

In the footsteps of Galileo: raising the twenty-first-century profile of Father Angelo Secchi

Ileana Chinnici: *Decoding the stars: a biography of Angelo Secchi, Jesuit and Scientist*. Leiden/Boston: Brill, 2019, XIX+367pp, \$169 HB

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How many people who know of Galileo's problems with the Pope are aware of the Catholic Church's institutional interest in astronomy? While Pope Gregory XIII had the so-called Gregorian Tower built in the late sixteenth century to provide the necessary astronomical data to determine the dates of holy days and Easter, by the late eighteenth century the Papacy had established the Observatory of the Roman College. The observatory has since been relocated several times and is currently in a former convent a mile away from Castel Gandolfo, the Pope's summer residence, some sixteen miles southeast of Rome, with offices of the Vatican Observatory Research Group at the Steward Observatory of the University of Arizona in Tucson. The current director of the VORG is Jesuit Brother Guy Consolmagno, an American research astronomer with a Ph.D. in planetary science.

How fitting, then, that the Foreword to Ileana Chinnici's fascinating biography of Father Angelo Secchi, Brother Guy's nineteenth-century predecessor, was written by none other than Brother Guy. In his information-packed two pages, Brother Guy introduces a theme linking "Secchi's life and personality" to Galileo's, probably the only Italian scientist whose name is familiar to the general international public. Whether or not the reader concludes that the comparison is wholly valid, the book as a whole validates its own implicit claim that historians of science, whatever their national origin, should become familiar with the achievements of Father Secchi.

The Foreword goes on to suggest that while Galileo devoted much of his career to "philosophizing and popularizing," Secchi, over the course of his shorter lifetime, continued to make "profound advances in science, in half a dozen widely divergent fields" (vii). In fact, as the book makes clear, Secchi's research in cutting-edge astronomy and physics waxed rather than waned during the final years of his career.

As an aside based on my own reading elsewhere, I mention that however alike the personalities of Galileo and Secchi might have been, it is worth noting that Galileo was professionally competitive on behalf of his own ego, feeling threatened, for example, by his misunderstanding (because of the difference in their calendars, Julian vs. Gregorian)

of the claims of Simon Marius of Germany to have detected the moons of Jupiter before Galileo himself did. Secchi, by contrast, though “[he] had considerable self-regard” (259), was aware that as a Jesuit and friend of the pope, “any personal acclaim was acclaim for the church” (112).

A particularly poignant point brought up in Father Guy’s Foreword is that Secchi, like Galileo, had a “combative” personality and was deeply involved with the complicated politics of his time—politics too complicated, in fact, for this American reader to grasp firmly. Secchi’s health seems to have been a victim of his realization in 1870—a time when anticlericalism in Italy was on the rise—that from then on “every act he made would have political implications” (225). Although he died of stomach cancer, it is tempting indeed to attribute Secchi’s premature death at 59 to the sociopolitical tensions that tormented him. Galileo, by contrast, died at age 78, more or less at peace under house arrest in Arcetri. As Father Guy reminds us, had Galileo died as young as Secchi, he would never have experienced his dramatic conflict with the Church that helped lead to his enduring fame.

It is worth noting that at least one of Secchi’s contemporaries, the French writer Prosper Poitevin, also saw a link between the two Italian astronomers. At the Paris Universal Exhibition of 1867, Secchi’s meteorograph—an instrument for automatically and simultaneously recording various meteorological conditions (e.g., barometric pressure, humidity, and temperature)—was awarded a prize. Poitevin, noting that that device alone saved the “honor of the Papal States,” concluded, “Praise Fr. Secchi! Praise the Jesuit who, in the nineteenth century, has made a public reconciliation with science and who came to protest, in the face of Rome, against the odious persecution it suffered once! Glory be to him! Because he avenges Galileo, the great astronomer of Pisa, and the snubs that the Jesuits, his relentless persecutors, poured on him!” (132). Of course, as Chinicci points out in a footnote to Chapter 9, the anti-clerical faction in Italy during Secchi’s lifetime often brought up Galileo “as an example to demonstrate the obscurantism of the Church, which was considered the enemy of science and progress, with the Jesuits as its paladins.” She notes as well that this tendentious view “deliberately ignored the important contribution that the Church had made to the development of sciences, especially astronomy” (260, footnote 4).

Another point stressed by Brother Guy is the distinction between astronomy and astrophysics and how it relates to Father Secchi. Before Secchi was appointed director of the Collegio Romano Observatory, astronomers worldwide for the most part devoted themselves to celestial mechanics—studies of the motions of objects in space, their positions and orbits, a discipline dating back to Hipparchus and Ptolemy in ancient times. Although Secchi was not the first Italian scientist to use a spectroscope to study starlight—Giovanni Battista Donati had in 1860 used an early spectroscopic instrument to determine that like-colored stars had similar spectral patterns—Secchi nonetheless earned the sobriquet “the Jesuit father of astrophysics” not only for pioneering the idea of classifying stars based on their spectra and for making spectroscopic observations of planets but also for helping found the international solar physics community, thus contributing to the development of heliophysics.

In addition to its overview of Secchi's contributions to astrophysics and spectroscopic research and to Secchi's agonizing decision to decline "the opportunity to create the [world's] very first school of astrophysics, even earlier than those established in Germany and the United States at the end of the century" (210)—Chinnici's book suggests several other aspects of his career that make him a figure worth reckoning with in the twenty-first century. I found particularly interesting his commitment to public outreach and his belief that scientists should strive to make their knowledge useful to society. Although he vigorously pursued primary research on the sun and stars, for example, without any knowledge of what the spinoffs of such discoveries might be, he argued in 1877, the year before his death, that "Science is useless if it is not beneficial," pointing to meteorology as "one of those sciences from which mankind may receive great and useful service" (86).

Secchi's commitment to making science useful to the public is apparent in many of his activities. He wrote books for the general reader, such as *Summary About the Physics of the Solar System* (the English title of the book he wrote in Italian) "to show that science can be popular without losing its dignity and truth" (104), and to that end included the most current research results, presented in accessible language. Secchi not only opened the Collegio Romano Observatory to visitors, including common people, but also kept the general public informed about the observatory's observations, both through the institution's Meteorological Bulletin and through articles in the popular press. He also enjoyed giving public lectures, which were very well attended, and directed them to a cross section of classes. In 1873 he wrote, "I have been busy with some lessons on the sun given to a workers' association" (97). For a man of his time, he was also a strong advocate of education for women, arguing not only that "Catholic girls should be properly educated," but also that their education must be "suitable to develop self-confidence and to gain some public esteem so that they will be respected and have authority and they may prove that their faith is enlightened and their pious devotions do not come from ignorance but from the deep conviction of their faith" (98).

One example of Secchi's public outreach seems especially rich in connotation, even if it involves some speculation on Chinnici's part: his follow-up in Rome to Léon Foucault's public pendulum experiment in Paris that proved the rotation of the Earth. "The symbolic value of this [experiment] in the Roman Catholic context was that of reconciling Copernicanism and Catholicism: As director of the Collegio Romano Observatory, Secchi probably felt that it was part of his 'mission' to dispel such prejudices between science and church" (73).

When he found that members of the Society of Jesus, however, misrepresented the content of new scientific theories, he did not remain silent about their errors. Chapter 9 reveals Secchi's reaction to fundamentalists who requested that the Vatican shutter the Collegio Romano Observatory and prevent Secchi's use of his telescopes. In this rebuke of modernity, astronomy research and education should be banned by the Catholic Church for encouraging atheism. In a draft of a letter to a Jesuit who promulgated such a view, Secchi wrote that the argument merely bolsters the belief that the Church is opposed to science, resulting in great damage. He argued tirelessly

against the effort to oppose scientific discoveries by bending Scripture to that purpose. On the other hand, assaulted by opponents on more than one front, Secchi found his scientific reputation torn to shreds by a number of British astronomers, possibly influenced by anti-Catholicism. None of Secchi's work ever found its way into English translation, though his reputation in the USA as a pioneer in astrophysical research only grew and spread.

Chinnici's excellent biography of Secchi concludes with an implicit call to historians of science to compensate for their discipline's having "poorly understood and insufficiently appreciated" Secchi's achievements "despite his important contributions to a whole host of scientific disciplines" (334). Readers of *Metascience*, take note.