

can be considered a subjunctive science. In this volume, religion and alchemy are presented as different angles of the same object, both of which direct the Franciscan authors and their readers to similar questions and theories about the ways in which the world works, or could work.

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A. MARK SMITH, *From Sight to Light: The Passage from Ancient to Modern Optics*. Chicago and London: The University of Chicago Press, 2017. Pp xi + 457. ISBN 978-0-226-52857-1. \$36.00 (paperback).

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Students of the history of optics looking for a decent introduction to the field have hitherto had two main options: David C. Lindberg's *Theories of Vision from Al-Kindi to Kepler* (1976) and Olivier Darrigol's *A History of Optics from Greek Antiquity to the Nineteenth Century* (2012), which, in pursuing the story beyond Kepler, is, by necessity, sketchier on the earlier period. A. Mark Smith's book (first published in 2015, now available in paperback) seems destined to be a new 'go-to' resource, even if his stated intention is to supplement, rather than supplant. He describes his work as a 'revamping' of David Lindberg's book (p. 4): as he writes, the broad narrative – the change in the focus of optics that provides his title – remains more or less the same, although there are some significant shifts in emphasis.

The most obvious change lies in the additional attention that Smith pays to the classical roots of the tradition within which thinkers before Kepler largely operated. Lindberg's book covered the whole of ancient optics in an opening chapter on the 'background' to the work of the ninth-century Arab scholar al-Kindi. Smith, by contrast, splits things up into two chapters covering, first, the emergence of optics as a science and, second, the 'flowering' of Greek optics, with Ptolemy featuring prominently in the latter. Perhaps a more profound bit of 'revamping', however, comes with the focus that Smith brings to issues that we might call 'psychological' or even 'epistemological'. He has argued elsewhere that the fundamental framework for approaching classical or medieval work in optics is an understanding of how thinkers in those periods approached cognition. Placing the optical work he examines here within this framework certainly leads to a richer account, even if discussions of what classical and medieval philosophers thought about psychology or epistemology do not always make for the easiest reading, even in Smith's elegant paraphrases.

Some revamping that Smith does not particularly trumpet is an approach that sits squarely in the historiographical tradition that has risen to prominence since the publication of Lindberg's book. In his introduction, he references some key texts in the shaping of the perspective that is known as 'the social construction of scientific knowledge'. He does so in a bid to defend himself against charges of orientalism in the creation of what is an avowedly Western-oriented narrative. Taking as an example Ibn Sahl and Willibrord Snel's independent discoveries of the sine law of refraction in the tenth and seventeenth centuries, he emphasizes the importance of the contemporary 'marketplace of ideas':

Whereas there appear to have been no buyers in Ibn Sahl's marketplace, there was a brisk trade in Snel's. It was therefore in the 'West', not the 'East', that the sine law became historically significant and meaningful as it was there that it became communal and fruitful (p. 9).

Smith's account is unapologetically teleological, with the work of Johannes Kepler standing at the *telos*. That seems fair enough, although readers with a particularly historical cast of mind may wish he had done a bit more to distinguish the seventeenth-century optics present in the final chapter of the book from the 'modern optics' of the title and the content of 'any modern textbook'

mentioned in the preface (p. ix). More disconcerting is the emphasis placed on Kepler's place in the narrative. The bit of revamping that Smith particularly emphasizes in his introduction is his differing conception of Kepler, whose work in his eyes is marked not by continuity with the tradition of perspectivist optics (*pace* Lindberg), but by 'a radical break' (p. 5), to the extent that the shift from sight to light is described throughout the book and particularly in the final two chapters as the 'Keplerian turn'.

The use of this term sits somewhat awkwardly with Smith's stress elsewhere in the book on the 'marketplace of ideas'. To be fair, he takes pains at the beginning of his final chapter to make it clear that he is not claiming that Kepler's analysis of retinal imaging was 'directly and causally responsible' for developments in seventeenth-century optics (p. 373); the argument here is that Kepler was, more or less, the right man in the right place at the right time. But, if that is the case, it is difficult to see what value there is in associating the turn so closely with him, to the extent that it bears his name. Could we not just call it the turn from sight to light?

At root, I suppose, this is a general point: the modern historiographical emphasis on the social construction of scientific knowledge does not sit particularly well with an account that seeks to highlight the distinctive and innovative features of an individual's thought. Perhaps A. Mark Smith will supplement his excellent book with a consideration of the issue and a robust account of why the 'Keplerian turn' does, in fact, deserve to be known as 'Keplerian'.

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MEL GOODING, DAVID MABBERLEY and JOE STUDHOLME, **Joseph Banks' Florilegium: Botanical Treasures from Cook's First Voyage**. London: Thames & Hudson, 2017. Pp. 320. ISBN 978-0-500-51936-3. £65.00 (hardcover).
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The story of Banks's engravings of plants collected during Cook's first voyage ties together the rise of scientific exploration in the eighteenth century, the status connected to publishing monumental works, and the life and ambitions of Joseph Banks. Based on specimens and drawings created during Cook's first voyage, the original project stalled and the work that had been completed by the time Banks died, including 743 copperplates, were donated to the British Museum. Banks's project is easily seen as tragic: a visionary with immense resources who undertakes a massive project, only to fall short and the unfinished materials left to languish in cabinets, shuffled from place to place. The current publication is tied to a recent attempt to change that narrative, to finish the monument and complete Banks's vision. As Studholme notes in his conclusion, 'The colour prints from the Alecto edition complete the record' (p. 311). Some might hope, however, that the images will one day also be accessible in a high-quality digital format, a project beyond what Banks could have envisioned.

The coloured reproductions throughout the book, including the paintings and sketches in the essays, are the greatest strength of the publication. The core of *Banks' Florilegium* is a selection of 147 plates reproducing the engravings as initially created in the complete full-colour edition produced by Alecto Historical Editions and the British Museum in the 1980s. The Alecto edition, published as separate leaves, was comprehensive, limited to a hundred copies, and very expensive. In the Thames & Hudson edition, the quality of the reproductions helps to establish why the botanical engravings commissioned by Banks are exemplary. The portrait plates were reproduced at roughly 75 per cent of the original (p. 21), the landscape plates with a smaller ratio. It is unfortunate that the landscape plates were not reproduced sideways in the book, which would have increased the quality of the reproduction, even if the image would then have not aligned with the text on the verso side. Likewise, for those with access to the original Alecto plates, it is possible