

DÁNIEL MARGÓCSY. *Commercial Visions: Science, Trade, and Visual Culture in the Dutch Golden Age*. Chicago: University of Chicago Press, 2014. Pp. x, 319. \$40.00.

The works of Mario Bagioli, Harold J. Cook, Steven Shapin, and Simon Schaffer have emphasized the modes in which political and economic considerations forged scientific consensus in early modern Europe. For example, Cook's *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (2007) argued that international commerce, as practiced by the Dutch, promoted networks that fostered trust in observations and description of the natural world, especially the substances that formed *materia medica*. These works contrast the cultivation of agreement with the supposedly quarrelsome character of scholasticism. But, as Dániel Margócsy demonstrates, the schools did not have a monopoly on disagreement, and, in fact, the competitiveness of early modern mercantile culture encouraged dispute, discord, and rivalry. The openness used to describe the Royal Society did not correspond to the realities of Dutch naturalists and publishers who produced knowledge concomitantly with commercial products.

Commercial Visions: Science, Trade, and Visual Culture in the Dutch Golden Age explores the commodification of early modern science by examining the circulation, collection, preservation, and representation of knowledge of plants, insects, and other natural curiosities and the means by which practitioners guarded the secrets behind anatomical preparations and scientific illustrations. Many of these explorations, especially in the later chapters, should be of interest to art historians and historians of the book, as well as historians of science. Margócsy's discussion of fact making, collecting, and the circulation of knowledge—all major foci of recent histories of early modern

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science—benefits from his detailed consideration that provides original insights and revisions. The volume is divided according to two primary themes: the first largely considers books and their relation to natural specimens, and the second looks at methods of representing the human body by means of artificial preservation and illustration.

Margócsy offers an original and convincing account of the rise of taxonomical encyclopedias or repertories. The envelopes of the gentlemen of the Republic of Letters contained more than ideas. Many circulated seeds, small plants, shells, and insects. The relatively low cost of shipping for the small exemplars—as opposed to quadrupeds, which were not subject to widespread collecting—transformed Renaissance natural history, with its interest in textual authority, into a tool that could be used to identify the desiderata of collecting. Thus, naturalists, sellers, and collectors, without the luxury of having standardized names, referred to specific folios of particular encyclopedias in order to identify the plants, shells, and insects they wished to buy or sell. In effect, these atlases served as catalogues for biological specimens. Their emphasis on description, accurate illustration, and minute differences grew as the result of their instrumental role in trade. This phenomenon reached its acme in Albertus Seba's *Thesaurus*. Seba's renown as a collector, as well as extensive marketing, promoted the sale of numerous subscriptions for the volume that was intended to depict his cabinet of curiosities. After his death, publishers at first hid the fact that they hired others to finish his work, while his collection, aided by their description in the earlier volumes, was sold at auction, making the task of ghostwriting the remaining sections difficult.

In contrast to the idealized openness of philosophical discourse, methods of representing and preserving the natural world were well-protected secrets, holding

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significant proprietary value. Frederik Ruysch's anatomical preparations, which were made by an undisclosed technique of wax injections, rendered many details of human cadavers easily visible. They served pedagogical aims as well as financial purposes. Peter the Great, for a large sum, bought not only his collection but also the secret formula for the injections. Ruysch's detractors, most prominently Govard Bidloo, rejected his preparations believing they distended and hardened the body's veins and organs. Bidloo preferred paper as the medium to represent visualizations of human anatomy because it was free from the distortions of wax injections and allowed the author to add what was invisible to the human eye by depicting, for example, tiny capillaries in infants' hearts.

Significantly, Margócsy describes a shift during the eighteenth century away from conceiving artisanal practices as fitting into the category of tacit knowledge. Printmakers, such as Jacob Christoph Le Blon and Lambert ten Kate, believed that representational techniques, notably methods for producing color prints and mezzotints inspired by Pythagorean proportions, were reducible to Newtonian-style mathematical laws and thereby communicable. Since their techniques could be rendered as formulas, they were easily transferable and therefore had to be protected as proprietary secrets. Accordingly, in order to obtain a patent, Le Blon was obliged to reveal his mathematical secrets to royal bureaucrats in distinction to earlier practices that assumed craft knowledge was embodied in the artisans themselves. During the Enlightenment, formulas behind invention were highly mobile, thus the stakes were higher for guarding secrets.

Consequently, for Margócsy, the Enlightenment was not a period of widespread openness. Rather, the idea that craft practices were universal and mathematically

Comment [PD1]: Why were they highly mobile?

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reducible fostered more intense competition among entrepreneurs and the birth of intellectual property.

The greatest merit of this book is its explanations of the mechanisms of the market that defined practices of natural history and anatomy. While historians of science often vaguely invoke economic motives for scientific developments, Margócsy details how the joint ventures, marketing, auctions, subscription schemes, printing projects, specimen sales, shipping expenses, commercial rivalries, and proprietary safeguarding not just functioned but blended with the production of knowledge. His concern is largely with scientific practice in a broad sense. Accordingly, he sets aside many technical issues of anatomy and natural philosophy as well as the philosophical and religious debates about mechanism and vitalism. This is not the book for those who desire to know more about what early modern naturalists thought about bodily processes or the relationship between the natural and divine. Rather, the book's rich research illustrates the interests and debates concocted through the commercial webs in which early modern Dutch naturalists created and sold collections of nature and depictions of them.

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