

Descartes's wording, which was far from implying a reductionist vision. Ultimately, the success of Clerselier's approach was so overwhelming and persuasive that the images he used to illustrate *L'homme* projected an unwarranted mechanistic outlook that was not endorsed in Descartes's text. The relation between commerce and luxury goods in seventeenth-century Antwerp is the subject of Sven Dupré's paper. After the restrictive measures taken in 1585 by the Spanish kingdom to inhibit its flourishing global commerce, the decline of Antwerp seemed to be inevitable. By resorting to craftsmen coming from outside, the municipal authorities promoted a more elitist commerce and developed successful workshops for the production of luxury glass, art cabinets, and mathematical and optical instruments; these valued know-how highly and made Antwerp a capital of a knowledge economy. In the last essay in *Silent Messengers* Koen Vermier reconstructs the late seventeenth-century Dutch debate over the divining rod, showing the interchange between science, religion, philosophy, and experimental practice. The controversy over divining was not only multilayered but exhibited a complex evolution in which positions shifted depending on the problematic interpretation of empirical evidence. A conclusion by Harold Cook, a general bibliography, and an index of names close the volume. This beautifully illustrated book presents a fine collection of essays that offer much food for thought and that are, at the same time, well-documented historical case studies on the relevance of material culture in early modern science.

MARCO BERETTA

James Dougal Fleming (Editor). *The Invention of Discovery, 1500–1700*. (Literary and Scientific Cultures of Early Modernity.) ix + 217 pp., bibl., index. Burlington, Vt.: Ashgate, 2011. \$99.95 (cloth).

With this collection of essays, James Dougal Fleming considers how the concepts of "invention" and "discovery" are applied to the understanding of the early modern development of scientific thinking. The history of early modern science, says Fleming, is characterized by two successive phases. The first tends to reconstruct history as a succession of discoveries and the second as a series of inventions. He recognizes, therefore, a shift "from objective finding to cultural making" (p. 2). Without denying the positive aspects of modern historiography, Fleming points to the fact that reducing discoveries to invention can still preserve a certain hierarchical structure that places "discovery" at

the top. Analyzing these categories in their historical early modern context, he argues that the tendency to reconstruct history as a succession of discoveries finds its historical reason in the fact that this approach was already suggested during the early modern period itself and then later appropriated and promoted during the Enlightenment. According to modern historiography, therefore, Fleming logically suggests, "discovery" is the prime "invention" of the early modern period.

The essays in this book investigate the forms in which discovery was "invented" in the early modern period: first, through the travel narrative, which implies accidental and therefore objective discoveries—as used, for instance by Johannes Kepler in *Astronomia nova* in 1609 (Piers Brown)—or, on a more abstract level, in the form of the narrative of possible worlds—as used by Descartes in *The World*, where the possibility of worlds is guaranteed by God and therefore thinking of them leads to their discovery (Jacqueline Wernimont); second, through the implementation of the methodology of theology—Francis Bacon's eliminative induction—in scientific practice (Steven Matthews); and third, through a reinterpretation of the scholastic doctrine of the occult qualities by the magi of the sixteenth and seventeenth centuries, according to whom no limit can be imposed on the knowable—preparing in this way the path to modern science (Fleming).

Some essays also investigate the early modern relation between discovery and invention in more general terms: by analyzing the relation between mathematics and linguistics in Thomas Harriot's works on the basis of the blend-theory, as developed in cognitive science (Michael Booth); in the frame of early modern Neoplatonism (Anthony Russell); by reconstructing the early modern debate between conventionalist and realist interpretations of Copernicus's worldview in terms of invented mathematics versus mathematics to decipher a discovered physics (Pietro Daniel Omodeo); by focusing on the relation between discovery and manifestation in John Foxe's *Actes and Monuments* (1583), an "encyclopedic catalogue of Protestant and proto-Protestant martyrs" (p. 126) (Ryan Netzley); by investigating the tension between the process of discovery and the perspective of eternity in the framework of the seventeenth-century English reformers (Travis DeCook); by disclosing how early modern literature played with the notions of "discoverable"—or "recognition"—and "undiscoverable"—or "ignoring"—taking black female nudity as its subject matter (Louise Denmead); by deepening the meaning of "newness" in relation to that of "discovery" in early modern France, where "new-

ness” is not necessarily related to real new content but, used in a way that presents the content of newly produced texts, instead denotes a strong rhetorical aspect of “discovery” (Vincent Masse).

The volume closes with an afterword by the editor that explores the hermeneutics of “discovery” both in the historiographical and the contemporary epistemological contexts.

This collection of essays is particularly well integrated and framed by Fleming’s theoretical approach and perspective. As a whole, *The Invention of Discovery, 1500–1700*, is particularly interesting from the perspective of historical epistemology, as it helps us to understand the meaning of early modern insistence on “new,” “newness,” and “newly discovered.”

MATTEO VALLERIANI

Daniel Garber. *Leibniz: Body, Substance, Monad.* xxi + 428 pp., illus., bibl., index. Originally published in 2009. Oxford/New York: Oxford University Press, 2011. £35 (cloth).

With a powerful mix of original scholarship, textual analysis, and contextualization, Daniel Garber closes a case he has been building for nearly thirty years against the myth of Leibniz as “a dogmatic idealist who from his early years to the end of his life lived in an austere and immaterial world of spiritual substances” (p. 391). Garber’s more specific target is the less mythical view, ably defended by Robert Adams among others, that early in his career Leibniz decisively substituted mentalistic monads for mind-independent matter, setting the stage for Berkeley and Kant. But just as Adams does not deny the realist sympathies of Leibniz’s early years, neither does Garber deny the idealist bent of later writings like *Monadologie* (1714). So the scholarly battle has been joined at the remarkable “middle years” (roughly the 1680s and 1690s), when Leibniz was equally enmeshed in mathematics, physics, theology, and metaphysics (not to mention diplomacy and mining). Whereas idealists find the seeds and flowering of the monadology in this period, Garber maintains that Leibniz adhered to infinitely nested corporeal substances: organic form-matter composites *all the way down*—or, as Garber likes to say, “bugs within bugs.”

The first four chapters of Garber’s long but lucid book, which trace the emergence of the “bugs within bugs” model, will be of greatest interest to historians of science. Leibniz began as a Hobbesian mechanist, insisting that all variety and change is geometrically deducible from self-evident notions of body and motion.

Unlike Hobbes, however, Leibniz was uncomfortable with the implications of wholesale materialism for the immortality of the soul and the doctrine of the Eucharist (Leibniz was Lutheran but anxious to accommodate Catholic orthodoxy). Conceiving of substance as the composite of matter (passivity, body) and form (activity, soul) served these theological purposes but also satisfied two pressing philosophical desiderata: accounting for the real unity of individual substances and for their power to move things and to resist being moved. Garber deftly explains how numerous entrenched conceptual difficulties plaguing seventeenth-century natural philosophy, especially Cartesianism, turned on these ancient problems. Form conceived by analogy with the human soul ensures that bodies can persist and aggregate even though matter *per se* is actually divided to infinity. Form conceived as force or activity explains why it is not Cartesian quantity of motion (size \times speed) that is conserved (as Leibniz famously demonstrated) but, rather, *vis viva* (mv^2). In the particularly intriguing final section of Chapter 4, Garber fruitfully contrasts Leibniz’s metaphysical conception of force with Newton’s more operational account, situating the former within the “natural philosophical tradition” of Descartes and the latter within the “mixed mathematical tradition” of Galileo.

Chapters 5–7 discuss a trio of familiar metaphysical issues that preoccupied Leibniz during the middle years: the noncommunication between substances (windowlessness), final causality and design, and phenomenalism. In each case, Garber not only argues convincingly that Leibniz’s views and motivations, to the extent that they are settled and clear, are compatible with a realist view of corporeal substance but also offers a good deal of interesting commentary independent of the interpretive debate that frames the book. The discussion of phenomenalism, for example, reveals the Paris Leibniz as deeply influenced by the external-world skepticism of Simon Foucher and strongly tempted by versions of immaterialism that anticipate Berkeley and Hume. The final two chapters consider the metaphysics of Leibniz’s late (post-1700) period, when he seems to identify reality with an infinity of mind-like, absolutely simple substances or “monads.” Ordinary bodies are not real things but merely “phenomena” resulting somehow from the arrangement and perceptions of these simple substances. Garber recognizes that Leibniz is led to this radical idealism by essentially the same considerations that had earlier converted him from Hobbesian mechanist to neo-Aristotelian, the need for unity and activity: