the table of contents suggests a familiar approach to universal histories—"Universe," "Earth," "Life," "Humanity," "History," "Modernity," "Future"—but, the final chapter, "Interpretation," underscores the most significant theme that informs the book from cover to cover. Each chapter unravels interpretive frameworks but begins with a wonderfully lucid explanation of the informational base, the evidence that shapes the different themes of universal histories: cosmology, geology, biology, and human history. Along the way, Gibelyou and Northrup emphasize consensus among the experts as well as acknowledge ongoing debates, but their goal is not to simply provide another universal history. Their most important contributions are the discussions of interpretation and the closing sections of each chapter, which take up philosophical questions on how we think about what we know. Among those topics are, mathematics and the limits of what physical laws can explain, the pros and cons of reductionism, and competing ideas on historical causation.

The chapter "Life" provides a particularly good example of the authors' twin approach of presenting the informational basis of a complex, and for some, controversial, topic like evolution and an insightful analysis of the interpretive questions, frameworks, and pitfalls

that accompany it. The chapter explains well "the Modern Evolutionary Synthesis" that grew from Darwin's nineteenth-century insights and scientific advances over the past century. The authors emphasize the broad consensus on, and explanatory effectiveness of, current evolutionary theory. The information here is complemented by an extended inset on the "Evidence for Evolution" before the authors pivot from "Evolution as Information" to "Evolution as Interpretation." Here, the concern shifts to challenges of interpretation like detaching the notion of "progress" from the popular understanding of evolution. Gibelyou and Northrup remind readers that evolution includes "no inherent drive toward greater 'complexity' or 'perfection' or anything of the sort" (115). Valuing some plants and animals higher or as more evolved, they point out, is an interpretive judgment, not one that grows out of the empirical evidence. Likewise, they discuss how careless interpretation of Darwin leads to grave misunderstandings about how to characterize the natural world and assign value to human lives. Here and elsewhere, the authors reiterate the value of interdisciplinary approaches to universal history themes in order to avoid interpretive pitfalls. In the philosophical discussion on science that closes the chapter, the authors explain that an interdisciplinary approach helps us avoid the problem of scientism by placing science it its social context, in concert with other disciplines.

Rather than emphasize one interpretive framework over another, *Big Ideas* argues for pluralism, placing the different worldviews brought to bear on universal histories in dialog with one another to better see and contemplate their strengths and weaknesses. For example, Gibelyou and Northrup turn a skeptical eye on the reigning paradigm of complexity as an interpretive framework and push against secular naturalism to make room for religious worldviews. Relying solely on complexity as an interpretive framework, they argue, can diminish the important place of simple phenomenon in the natural world, like single-cell bacteria or the role of the family in human history. They advocate keeping the story of the simple and the complex linked so that a feedback loop illustrating their interconnected roles comes to the foreground rather than a linear interpretation that emphasizes an ever-increasing complexity. Narratives of increasing complexity, they warn, run the risk of being misunderstood as progress narratives in which "more complex" equals "better." Similarly, they argue that relying on the dominant secular Western worldview of naturalism diminishes other world views like religions which have been particularly important in shaping the human experience. Bringing a pluralist approach to universal histories avoids the problem of over-reliance on one big idea, which cannot quite capture the diversity of systems, scales, and phenomena that populates universal histories.

Additional features enhance the appeal of *Big Ideas.* "To Ponder" insets arise out of chapter themes and offer thought exercises on issues such as how to wrestle with crackpot science or periodize one's personal history. "Side Note" insets take brief, deep dives into relevant topics such as considerations of scale, counterfactuals, and futurologists. Footnotes

also provide extended explanations as well as source citations, many of which are easily accessible via URLs. There is no bibliography, but the index is thorough and helpful in identifying content themes, authors, and book titles. Especially attractive are two sets of high-quality color plates, which effectively illustrate topics like "Geological Time Scale," the "Wrong Way to Think About Evolution," and "Future Continental Drift." The organization of chapters into titled sections and sub-sections adds to the engaging readability of the text.

Big Ideas is essential reading for all who are interested in universal histories and will be absolutely invaluable to anyone teaching in the Big History field. It is a good choice for upper-division undergraduates and graduate students and could be seamlessly integrated into a general historiography course. Most important, this "Guide to the History of Everything" is a pathbreaking discussion on universal histories, about what we know and how we think about what we know.

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