

Starry Messenger

Two biographies consider the astronomer, physicist and philosopher Galileo Galilei, whose life story is full of puzzles.

BY OWEN GINGERICH

GALILEO GALILEI, “martyr of science” in the picturesque 19th-century expression, has undoubtedly attracted more biographers than Copernicus, Kepler, Newton and Einstein combined. His run-in with the Roman Catholic Church over the motion of the earth, his forced confession and his famous stage-whispered riposte — “*e pur si*

GALILEO

Watcher of the Skies.

By David Wootton.

Illustrated. 328 pp. Yale University Press. \$35.

GALILEO

By J.L. Heilbron.

Illustrated. 508 pp. Oxford University Press. \$34.95.

muove,” “but yet it moves” (which surely was never delivered) — are all the makings of high drama.

So thought Bertolt Brecht, who wrote his play “Galileo” three times. The first time, in 1938, he portrayed the scientist as hero. His remake, after the trauma of Hiroshima and Nagasaki, pictured Galileo as a tool of the state. And the final, Marxist-tinged version, written in 1953, after Brecht returned to East Berlin from America, showed the artist as tool of the state — telling us perhaps more about Brecht than about Galileo.

Inevitably, the serious biographer also mirrors something of himself in depicting his subject. Readers who make it through the occasional eye-glazing geometrical digression in J.L. Heilbron’s “Galileo” will not be surprised to find that the author’s extensive output includes a fresh explication of Euclid. Likewise, the reader of David Wootton’s “Galileo: Watcher of the Skies,” which includes a revisionist chapter on Galileo’s “(un)belief,” as he puts it, will not be surprised to learn that Wootton has written repeatedly about atheism.

Each of these books demonstrates an awesome command of the vast Galileo literature. Heilbron, an emeritus professor of the history of science at Berkeley, is more fine-grained in his approach, leavening his account with wit and irony. Wootton, a historian at the University of York, excels in boldly speculating about Galileo’s motives and the overall trajectory of his life, seeking to understand why Galileo cared so much about Copernicus’s heliocentric view of the heavens.

The Galileo story is full of puzzles. In 1597 he wrote to Kepler that he was essentially a closet Copernican, with un-

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specified new arguments in support of the idea that the earth moved around the sun. But he never responded to Kepler’s urging that he stand forth in his opinions. Instead, Galileo continued to teach the ancient geocentric view, while making remarkable progress in studying the motion of falling bodies. Until age 46 he had published nothing remarkable. Then, in 1610, he burst onto the international stage with “The Starry Messenger,” announcing his discovery, via telescope, of the craters and mountains on the moon, the four bright moons of Jupiter and the fact that the Milky Way is composed of millions of distinct stars. Thereafter followed his discovery of the phases of Venus — which proved that it had to revolve around the sun, not the earth — and of sunspots.

By 1615 Galileo’s career of scientific discovery was essentially finished, although some of his most influential work still remained unpublished. “The Starry Messenger” had served as a successful job application for a position in the Medici court in Florence. His friends in the Venetian Republic were disappointed and even outraged at his decision to leave the intellectually freer atmosphere of Padua and Venice for Tuscany, which was under the Vatican’s thumb. Wootton argues that Galileo had a particularly ambitious goal: to persuade the Roman hierarchy to leave open the cosmological choice between the Aristotelian geocentrism and Copernicus’s heliocentrism; and that this could be more easily done from Florence. While

Galileo was comparatively indifferent to the salary offered, he insisted that his title include the word “philosopher.” He wanted to be a philosopher credentialed to say how the world was really made, not just a mathematician able to validate a hypothetical scheme for computing the position of planets.

In both biographies Galileo emerges as an ambiguous hero-antihero. Wootton explains right at the beginning how the surviving documentation has long been win-

The book that got Galileo in trouble with the Inquisition was not in fact a classic of scientific discovery.

nowed and spun by friends and scholars eager to paint Galileo as a good Catholic. His own spin is that for Galileo, cosmology was paramount over theology and Copernicism proved “the fundamental insignificance of the human species.” But the idea of human insignificance belongs to our time, not Galileo’s.

Heilbron, on the other hand, makes no big issue of any religious unorthodoxies on Galileo’s part beyond his Copernicism, though surely there must have been some. Unlike Wootton, he doesn’t see any secret unbelief underneath the public Catholicism, noting in passing that when Galileo, near the end of his life, was under a strict

house arrest on charges of heresy, Urban VIII granted him special permission to attend Mass at a nearby church.

Everyone agrees that Galileo was an incorrigible egotist, so full of himself that he repeatedly misjudged his ability to persuade the authorities of his own opinions. His attempt via the Jesuit astronomers in 1615-16 to convince the Vatican backfired and, in Wootton’s view, led to an increasing estrangement with the Jesuits. Both Wootton and Heilbron are sharply critical of Galileo’s unnecessary alienation of the Jesuits, and Heilbron in particular highlights Galileo’s scientific fumbles, both in the debates with the Jesuits and later in his controversial “Dialogue on the Two Chief World Systems” (1632). As he wryly comments, “It was not Galileo’s style to accept corrections from others.”

THE “Dialogue” was ostensibly a neutral comparison of the geocentric and Copernican cosmologies, but Galileo could not help giving pride of place to the heliocentric arrangement. He had been warned not to hold or teach the Copernican system, so inevitably he got himself into deep trouble with the Inquisition. He was ordered to Rome to stand trial and placed under house arrest for the remainder of his life. The “Dialogue” was in fact not a great classic of scientific discovery. It was, however, the book that won the war, the persuasive account that made the Copernican cosmology intellectually respectable. Ironically, it is Galileo’s lesser-known “Discourses on Two New Sciences” (1638) that stands as his greatest scientific contribution and a forerunner to Newton’s powerful physics. A major part of that work had already been prepared in Padua before the telescope propelled Galileo to international fame.

For the general reader, Wootton’s is likely to be the more engaging account; Heilbron’s, though, has much richer scientific detail, and will no doubt become the standard, comprehensive biography. Early in the book, Heilbron has a serious mathematical discussion of Galileo’s Paduan period. In one of his most inventive sections, he creates a Galilean dialogue on issues of algebra and geometry. Though not easy to read, it brilliantly expresses the ambiguities and blind alleys as Galileo wrestled with the conceptual difficulty of introducing a non-geometrical quantity — time itself — into the proportions. These issues did not find their final formulation until the end of his life, when he raced to complete “Two New Sciences” and smuggle it to Holland for publication.

Galileo was the most articulate spokesman for the new astronomy, the pioneer who set observational astronomy on its modern track. He simply had the misfortune to be born in the period when the Reformation, the Counter-Reformation and the Thirty Years’ War greatly restricted his intellectual options. □