

written in a beguilingly plain style; yet for our understanding of history and historiography, its argument is rich, challenging, and, in the true sense of the word, radical.

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**On the Edge of Eternity: The Antiquity of the Earth in Medieval and Early Modern Europe.** By Ivano Dal Prete.

New York: Oxford University Press, 2022. Pp. xiv+352. \$34.95.

The discovery of deep time remains a “master narrative” in the history of science. Before the Enlightenment, so the story goes, Europeans believed that the earth was 6,000 years old. They derived their notion of the earth’s age from the book of Genesis, and so short time scales determined what was conceivable. But then came the geologists of the eighteenth and nineteenth centuries, who studied the earth’s layers and discovered the “dark abyss of time”—a history of nature so ancient that it far outstripped human existence. This story is powerful. It contains truths. But does it offer an accurate portrayal of the complexity of history?

Ivano Dal Prete’s *On the Edge of Eternity* is a brilliant book which shows that the earth’s extreme geological age was widely debated in the Middle Ages and Renaissance, when nonbiblical conceptions of time were deemed “largely unproblematic, [and] circulated freely even outside the learned elites” (7). Expanding on the archival scholarship on medieval science pioneered by Pierre Duhem, and following the clues left by historians such as Martin Rudwick, Dal Prete brings together an impressive range of material (spanning from late antiquity to the eighteenth century) to reconstruct the multiplicity of beliefs about the earth’s deep history in medieval and early modern Europe. He shows that the assumption of an ancient earth (presumed to be tens of thousands to billions of years old) was not uncommon in medieval systems of natural philosophy, which posited the earth’s submersion through cyclical floods and the deposition of marine fossils as processes that stretched back into the near-eternity of time. Against this backdrop figures of the Renaissance, such as Leonardo da Vinci, emerge in new relief (81–92). No longer the “useless geniuses” that François Ellenberger made them out to be, they represent the culmination of a medieval tradition of belief that was much more common—and far less heterodox—than previously assumed.

The book unfolds its narrative in seven chapters on a longue durée scale. Dal Prete opens with the church fathers of late antiquity, who created the template for a biblical chronology yet still clung to pagan notions about the rebirth of worlds and the endless cycles of time. The book then moves on to medieval Europe, where scholars like Jean Buridan and Albert the Great continued to theorize (as natural philosophy separate from theology) the earth’s extreme age. Dal Prete evidences the reach of medieval discourse by arguing that notions of an ancient earth were not only discussed in universities like Paris but found wide dissemination through vernacular works, as in the case of the Tuscan merchant Restoro d’Arezzo. Against this background, he dramatically recasts the events of the seventeenth and eighteenth centuries. First, the “Scientific Revolution” emerges as a time when a push to biblical literalism led to a stronger enforcement of sacred chronologies, where marine fossils increasingly evidenced the literal truth of Noah’s flood. Second, the “Enlightenment” emerges as a time of myth making, celebrating its alleged discovery of deep time as a victory of secular reason over the superstitious beliefs of a uniform Christian past. It’s an irony of Dal Prete’s narrative, perhaps a deliberate one,

that it ends with conservative elites in the Veneto reinforcing the literal truth of the biblical flood on the eve of modernity.

This is a complex, wide-ranging work of scholarship. Dal Prete traverses many centuries, recapturing a cacophony of voices. He develops a *longue durée* history that is remarkably intricate: ideas of deep time do not endlessly reemerge out of a uniform ocean but form distinct currents that carve out complex landscapes. This history is hard to capture—and Dal Prete does it superbly. He teases out different kinds of temporal imaginings, from philosophical ones that postulated an off-kilter earth that wore down mountains over long periods of time to empirical ones that used rock strata to evidence periodic flooding. He reveals that ancient authorities could be used to support the earth's extreme age in a way that did not impinge on scriptural truths. For many, the cyclical floods of Aristotelian earth history were compatible with the universal Flood of Noah, just as an eternal universe was compatible with one created in time. Multiple now-contradictory beliefs coexisted and Dal Prete demonstrates how these harmonized—and stood in conflict—in exquisite detail.

At times one wonders how common it was to conceive of an earth of such antiquity, and whether marine fossils were more commonly ascribed to Noah's flood without invoking longer time scales. Dal Prete claims that before the seventeenth century, "it was much more common to attribute 'marine petrifications' to vast revolutions of the Earth in a distant past . . . rather than to the Noachic Flood" (127). Regardless of how one stands here, Dal Prete reads sources with great nuance and listens carefully for their hidden valences. For example, he shows that the word *diluvium*, *il diluvio*, "the flood," used to be ambiguous between *the* flood of Noah and *one* flood of many that stretched back to eternity. Especially for those scholars wishing to revisit the question of deep time in the seventeenth and eighteenth centuries, Dal Prete provides a model of how to detect different layers of meaning in the source material—and this makes his work invaluable to scholars of later centuries.

One of the book's most innovative moments is its reassessment of the Enlightenment, not as the period that led to the discovery of deep time, but as a period that led to increasing "politicization and polarization" such that any "complex and nuanced history [of deep time] was crushed" (158–59). If there are villains in Dal Prete's story, they are to be found in *philosophes* like d'Holbach and Voltaire who "rearranged historical sources and natural evidence in ways that supported their agendas," presenting ideas of deep time "as recent breakthroughs of human reason" rather than "in their uninterrupted continuity with medieval and Renaissance natural philosophy" (158). This fascinating insight raises the question of continuity in Dal Prete's alternate genealogy. Interestingly, the Renaissance also postulated a break with a preceding "dark age." One might wonder if Renaissance figures themselves saw their notion of time as a descendant of medieval thought (as opposed to antiquity), even if we as modern historians can draw that line of continuity for them.

*On the Edge of Eternity* is an outstanding book. It questions the view that the depths of geological time were "discovered" in the late eighteenth century, spelling out a novel approach that recovers a complex past. The modernity of deep time remains a pervasive assumption in books, articles, and class syllabi; hence this monograph is required reading for historians of science and intellectual historians regardless of period. Dal Prete offers new assumptions for how to research (and teach!) one of the most dramatic chapters in the history of science. I will be one of those building upon his insights—and his provocations.

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