

dispute that emerged between Kepler and Johannes Krabbe, court astronomer in Wolfenbüttel, who considered the new luminary a comet, not a star, that was able to change in size and speed, a conclusion that Kepler strongly and publicly disagreed with. In similar fashion, Regier conducts a well-organized comparative analysis of Kepler and his court contemporary Anselmus Boëtius de Boodt, taking a broader approach and expanding his study to include subjects beyond the 1604 supernova where the two intellectuals were in agreement. The next two chapters provide a critical analysis of *De Stella Nova* itself. Kepler lived in a time when astrology and astronomy were not separate, and Rothman offers an analysis of Kepler's relationship with astrology through the lens of nature versus culture, focusing on Kepler's position as "both a practitioner and reformer" of astrology, of which he believed God was the ultimate architect. Similarly, Granada outlines the movement by Kepler's contemporaries to Christianize the constellations, concluding that Kepler's musings on reconfiguring the heavens likely influenced other German intellectuals.

The final three chapters extend the narrative of the book beyond Kepler's immediate scope and through the present day. Omodeo looks at the influence of Kepler on a number of intellectuals who followed him, including well-known figures like Rene Descartes and Pierre Gassendi. Cosci presents a survey of the epistemological exchanges that occurred in Italy following the appearance of the new star through the many scholars who wrote letters on the subject. In the final chapter, astrophysicist Blair offers a look at the impact on modern science that Kepler and the new star of 1604 had by offering an analysis of the star, now known as SN1604, through the lens of today's scientific practices.

Ultimately, this volume provides a broad analysis of the context in which Kepler developed his theories and calculations, as well as an examination of the role that Kepler's own ontological beliefs played in his theories of the heavens. While at times some chapters feel bogged down with minutiae, making it challenging for nonexperts of Renaissance science and philosophy to follow along and obfuscating the overall message, the final product is a well-rounded survey of Kepler's theories and contributions to science relating to the supernova of 1604.

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The Italian Renaissance of Machines. Paolo Galluzzi.

Trans. Jonathan Mandelbaum. The Bernard Berenson Lectures on the Italian Renaissance. Cambridge, MA: Harvard University Press, 2020. x + 276 pp. \$39.95.

Conventional treatments of the Renaissance give scant attention to the mechanical devices that made possible some of the age's greatest monuments or to the inventors

who envisioned the new technologies. Pamela Long's brilliant works on Renaissance technology and engineering are important exceptions, as are the extensive publications of Paolo Galluzzi, the longtime director of the Museo Galileo in Florence and leading specialist of the history of Renaissance engineering. With his latest book, Galluzzi depicts a new Italian Renaissance, a renaissance of machines. *The Italian Renaissance of Machines*, based on his 2014 Berenson Lectures at the Villa I Tatti in Florence, may be the most accessible contribution to Galluzzi's vast body of scholarship.

Galluzzi's subject is the Renaissance books of machines, both in manuscript and print, from the fifteenth to the early seventeenth century. Galluzzi begins with the Sieneese school of engineering treatises, concentrating particularly on the work of Mariano di Jacopo, called Taccola (1382–1453), who, Galluzzi writes, was “the first effective promoter of a movement for the cultural and social recognition of technical knowledge and practice that was soon to gain widespread and lasting momentum” (2). Taccola was no engineer but was, as Galluzzi describes him, a “humanist of machines.” His ornately illustrated manuscript treatises, “De Ingeneis” and “De Machinis,” were, like most humanist works, dedicated to a hoped-for patron, in this case Emperor Sigismund of Hungary.

The Renaissance treatises on machines weren't just impressive works of art; the devices they depicted carried an important message: machines can ease the burden of human toil, and as such are symbols of power—as, for example, in a depiction of a woman effortlessly operating a suction pump to draw water from a well, to Galluzzi's knowledge the only fifteenth-century image of a woman operating a mechanical device.

The advent of linear perspective was a crucial shift in enabling artists to realistically depict complex machines. First appearing in the work of Taccola's contemporary Francesco di Giorgio, it was exploited to great effect by Leonardo da Vinci, whose machine manuscripts (the Codex Atlanticus and the Codex Arundel) are the subject of a lengthy, magisterial chapter. From Leonardo's perspective, machines weren't just useful and labor saving; they were also good to think with. Galluzzi's meticulous study of Leonardo's notebooks reveals that his intention was to understand the rules (or laws) of mechanics, and he vehemently rejected the medieval tradition of mechanics, which posited laws based on mathematical lines and imaginary weights, abstract fictions that ignore the critical reality of friction. He upheld a similar standard in his studies of optics, in particular his treatment of burning mirrors, in which he proposed to replicate Archimedes's celebrated mirror, which focused the sun's rays to set fire to Roman ships laying siege to the city of Syracuse. Leonardo's speculations about designing burning mirrors were never far removed from the gritty reality of actually making such mirrors—in other words, they were not just about geometrical optics but about designing real instruments.

In his final chapter, “Immaterial Machines,” Galluzzi treats machine books that were influenced by the humanist rediscovery of ancient treatises on architecture and mechanics, which emphasized the mathematical foundations of mechanical activities.

Proponents, mostly philologists, became known as “restorers of ancient mechanics”—Niccolò Tartaglia and Guidobaldo dal Monte, among others. The obsession with geometrical principles and imaginary machines is pronounced in the so-called Theaters of Machines, lavishly illustrated treatises depicting intricate, excessively complicated mechanical devices. The Theaters of Machines promoted the image of the engineer as a magus, a maker of wondrous, almost miraculous mechanical devices. The humanist restorers of ancient mechanics dreamed of machines but never built machines; they were only interested in the geometrical principles of mechanics. It was a radical shift away from Leonardo’s way of thinking about machines, and it was the pathway that culminated in Galileo’s compelling treatises on mechanics.

Some of the material in *The Italian Renaissance of Machines* has been recycled from Galluzzi’s previous publications, but many of these earlier studies (including a surfeit of exhibition catalogues) are difficult to find or out of print. This handsome volume, printed on sturdy paper and amply illustrated with high-quality images, makes readily available the central thesis of the foremost historian of Italian Renaissance mechanics.

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Health and Healing in the Early Modern Iberian World: A Gendered Perspective.
Margaret E. Boyle and Sarah E. Owens, eds.
Toronto: University of Toronto Press, 2021. xii + 268 pp. \$65.

In *Medical Cultures of the Early Modern Spanish Empire* (2014), John Slater et al. note that “there were many medical cultures [in the empire] . . . practices related to health and sickness were undertaken to a great extent by people without formal medical training who did not identify themselves as medical practitioners. This means that medical occupations and medical practices were not always related in discernable ways” (13–14). *Health and Healing in the Early Modern Iberian World* expands on this observation, seeking to recover these “practices related to health and sickness” and reconsider them as a point of intersection between ideas of race, colonialism, and, above all, gender and sexuality. This collection therefore answers Alisha Rankin’s claim put forth in *Panacea’s Daughters*: the women of early modern Iberia, Portugal, and their colonies have, in anglophone scholarship at least, often received short shrift. Over the course of ten chapters, the included essays provide some redress to this gap, demonstrating the panoply of ways that gender and sexuality intersected with conceptions of health and health management within the early modern Iberian Empire.

The volume itself is divided into three thematic sections: “Treatment Models,” “Representing Health,” and “Faith and Illness.” The first section will perhaps be most familiar to scholars of medicine, as it focuses on the identification and treatment