

BOOK REVIEW

Science Before Socrates: Parmenides, Anaxagoras, and the New Astronomy. By DANIEL W. GRAHAM. New York: Oxford University Press, 2013. Pp. xiii + 287. Hardcover, \$49.95. ISBN 978-0-19-995978-5.

This book is more than the mere history suggested by its title, being rather “an argument rather than a historical narrative” (117–118). It even has a “hero,” namely Anaxagoras. The thesis/argument is that the Presocratics were better scientists than they have generally been made out to be, and not merely speculators. It should be said up front that embedded in all this is much solid historical research on Graham’s part, so that a student without knowledge of Greek or Latin can indeed learn what and how early Greek thinkers argued about the heavens—but pretty much only the heavens, for Graham focuses on this aspect—the “astronomy” of the subtitle—to the near total exclusion of all else they wrote on. In this, his main task, he is entirely successful, ably demonstrating (*passim* and then surveyed in Appendix 1) that a host of modern scholars have seriously downplayed some reasoned and articulate arguments.

It is, then, as “scientific astronomers” (13) that Graham studies them, not more generally as thinkers (the word applied to this group by, i.a., Theodor Gomperz, Walther Kranz, and Claire Louguet), or even as philosophers, their usual rubric; indeed Graham is interested in the “transition from ... philosophy to science” (5), a surprising phrase from one of the leading scholars of ancient philosophy. Why, though, since the ancients of course had no such distinction, should we? In *The Republic*, moreover, this transition is reversed: astronomy is but the way station to a higher, philosophical, mode of thought. More important, a historian of science should judge not the truth of an earlier theory, but the questions that are asked in a particular time and place; see R. G. Collingwood, *An Autobiography*, Oxford 1939, ch. 7, “The History of Philosophy.”

In other words, Graham is absolutely right that what he calls heliophotism—the recognition that the moon’s light reflects that of the sun, and a major (and fascinating) thread of the book—, first found in Parmenides, made far fuller use of by Anaxagoras, and developed somewhat further by Empedocles, was a remarkable advance in determining a complex set of interrelated spatial relationships among earth, sun, and moon. I too think Anaxagoras a marvelous early example of the

modern scientist. This is, however, no reason to be dismissive of earlier thinkers—which I hasten to add was certainly not Graham’s aim, but seems rather to be an unintended consequence of his concentration on empirical science.

Graham, for example, passes too quickly over Anaximander’s striking and even brilliant notion that the earth can remain in midair (μετέωρος) because it is equally distant from all else, there being no reason therefore for it to move one way rather than any other; cf. Kahn, *Anaximander* (New York, 1960) 76–77 for a proper appreciation. Similarly, Heraclitus is as much to be admired for his refusal (not inability) to write “rationally,” that is, to produce a sentence that unambiguously means one and only one thing, as is Anaxagoras admirable for the logical progression of *his* sentences. Even if we do not believe in Heraclitus’ bowl-shaped ephemeral sun, we may still admire its ability to answer several related problems without recourse to divinity. This too is science in its original sense, taken from Greek *episteme*.

Graham (32–35) is right to argue that it can often be useful to apply terms (even Greeklike ones) anachronistically to various items we want to think of as groups—such as Aristotle’s use of *arche* or our own of “didactic poetry”—so long as we are aware of the anachronism: Thales’ water is *not* the same as Heraclitus’ fire. Graham anticipates this in chapter 1, “Looking for Science,” but I fear that this excellent survey of modern theories of science, which can be recommended on its own, will instead be often skipped as readers head for the later chapters on the Presocratics themselves.

In addition to heliophotism, Graham also traces the related development of the ways various Presocratics made sense of the facts of perspective. Until a thorough early history of the subject in Greece is written, Graham’s pages on the subject (which unfortunately go unnoticed in the index) will remain essential reading, although there is room for disagreement on some minor points. He, e.g., thinks that Empedocles’ statement that the moon casts a shadow equal to itself derives from the view that the sun is not that far from it (187–8), whereas I think that (as is even more to Empedocles’ credit as a scientific thinker) it is because he observed that *any* object directly beneath the sun always casts a shadow of the same size (since the sun is effectively an infinite distance away and its shadow lines are parallel)—from which he inferred that this must be true of the moon as well. That this is no longer the case with an object so large and far above the earth as the moon places him behind Anaxagoras in this regard—which may suggest that Empedocles had not read him—, but still reflects well on his powers of observation and deduction.

In sum, then: an admirable book, demonstrating that some at least of the Presocratics were well on the way towards our modern notion of scientific thinking. I would only urge that before recommending it to nonspecialists (at whom it seems to be aimed), one add that there are many other reasons for regarding them truly as the founding fathers of European thought in a broader sense. Ontology anybody?

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