Review
Janiak, Andrew (ed.) (2020). *Space: A History.* OUP: New York

Space: A History explores the development of the philosophic concept of space from antiquity to the eighteenth century. It comprises history of philosophy chapters, ordered chronologically; and short 'Reflections' on space from other disciplines, including the history of art and mathematics. The book makes many valuable contributions to the history of space, and all its parts reward close reading.

Its publication is especially welcome because its theme is so unusual. Take a closely related topic in the history of philosophy: time. There are many wide-ranging histories of philosophy of time, from Gunn's 1929 *The Problem of Time* to Bardon's 2013 *A Brief History of the Philosophy of Time.* In contrast, there are no wide-ranging histories of the philosophy of space. There are books covering space during specific periods in history, such as Koyré's 1957 *From the Closed World to the Open Universe*, Grant's 1981 *Much Ado About Nothing*, and Dainton's 2001 *Time and Space.* The only wide-ranging book on space I'm aware of is Jammer's 1954 *Concepts of Space*, which focuses on space in the history of physics. Given the importance of space to philosophy, it's surprising that this 2020 volume is the first to offer a panoramic view of its long history.

Space has three major strengths. First, its conceptual pluralism. The volume belongs to the Oxford Philosophical Concepts series which, as the series editor Christia Mercer explains, enables historians of philosophy to 'rethink' a central concept in philosophy's past. The point is not to offer a broad overview, rather to 'identify problems the concept was originally supposed to solve and investigate how approaches to them shifted over time' (p.vii). Given this design, I imagine it would be tempting to hammer a one-size-fits-all concept of space into multiple philosophic eras. But, in his editor's "Introduction", Andrew Janiak rebuffs this temptation: *Space* does *not* assume there is a single concept of space whose history we can trace. Instead, the volume asks guiding questions (p2). Did philosophers in previous ages have a concept of space at all? Did they regard space as a significant topic of philosophical reflection or debate? If so, was that due to reasons internal to philosophy, or for external ones, perhaps stemming from theology or mathematics? Such pluralism in a theme-based book is refreshing.

Second, the book's individual chapters; I'll pick out a few highlights of each. Barbara Sattler's "Space in Ancient Times" ponders the *task* of space. Is it to show 'where some body is situated and where it is moving'; or rather to 'delimit one thing from another' and be a condition for plurality? The chapter is a brilliant reminder that philosophical questions have not been around forever - each has origins in human thought. Marije Martijn explores the role of imagination in "Geometrical and Physical Space in Proclus". This is an uncommon subject, and of particular interest is Proclus' view that place is a kind of immaterial body. Edith Sylla's "Concepts of Space in the 14th Century" focuses on how Nicole Oresme modified Aristotle's account of place towards one of space. We learn that considering what is and isn't possible pushed Oresme towards new ideas about vacuum. Gary Hatfield's "Geometry and Visual Space from Antiquity to the Early Moderns" considers geometrical analyses of sight through history. Alongside exceptionally clear discussions of well-known thinkers such as Euclid, Descartes and Berkeley, the chapter covers the work of Ibn al-Haytham Kepler, who argued amongst other things that light is the direct agent of vision. Janiak's "Space in the Seventeenth Century" covers the likes of Descartes, Newton, and Leibniz. With this chapter there is a distinct feeling of moving onto ground better connected with debates today, and it contains especially useful discussions on how the concept of space shifted with regard to motion and structure. Michael Friedman contributes the final chapter, "Space in Kantian Idealism", arguing

that Kant's transcendental idealism is best understood against the Newton-Leibniz backdrop. I found the discussion of why Kant neglected the possibility that space might be both the form of our outer intuition *and* the form of mind-independent objects particularly interesting.

Third, the many new connections suggested by the Reflections between philosophy and other disciplines. Banu Gökariksel explores women's veiling practices as they move through the city of Istanbul. Using ant colonies, Nicole Heller considers spatial concepts and scales in ecology. Mari Yoko Hara discusses perspective in Renaissance art and architecture. Jennifer Groh considers embodied cognition in neuroscience, explaining that thinking involves the brain's sensory and motor pathways. Mimi Kim explores the space of a chemical laboratory. Jeremy Gray recounts the history of non-Euclidean geometry. Inspired by Euclidean and non-Euclidean geometry, George Hart explains his mathematical approach to space in sculpture. As Janiak notes, some of the Reflections pair neatly with the main chapters, such as Hara's Reflection on perspective and Hatfield's chapter on optics. Other Reflections do not pair neatly, which has the benefit of flagging things about space that philosophy has failed to address, and may 'prod' philosophers into thinking about space in new ways. '[P]hilosophers', Janiak rightly states, 'do not hold exclusive, or even primary, sway over the concept of space' (p.4-5).

Of course, for all these strengths, *Space* also has some (ahem) holes. One concerns the gaps between its chapters. Each chapter picks out pivotal episodes in the philosophy of space, such as Aristotle's identification of place with body, and the Newton-Leibniz debate. As their substantial discussions show, concepts of space in these various episodes were hugely complex. Yet this hints at the complexity that must surround these episodes - at the material we're missing in the gaps. What happened between Proclus' fifth century account of space, and Oresme's fourteenth century account? How did philosophers jump from Oresme's cautious musings to Newton's bold absolutism? In its current form, *Space* evidences Janiak's thesis that there may be no concept of space common to multiple philosophic ages a little *too* well. It makes me wonder if this is why scholars haven't produced wide-ranging histories of space at the same rate they've produced histories of time - arguably, something closer to a single concept of 'time' has persisted through the centuries, whereas this is not the case with space. Obviously, one volume cannot cover everything. But this issue could have been addressed by beefing up the book's narrative component. Perhaps additional chapters could have covered some of the longer chronological jumps, or else short editorials between chapters could have briefly explained linking philosophical developments?

Another hole concerns the decision to end *Space* with Kant's eighteenth century *Critique of Pure Reason*. The "Introduction" explains that the nineteenth century saw a spatial revolution in the rise of non-Euclidean geometries; and the early twentieth saw yet another, in Einstein's theories of relativity. Janiak gives several reasons for stopping this volume with Kant, 'just before' these exciting developments. One reason is that these developments are intimately connected with the early twentieth century rise of analytic philosophy, and the literature on analytic, twentieth century theories of space is already vast. Understandably, Janiak prefers to contribute to the more modest bodies of literature on earlier theories of space. Another reason is that, as it stands, all the figures covered in the volume agree on some basic ideas, including that geometry is Euclidean, and space and time are separate things. Once these ideas shift, Janiak claims that an 'intellectual boundary' is reached, and the volume aims to stop just before that point (p.6-8).

Although I see the sense of this, I argue the volume stops about a hundred years too early. Kant's *Critique of Pure Reason* came out in 1781. János Bolyai and Nikolai Lobachevsky developed non-Euclidean geometries in the 1820s, but their ideas were not widely recognised in mathematics until the 1860s, and many more decades passed before they filtered widely into philosophy. Einstein's special theory of relativity was published later still, in 1905. I would have

appreciated a final chapter exploring space in mid (or even late) nineteenth century philosophy, perhaps looking at later German idealisms or British empiricisms. Like the medieval period, the nineteenth century is also neglected by historians of philosophy - certainly in comparison to the seventeenth. An additional chapter would have helped address that neglect, and still squeaked in just before the volume's self-imposed intellectual boundary.

Holes aside, *Space* advances many fascinating theses, raises intriguing interdisciplinary questions, and is well worth reading. I hope it will lead to further far-reaching studies of philosophic space.

References

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