Introduction

Il Saggiatore at 400. An early modern controversy and its legacy

Dario Tessicini
University of Genova, dario.tessicini@unige.it

Abstract
The text is a short introduction to Galilei's *Il Saggiatore* and to the essays in the Focus. *Il Saggiatore* was published in response to a cometary dispute started in 1619 by the publication of the Jesuit Orazio Grassi's *De tribus cometis disputatio*. *Il Saggiatore* challenged Grassi's methodology and results, as well as prevailing beliefs about comets. The text also served as a cultural platform for Galilei and the Accademia dei Lincei. It ignited debates, prompted a response from Grassi, and led to personal attacks on Galileo, further straining his relations with the Jesuits. The volume also faced accusations of supporting Copernicanism and atomism. Four centuries later, Galileo's work continues to inspire reflection on its cultural and intellectual significance: this Focus provides multiple viewpoints on the controversies that accompanied *Il Saggiatore* and its aftermath.

Keywords
Galileo Galilei, comets, Jesuits, Collegio Romano, Orazio Grassi, heliocentrism, Mario Guiducci, Nicolaus Copernicus, Virginio Cesarini, Simon Mayr

How to cite this article
Tessicini, Dario. "Introduction. *Il Saggiatore* at 400. An early modern controversy and its legacy". *Galilæana* XX, 2 (2023), 3-6; doi: 10.57617/gal-28.

The year 2023 marks the quatercentenary of the publication of Galileo Galilei's *Il Saggiatore* (*The Assayer*), a work that is best known for its controversial scientific claims on cometary theory, and for being a turning point in its author's relations with the Jesuits. The dispute unfolded in 1619, triggered by an unusual appearance in rapid sequence of three comets observed in August-September 1618 (C/1618 Q1), November-December 1618 (C/1618 V1), and November 1618-January 1619 (C/1618 W1). The phenomena generated substantial attention from scholars, astronomers, and learned amateurs across Europe. In Rome, the Jesuits of the Collegio Romano organized four lectures by the resident professors of theology, rhetoric, natural philosophy, and mathematics, each offering a different interpretation of the comets. The lecture by the mathematician Orazio Grassi was printed anonymously in February 1619 with the title *De tribus cometis disputatio.* His work rejected the Aristotelian explanation of comets as meteorological conflagrations and argued that the three comets were celestial bodies due to their lack of parallax, regular motion, and slight enlargement under telescopic observation. Furthermore, Grassi endorsed Tycho Brahe's theory of comets having circular orbits between the Earth and the Sun, claiming that this interpretation constituted a decisive argument against heliocentrism.

In Florence, a bedridden Galileo relied on his network of correspondents for information about the comets and expressed his intention to engage in the debates. Expectations grew during the following weeks, and in June 1619, Galileo's views were presented in *Discorso delle comete*, published and signed by his friend, the Florentine nobleman Mario Guiducci. The *Discorso*'s tenets often directly contradicted Grassi and Tycho, as Guiducci-Galileo asserted that comets moved in straight lines and not circularly, that they were not solid bodies but reflections of sunlight on terrestrial vapors, and that their lack of parallax was irrelevant in determining their distance. While the *Discorso* did not overtly promote heliocentrism and the mobility of the Earth, attentive readers could infer implicit support of this hypothesis in Galileo's cometary theory. Writing under the name of a fictional pupil, Lothario Sarsi, Grassi responded in October 1619 with the *Libra astronomica ac philosophica*. This time, the defense of the Jesuit's previous positions was accompanied by some insidious allegations against Galileo, among which were his ingratitude to the Order and promotion of Copernican cosmology despite its prohibition since 1616. A forbidding reminder of this prohibition, Francesco Ingoli's list of corrections to Copernicus' *De revolutionibus* was published several months later – in May 1620. Despite the dangerous path that the dispute was taking and the calls for prudence from his friends in Rome, Galileo decided to drop his mask and respond directly to the *Libra*. His intention was made public in June 1620 through a letter from Guiducci to his former Jesuit teacher, Tarquinio Galluzzi. A complete draft of *Il Saggiatore* was sent to Rome in October 1622, but its publication was delayed due to the "mirabil congiuntura" of the election of Cardinal Maffeo Barberini as Pope Urban VIII and meticulous editorial scrutiny by the Accademia dei Lincei. Dedicated to the new pope, *Il Saggiatore* takes the form of a letter to Virginio

Cesarini, a young Lincei member (1595-1624) and chamberlain to the Pope. It is a detailed dissection of Grassi's *Libra*, which is fully transcribed in *Il Saggiatore* and thoroughly "assayed" by Galileo's trenchant rhetorics. While cometary theory remains the main focus, *Il Saggiatore* also conveys Galileo's thoughts on the use and the capabilities of the telescope (following Grassi's insinuations about its invention), on natural philosophy (famously, Galileo's arguments about the book of Nature and its mathematical language), on matter theory, on scientific methodology, and on grievances against Simon Mayr's *Mundus Jovialis* (1614). Overall, *Il Saggiatore* is a vehicle for the intellectual program of Galileo and the Lincei, although it reflects more of its author's ideas and character than some of his cautious friends might have advised. The volume sparked debates within and outside the scientific realm, provoked a further reply from Grassi (the *Ratio ponderum*, 1626), and unleashed personal attacks on Galileo. It did not help that some of Galileo's arguments on comets were not all that impregnable. As the dispute continued, *Il Saggiatore* became the target of at least two anonymous denunciations for its alleged support of Copernicanism and atomism. Ultimately, Galileo's willingness to confront his opponents exacerbated his already strained relations with the Jesuits and foreshadowed future conflicts that would profoundly impact the Tuscan scientist's personal and intellectual journey.

Four centuries later, a more nuanced perspective on *Il Saggiatore* allows us to reconsider the contextual challenges and constraints as well as the agendas and shortcomings of the various actors in the debates surrounding the volume. The cometary dispute between Grassi and Galileo does not seem to have lost its controversial nature; reflections on its intellectual and cultural relevance and on its enduring legacy continue to appear. This 'Focus' section comprises four essays that provide multiple perspectives on the cometary controversy. Eva Struhal's essay explores the reception of Galileo's epistemological and technological novelties in the arts, using the example of the Florentine painter and architect Baccio del Bianco to demonstrate how *Il Saggiatore* became a symbol of reformist attitudes toward knowledge and artistic representation. Secondly, Luis Miguel Carolino examines the reception of *Il Saggiatore*'s cometary controversy within the Jesuit Order across the decades following its publication; he reveals complex, detailed interpretations of the constraints on Jesuit cosmological speculations and challenges assumptions about the tensions between different cosmological models. Jason Dean and Nick Wilding delve into the production process of *Il Saggiatore*, merging book history with the history of science to provide a detailed reconstruction of the book's creation and its cultural context. Finally, Eileen Reeves, Huib Zuidervaart, and Albert Van Helden revisit Galileo's attack on the German astronomer Simon Mayr (Marius), who claimed to have observed the satellites of Jupiter first and more precisely. They consider how Galileo's attack reverberated in nineteenth-century historiography, particularly in the writings of the Dutch physicist Johannes Bosscha Jr., the astronomer Jean Abraham Chrétien Oudemans, and the Italian mathematician, historian of science, and editor of Galileo's works, Antonio Favaro.