
Resources of Intellectual Legitimacy in Italian Cosmological Affairs: Cremonini and Bellarmine's Authority Conflict (c.1616)

Pietro Daniel Omodeo

Ca' Foscari University of Venice

This essay deals with two seventeenth-century intellectuals, the Aristotelian philosopher at Padua, Cesare Cremonini, and the Jesuit controversialist, Robert Bellarmine. In the years of the cosmological affair of 1616, both defended their cosmological conceptions by relying on the principle of authority. However, they embraced different sources of legitimation in matters of natural philosophy. While the Padua professor stick to (what he considered to be) the letter of Aristotle, basically a secular interpretation of his world conception, Cardinal and Inquisitor Bellarmine understood the cosmos against a theological background. In particular, Bellarmine subordinated natural philosophy to exegesis and the authority of the Scriptures, and this allowed him to depart from Aristotle to some extent (for instance on the fluidity and possibly the corruptibility of the heavens). Yet, the two thinkers also shared the criticism of the major astronomical novelty of their time, namely the planetary system of Copernicus and his followers. But their objections rested on different worldviews and authorities (Aristotle and the Scriptures, respectively). Cremonini also supported a vision of celestial animation which was received with much preoccupation by

This article stems from the project *Early–Modern–Cosmology*, which has received funding from the European Union's Horizon 2020 Research and Innovation Programme (GA n. 725883). I would like to thank the blind referees for their precious comments and suggestions. I would also like to thank the colleagues in Venice and Innsbruck, who discussed with me the problems of the animation of the heavens in the framework of an exchange between the ERC projects *Early–Modern–Cosmology* and NOCEMUS (PI, Martin Korenjak, GA 741374). I am particularly thankful to Ovanes Akopyan for his valuable comments and suggestions. Unless otherwise stated, translations are mine.

Perspectives on Science 2022, vol. 30, no. 5

© 2022 by The Massachusetts Institute of Technology

https://doi.org/10.1162/posc_a_00563

religious authorities as they feared that his views might revive forms of astral worshipping. This essay discusses the manner in which Cremonini and Bellarmine received geocentrism and cosmology in very different, even opposite, manners, especially concerning the relation between natural philosophy and theology, and the reconcilability of cosmology with the Scriptures.

1. Introduction

Thomas S. Kuhn once argued that an “Aristotelian-Ptolemaic paradigm” dominated astronomy and regulated normal scientific activity for many centuries before the Copernican break induced a new generation of scholars to embrace a fundamentally restructured vision of the world with consequences ranging from astronomy to physics, the image of humankind, and religion (Kuhn 1959, 1962; Swerdlow 2004; Westman 1994). As important as this interpretation was to make the epistemological idea of the discontinuity of the historical a priori of science plausible (Kuhn’s celebrated theory of scientific revolutions), it also disseminated a historical oversimplification. Among others, it levelled the positions of the opponents of heliocentrism to an undifferentiated community of religiously motivated Aristotelian Ptolemaics, while the early modern cosmological debates were reduced to a pro and contra controversy over Copernicus’s legacy.¹ This essay on the sources of cosmological legitimation in the early seventeenth century faces a more intricate story, at least as far as geocentric positionings were concerned.

In the midst of heated controversies that agitated early seventeenth-century scientific culture in Italy, two prominent intellectuals, the Aristotelian philosopher, Cesare Cremonini, and the Jesuit controversialist, Robert Bellarmine defended geocentric cosmological views on the basis of arguments that ultimately rested on the principle of authority, secularly philosophical and philosophical-theological, respectively. Both criticized the main astronomical innovations of their time, particularly the planetary system of Copernicus and his followers. However, while Bellarmine showed a certain openness to the doctrine of the fluidity and corruptibility of the heavens, in a more Stoic than Aristotelian fashion, Cremonini went as far, in his adherence to the Aristotelian philosophy, as to refuse to look into his friend and colleague Galileo Galilei’s telescope and acknowledge the validity of the discoveries that the latter had announced in the *Sidereus Nuncius* (1610).² In Cremonini’s eyes, such novelties had the major shortcoming that they

1. More recent studies have contributed to gain a more nuanced understanding of the “Copernican question” and its cultural impact (see Westman 2011; Omodeo 2014).

2. Cremonini’s refusal to look into the telescope is derived from a letter by Paolo Gualdo to Galileo from 29 July 1611 and has become almost legendary (cf. Galilei 1901, p. 165).

conflicted with basic assumptions of Aristotle's *De coelo*, especially the incorruptibility of the heavens. Yet, Cremonini's interpretation of the Aristotelian cosmos was quite unconventional, especially concerning its reconcilability with Christian dogma. He and Bellarmine received the cosmological tradition in very different, even opposite, manners with regard to such crucial aspects as the relation between natural philosophy and theology, and the reconcilability of cosmology with the Scriptures.

The relevant context is that of the cosmological affair of 1616 (sometimes reduced to the "Galileo affair"), which reached its climax when the Holy Office in Rome condemned the Copernican planetary hypotheses and the Sacred Congregation of the Index decreed the suspension of Copernicus's heliocentric work, *De revolutionibus orbium coelestium* [On the Revolutions of the Celestial Spheres] (1543) "*donec expurgatur*" [until corrected]. Statements concerning terrestrial motion and the Sun's immobility cum centrality had to be fixed—at least as far as they suggested a "physical" reality of "mathematical" hypotheses—because they were in ostensible conflict with faith (i.e., the literal interpretation of the Scriptures) and reason (i.e., Aristotelian philosophy) (see Pagano 1984).³ This event has been often regarded as the result of a clash between opposing "styles of thought"—scientific, philosophical, and religious.⁴ However, it was no purely intellectual conflict, as it was connected with institutional and political agendas. In fact, competing cosmological conceptions and epistemic values were tied to different societal settings, as they were especially linked to university, ecclesiastical institutions, and courts.⁵ One can recount the names and "affiliations" of the main

3. The censor who completed the expurgation of Copernicus, Francesco Ingoli, eventually eliminated only those passages that referred to terrestrial motion or solar centrality in an assertive manner and not those which could be interpreted as purely mathematical hypotheses (cf. Lerner, R.M., 2004).

4. I prefer to speak of "styles of thought" alongside Ludwik Fleck and Ian Hacking rather than "paradigms," although Kuhn's opposition of the Copernican and Aristotelian-Ptolemaic frameworks also refers to a cognitive as well as a discursive framework looming large over cosmological controversies over the motion of the earth and the centrality of the sun, in which the position of humankind in the cosmos and biblical exegesis were at stake. Fleck's concept is more sensitive to the connection of cognitive, conceptual, and ideological structures to their cultural-historical settings. For an accurate reconstruction of crucial elements of the conflict over Copernicus surrounding Galileo, see Guerrini 2010 (see also Bucciantini 1995; Bucciantini, Camerota, and Giudice 2011).

5. Biagioli (1993) has forcefully called for a sociological reconstruction of the cosmological affair, which invested Galileo, in *Galileo, Courtier*. His analysis essentially looked at the micro-sociology of the Renaissance court and the opportunities it offered to a court philosopher/mathematician. For a broader reconstruction of the societal structures of courtly science rather than the personal interactions, see Omodeo and Renn 2019. In the present essay, I wish to stress the adherence of different approaches to cosmology (and cosmological authority) to different social settings.

actors of the famous drama: Galileo Galilei, the Florentine mathematico-philosophical courtier, Bellarmine, the Roman Inquisitor, Cremonini, the Padua professor of philosophy, Tommaso Campanella, the religious-political agitator in jail, and Antonio Foscarini, the Carmelite friar and provincial superior of Calabria. Most of the cosmological works by these scientists, philosophers, and theologians have been studied in detail. This scholarly attention especially concerns the works that document Galileo's adherence to the heliocentric theory: his Copernican letters to Benedetto Castelli (21 December 1613) and to the Grand Duchess of Tuscany, Christina (1615), and Campanella's *Apology* for Galileo's philosophical freedom, the *Apologia pro Galilaeo* he wrote in prison in 1616.⁶ Foscarini's defense of the scriptural tenability of the "Pythagorean" planetary theory of Copernicus, *Lettera sopra l'opinione de' Pitagorici e del Copernico* [Letter on the Opinion of the Pythagoreans and of Copernicus] (1615), is well known, too (Blackwell 1991).

Much less has been written on works on cosmology by Cremonini and Bellarmine, although these authors are often mentioned in connection with the scientific controversies of the time.⁷ In this essay, I focus on their lesser-known works: Cremonini's *Disputatio de coelo in tres partes divisa* ("Disputation on the Heavens Divided into Three Parts") (Venice, 1613), and Bellarmine's *De ascensione mentis in Deum per scalam rerum creaturarum* ["The Mind's Ascent to God through the Creatures's Scale"] (1615). To be sure, these works cannot be understood in isolation but as part of the broader authority and cosmology conflict of the time. After the Roman censure of 1616—and even more so after the condemnation of Galileo's Copernican dialogue in 1633—, Galileo's cosmology was received in Europe in parallel with other defenses of the Scriptural tenability of the Copernican system, *in primis*, in connection with Johannes Kepler's and Foscarini's writings on similar issues. In fact, their considerations on the reconciliation of Copernican astronomy and the Scriptures were perceived as part of the same cultural agenda, namely, one that favored a mathematical approach to nature and argued for the Scriptural compatibility of daring innovations, such as the heliocentric planetary theory.⁸ Cremonini's and

6. The literature on Galileo's Copernican controversies is overwhelming, especially as it has been at the center of much discussion on science and religion. Apart from the above mentioned sources see Finocchiaro 1989; Feldhay 1995; Blackwell 2006.

7. On Cremonini's cosmology, see Del Torre 1968; Omodeo 2019. On Bellarmine's cosmology, see Baldini 1984; Baldini and Coyne 1984; Coyne and Baldini 1985; more specifically, on Bellarmine's *De ascensione* cf. Barreca 2013.

8. The Elsevir Latin edition of Galileo's dialogue, *Dialogus de systemate mundi* (Strasbourg 1635), comprised an *Appendix gemina, qua SS. Scripturae dicta cum Terrae mobilitate conciliantur*, by Kepler and Foscarini. In a similar manner, the English edition by

Bellarmino's works could not be received together with Galileo, as they visibly embraced different methodologies and had a diverging comprehension of the world. It might have been a consequence of such dissonance that their interventions have been neglected by most historical reconstructions of the cosmological affair. Both the Padua professor and the Cardinal Inquisitor in Rome rejected heliocentrism and the cogency of mathematical-astronomical conclusions, while aiming to maintain geocentric cosmology. What is more, their reliance on authorities, in particular on Aristotle, presents two markedly different approaches, which clashed with each other in fundamental respects. Cremonini adhered to the teaching of Aristotle as the main authority of university philosophy, while Bellarmine had an official reverence towards Aristotle as the philosophical cornerstone of Counter-Reformist theology—but less strict adherence to his cosmology. Their respective approaches led them to opposite conclusions on how to interpret geocentric cosmology. Indeed, Bellarmine figures prominently among the Roman censors of Cremonini's works (Spruit 2000, pp. 197–8).

2. Cremonini's Cosmic Animation via Aristotle and Other Cosmological Heterodoxies

Cesare Cremonini has a two-sided reputation in historiography, as he has often been portrayed as a sort of cultural politician in institutional history and an irredeemable conservative in the history of science. In institutional history, Cremonini is known for his fierce opposition to Jesuit education. He was in the forefront of those who criticized the opening of a Jesuit college in Padua, which would have co-existed with the University. He was the representative of the University's corporate interests in front of the Venetian authorities which, eventually, decided to prohibit the Jesuits' public teaching initiative.⁹ Scholars of Counter Reformation Italy have also pointed out that Cremonini was among the early modern "scientists" whose orthodoxy was scrutinized by the Inquisition for many years and, at one point, his case also led to an inspection of Galileo (Poppi 1992; Baldini and Spruit 2009, 1.2: pp. 1485–87).

In the history of science, Cremonini has a poor reputation. He is remembered for his criticism of telescopic astronomy. In spite of his close friendship with Galileo, he refused to look into his lenses and thereby legitimate a cosmology that departed from the Aristotelian letter. He

Thomas Salusbury, *The system of the world* (London 1661), comprised a series of additional related texts, among them, Kepler, *His Reconciling of Scripture Texts*, Didacus a Stunica, *His Reconciling of Scripture Texts*, and Foscarini, *His Epistle... reconciling the Authority of Scripture, and Judgments of Divines alleged against his System*.

9. On the Jesuits's controversy with the University of Padua, see Favaro 1878; Cremonini 1998; Grendler 2002.

embodied the type of “pedantic” Aristotelian reprimanded by Galileo as somebody who would even refuse to acknowledge, on the basis of anatomic sections, that the nerves depart from the brain instead of the heart, because this conclusion conflicted with Aristotle’s doctrine, if taken literally.¹⁰

Cremonini’s radical—at points perhaps “subversive”—loyalty to Aristotle located him outside of the circle of cosmological innovators of his time and also led him to harsh conflicts with religion and Catholic Scholasticism, in particular with the variant of Aristotelian philosophy that emerged after the Council of Trent (Sangalli 1998; see also Mayer 2014, *passim*. I take the adjective “subversive” from Martin 2014). On the basis of “sole reason,” by which Cremonini meant Aristotelian philosophy, he inferred (1) the absence of a Creator from the doctrine of the eternity of the world, that is, a cosmos without Creator, (2) he argued for the uselessness of divine providence to rule over nature and (3) indirectly fostered the thesis that souls cannot be separated from bodies according to natural reasoning. Although he explicitly distanced himself from the sort of heretical theses on the mortality of the human soul found in the work of Pietro Pomponazzi, (whose theses were in open conflict with the Christian dogma of the immortality of the soul), Cremonini asserted the inseparability of celestial souls from celestial bodies against a doctrine of the separate motive intelligences of the heavens. This went against the opinion of many opponents of Pomponazzi (such as Agostino Nifo) who had countered his argument for the body-soul inseparability (Nifo 2009; Pomponazzi 2013; cf. Garin 1966, pp. 499–580; Leinkauf 2017, pp. 1589–1621). For these reasons, Cremonini was severely and repeatedly reprimanded but never actually condemned. In fact, the Republic of Venice strenuously defended his *libertas philosophandi* as a professor appointed at its state university. Cremonini always declared himself innocent through appeals to the doctrine of the double truth that revived medieval debates on this notion (Bianchi 1990). According to this Averroist attitude, one should admit that there are two accesses to truth, one within the limits of sole (Aristotelian) reason, and one that descends from divine revelation.¹¹ As a matter of fact, this claim often masked conflicting views

10. In fact, Cremonini did reject experimental evidence in anatomy on the basis of Aristotle, and even engaged with a criticism of Galen, for instance in his *Apologia dictorum Aristotelis de calido innato adversus Galenum* (Venice 1626).

11. Although Cremonini adopted Averroist positions on specific issues, he cannot be labelled as an “Averroist” according to a dichotomy very much in vogue in past accounts of Italian Renaissance Aristotelianism, which reduced a multifaceted philosophical culture to the opposition of “Averroists” and “Alexandrists” on the immortality of the soul (Garin 1966, vol. 2, chap. 1). As a matter of fact, we are today in a better position to judge the Aristotelian eclecticism of those days and refer to its strands in the plural. On Renaissance Aristotelianisms see, among others, Sgarbi 2017.

of reality, not just “two accesses.” Cremonini declared that the philosopher limits himself to reason and, in the cases in which he comes to rational conclusions that are in open contradiction with religious dogmas, accepts the other indemonstrable truth as an issue of faith. Along this line, he defended the autonomy of his philosophical arguments as independent of theological considerations, which he refused to address. One reads at the beginning of his *Disputatio de coelo* (1613) the following caveat:

Reader, be warned that in this work I expound Aristotle’s doctrine following his philosophical principles. You should not be surprised if some statements derived from the Philosopher’s mind (which is excellent elsewhere) are contrary to Christian faith and to the truth. (Cremonini 1613, f. +3v)¹²

One of the most radical theses that he propounded in this text was the necessity of the world’s existence in accordance with Aristotle’s theses of the eternity of the cosmos. Furthermore, he connected this thesis with an explicit negation that God has a free will—at least in accordance with Aristotle’s natural reason. This implies that God is necessitated. Such a negation of the act of Creation and divine freedom marks Cremonini’s naturalist radicalism along the line that ideally connects him to the most subversive natural philosophers of early modernity, Giordano Bruno and Baruch Spinoza (Omodeo 2019). In Cremonini’s case, though, the necessity thesis was based on the principle of authority: “The Philosopher does not posit God’s will” (Cremonini 1613, p. 385). Cremonini regarded Aristotle as the “Philosopher” *tout court*, the prototype of all rational thinking. Therefore, his presentation of heretical theses via Aristotle seemed unacceptable to religious authorities as they, on the top of it, embraced a Christianized version of Aristotelian philosophy in line with Counter Reformation theology.¹³ The Roman Inquisitors repeatedly requested Cremonini to recant from his interpretation of Aristotle’s cosmology, but he never renounced his “purely” philosophical attitude. As he claimed, he was expected to teach Aristotle’s corpus as it is and not as it should be. Moreover, he adduced that he was neither capable of understanding theology nor supposed to deal with it. Accordingly, he declared that he bent to

12. “Lector hoc te monitum volo me in hoc opere scribendo doctrinam Aristotelis, eiusque Philosophiae principia sequutum; ut nihil mirum, nonnulla hic ad Philosophi alioqui eximii mentem dicta Christianae fidei, ac veritati adversari.”

13. It should be mentioned that Cremonini did not dismiss Thomas Aquinas’ work, just as he took into account various strands of ancient and Scholastic Aristotelianism. However, he did so in a quite eclectic manner, without sticking to any interpretation and always pretending to aim at Aristotle’s original intention without overdeterminations and anachronisms. On this urge to go back to the philosophical sources, see Martin 2014.

religious authorities on matters of faith. Such arguments are to be found in his responses to theological criticism, in *Apologia dictionum Aristotelis de quinta coeli substantia* [Apology of Aristotle's Statements on the Fifth Substance of the Heavens] (printed in 1616), and *De coeli efficientia* ["On the Efficiency of the Heavens"], which was written in the wake of these controversies and remained unpublished as it did not pass the censorship.¹⁴

There is another, less obvious, aspect of Cremonini's worldview that proved extremely controversial from a theological perspective and is worth mentioning. He affirmed that the heavens are moved by their souls, which act as inner principles of animation. Although the question of the animation of the celestial spheres had been a lengthy debated issue among Aristotle's commentators since antiquity, among Islamic philosophers and Latin scholastics (Wolfson 1973), Cremonini directly referred his view to the most authoritative philosophical texts on the heavens, *in primis* Aristotle's *De coelo*: "Heaven is animated and has the principle of motion. These are Aristotle's words in *De coelo* II 13" Cremonini 1613, p. 87)¹⁵ Cremonini argued on the basis of Aristotle's authority that the cosmos and its major parts, the celestial spheres deputed to transport the planets, are animal-like entities. Although this conception was usually referenced through Platonic and neo-Platonic sources, Cremonini rather supported it via Aristotle. In fact, he argued that celestial bodies are endowed with souls because their material bodies are "organized" in heterogeneous parts similar to the "organs" of animals. His maxim was that "to infer animation [the attribute of having a soul or *anima*] from organization [the attribute of having a heterogeneous functional structure] is an upmost Aristotelian argument" (Cremonini 1613, p. 77).¹⁶

The idea of cosmic animation was looked upon with much concern by religious authorities.¹⁷ In fact, the scientific and theological circles of Rome criticized Cremonini's *Disputatio de coelo* not only for his views about the eternity of the cosmos and divine necessity but also for his theses on the animation of the heavens. As the founder of the Lincean Academy, Federico Cesi reported to Galileo, the *Disputatio* was "frowned upon by the censors for its celestial animals or animated heavens" (see Galluzzi 2017, p. 161). The theologian Francesco Ingoli, known to astronomy historians for the expurgation of Copernicus's *De revolutionibus* after the condemnation of the

14. Two extant copies of *De coeli efficientia* are preserved at the University Library of Padua (Ms. 200/1) and at the Marciana National Library of Venice (Ms. latini VI 176). On Cremonini's troubles with the Inquisition related to his cosmology, see Del Torre 1966.

15. "Coelum est animatum et habet motus principium. Sunt verba Aristotelis 2. De Coelo, textu 13."

16. "Arguere ab organizatione ad animationem est arguere ab eo, quod est maxime Aristotelicum."

17. One could also speak, with Kevin Chang, of "cosmic vitalism" (cf. Chang 2011).

heliocentric system, also wrote from Rome on the reactions to Cremonini to Cardinal Caetani on 9 August 1613:

I was invited to Prince Cesi's palace on Wednesday, where there were many scholars discussing various mathematical, philosophical, and theological questions. There were Peripatetics, Paracelsians, and Telesians. You can imagine whether there was any agreement. One of them was fiercely attacked for maintaining that the heavens are animated. I commented that, first, this opinion had been condemned as erroneous by the Sorbonne of Paris; second, that in the first chapter of *Genesis* the ends to which God made the creatures are listed and that it was established that the celestial bodies "serve as signs to mark sacred times" and not as intelligent beings, because this is the principal end of the intellectual soul that He gave only to the heavens. Although he put up a good defense by saying that what is written in the book of *Genesis* was not the principal purpose, I replied that it could not be so because the principal purpose for which the other creatures were created are clearly stated there. (Galluzzi 2017, pp. 161–62; slightly revised; cf. Galluzzi 2014, pp. 185–86)¹⁸

The controversy referred to in this passage was championed by two scholars: the Padua philosopher Giulio Cesare Lagalla, who followed Cremonini as a supporter of animation, and the Jesuit Francesco Diotallevi. The latter feared that the idea that the heavens have souls could resuscitate forms of astral worshipping. Against such neo-pagan cults, he argued

If the heavenly soul is blessed, then we should worship the stars as part of a blessed body, in the same manner in which we venerate the relics of the saints. However, this is against Scripture, which forbids worshipping the sun, the moon, and all the stars. (Lagalla 1622, p. 6)¹⁹

It should be remarked that none of the clashing parties rejected Aristotle's authority. Lagalla and Diotallevi based their arguments on different interpretations of Aristotle and the manner in which a reconciliation between his philosophy and the Christian religion should take shape. Lagalla even sought to support animism through the Doctors of the Church, such as Augustine and Thomas, who left the issue of celestial animation open to discussion.²⁰

18. The defender of celestial animation was the Aristotelian philosopher Giulio Cesare Lagalla, author of *De coelo animato disputatio* (1622).

19. "Si anima coeli sit beata, tunc sidera tanquam corporis beati partes, adoranda essent, quemadmodum adorantur Sanctorum Reliquiae. Contrarium tamen statuit Scriptura, quae Solem ac Lunam, et coetera sidera, prohibet adorari." This argument is reported by Lagalla himself in *De coelo animato disputatio*.

20. Lagalla referred to Book 2 70 of Thomas' *Summa contra Gentiles* and to passages from Augustine's *Enchiridion* and *De genesi ad literam*. Cf. Lagalla 1622, p. 21 ("liberum esse

What possibly made the animation of the heavens controversial is that form of “cosmic vitalism” made soul doctrines relevant to astronomy and, vice versa, suggested to infer theses on the souls and their relation to bodies from heavenly doctrines. Cremonini, for instance, took the definition of the heavens’ souls from Aristotle’s *De anima*:

Every organic body is animated by the soul, which is its essence [or quiddity, *quod quid erat esse illius*]. The heaven is an organic body. Therefore, the heaven is animated by the soul which is its essence. The soul, which is the essence of the natural body, is the nature and form that is inseparable, apart from an act of reason. It is one with its matter, since potency and act are one (*De anima* II 7). (Cremonini 1613, p. 100)²¹

Could the thesis of the inseparability of the heavenly souls have consequences on the comprehension of human souls and disprove their immortality?²² The Roman authorities certainly preferred to keep the discourse on the heavens and that on the soul separated in a time when Pomponazzi’s controversies on the mortality of the soul were of fresh memory. Cremonini’s assertion, in the above mentioned passage, that the soul is inseparable, echoed Pomponazzi’s thesis that the soul perishes with the body. To reject the heavens’ animation, as many Jesuits did, could prove a safe strategy to insulate astronomy from controversies over the soul. This, in turn, brings us to the Jesuit positions on cosmology and celestial animation, and particularly Bellarmine as one of the theological examiners of Cremonini’s work in Rome.

3. Intermezzo: The Question of Celestial Animation among Aristotelians

At the same time as the above reactions in Rome to Cremonini’s animated cosmology were taking place, the religious authorities started examining

unicuique, absque ulla erroris suspitione hanc sententiam tueri; potissimum Sancto Thoma id confirmante”), and p. 26.

21. “Omne corpus organicum est animatum, anima quae est, quod quid erat esse illius. Coelum est corpus organicum, ergo coelum est animatum, anima, quae est, quod quid erat esse illius. Anima, quae est, quod quid erat esse corporis naturalis, est natura, et forma non separabilis, nisi secundum rationem, faciens unum cum sua materia, ut potentia, et actus unum faciunt, 2. de Anima textu 7. Ergo anima coeli non est intelligentia, sed natura et forma naturalis [...] sicut omne animatum est organicum, ita omne organicum est animatum [...] Quod movet seipsum, habet in seipso principium activum sui motus [...]”

22. Eugenio Garin argued for a connection of cosmological and psychological concerns in the immortality polemics surrounding Pomponazzi (cf. Garin 1966, pp. 526–27). On the Alexandrist-Averroist controversies over the immortality of the soul affecting the cosmological debate, see Omodeo 2020.

the ideas he presented in the *Disputatio de coelo*. The Congregation of the Holy Office raised doubts about its legitimacy and doubted whether the printed book corresponded to the one that the Venetian Inquisitor approved for publication. Consequently, the Pope requested that a comparison between the approved version and the printed book was made. Most likely, Bellarmine was also assigned to be the book's censor (Mayer 2014, p. 128). Thomas Mayer, the historian of Inquisition trials, has offered a well-documented reconstruction of the Inquisitors' engagement with the *disputatio* and its author and their request that Cremonini recanted from his controversial theses. Cremonini wrote two books as a response to his critics, but the latter were dissatisfied by his apologies. The first of these two books, *Apologia dictorum Aristotelis de quinta coeli substantia* ["Apology for Aristotle's Statements on the Fifth Substance of the Heavens"] appeared in Venice in 1616 while the subsequent *De coeli efficientia* was written immediately thereafter but was never approved for publication. In the end of this long contrast between Roman authorities and Cremonini in Padua, the Pope prohibited his work "without any limitations." The final decision was prompted after a report by the Padua Inquisitor reached the Congregation of the Holy Office informing them that Cremonini had declared that he was not concerned "whether his books are prohibited or not" (Spruit 2000, p. 203). The main allegations concerned the defense of the eternity of the heaven, the mortality of the soul, and the thesis that God is the final cause but not the creator of the world (Mabilleau 1881, pp. 355–7). The animation of the heavens, as was defended by Cremonini, was very much at the center of the dispute, as the thesis of the ensouled heavens and the inseparability of their souls could raise doubts concerning the immortality of human souls independently of the body.

To be sure, Cremonini was not the first Aristotelian to defend celestial animation. Although many Latin Scholastic philosophers denied the idea that the whole and its parts are animated (i.e., the cosmos and the celestial spheres are endowed with souls that act as motive forces), the exceptions to this tendency are very significant. For instance, Robert Grosseteste and Thomas Aquinas did not exclude in principle that souls (*animae*, hence the expression I use of "animism") could account for celestial motions (Grant 1994, p. 472). Animism had its Platonic resonances, too. Neo-Platonic thinkers, including in the Renaissance, often connected animation with the idea that the microcosm and macrocosm have a structural correspondence and with the doctrine the *anima mundi* (or world soul). Apart from philosophers gathering in Florence in the fifteenth century, later authors, such as Girolamo Fracastoro, Francesco Patrizi, Giordano Bruno, and Johannes Kepler, varied the Marsilio Ficino's neo-Platonic

legacy and embraced various forms of cosmic animism.²³ However, the idea of celestial animation was also received by distinguished Aristotelians, especially by Padua professors during the Renaissance. This is witnessed by Cremonini himself, and his pupil Lagalla, who strenuously defended the doctrine of the heavens' animation through appeals to the authorities of the "Philosopher," the "Commentator" (i.e., Aristotle and Averroes), and Thomas Aquinas. Forms of Aristotelian animism of the heavens were also defended before Cremonini by other philosophers who are variously related to the so-called Padua School, including Agostino Nifo, Girolamo Fracastoro, Gasparo Contarini, and Jacopo Zabarella.²⁴ Other early modern thinkers who also relied on Aristotle's authority preferred to renounce cosmic animation. Among them, many Jesuits abandoned animation as a viable explanation of celestial motions. For instance, the most reputed Jesuit astronomer of the seventeenth century, Giovanni Battista Riccioli, argued in his *Almagestum novum* IX 8 ["The New Almagest"] (1661), that the heavens work like a mechanism without any support of motive souls. He also pointed out that the latter position runs the risk of reviving ancient forms of celestial worshipping:

The celestial bodies are not animated by an intellectual or rational, nor by a sensitive or vegetative, soul. [...] This is proven by the authority of the Fathers, especially the accounts of St. Cyril [...] and St. Ambrose [...], two authors who, in fact, reproach Origen for suggesting that dew and frost, and the cold, might be taken as animated in so far as they invite to praise God; of St. Gregory of Nazianzus [...], who, on Psellus's testimony, condemns the Platonic impostures about the heavenly soul; and of St. Chrysostom [...], who among other things declares: 'the sun has neither reason, nor a mind or potential for reasoning'. [...] Acutely, Lactantius accuses the pagans with this argument: rather than assuming that the predictability of their motion connects the stars to God, it should

23. The cometary debates of Tycho Brahe's time provided a great impulse for speculations about the possible causes of planetary motions through a fluid space, including forms of "astrobiology," as Paolo Rossi has labelled them (see, among others, Rossi 1977; Granada 2010; Boner 2013; Regier 2014). On Patrizi's cosmology, also see Prins 2015.

24. See, among others, Nifo, *De intellectu* II 22 (Nifo 2011, pp. 304–5); Zabarella, *De rebus naturalibus libri XXX* (1597, p. 269); the exchange between Contarini and Fracastoro on the causes of celestial motion (Contarini 1571, pp. 238–52), and Fracastoro's dialogue, *Fracastorius sive de anima* (Fracastoro 1574, pp. 149v–150r).

have been observed instead that they lack not just divinity, but also intellect and will. (Riccioli 1651, pp. 245–46)²⁵

This position, embraced and propagated by the most influential Jesuit astronomer of the time, can be considered to be representative of the hegemonic line of the Jesuit order on these matters in the seventeenth century. It seems to be no chance that the best-known supporter of de-animated cosmic mechanisms of early modernity, René Descartes, received his fundamental education from the Jesuits.²⁶

4. Bellarmine's Scriptural Cosmology

Among Jesuit theologians, Bellarmine certainly played a crucial role in the reassessment of controversial philosophical doctrines in Rome (Godman 2000). Although he was neither an astronomer nor a natural philosopher, as a Roman censor and Inquisitor, he had a strong say in matters of science and faith. He played an instrumental role in the eventual condemnation of Giordano Bruno. His trial featured a discussion on cosmology and Copernicus's legacy, as part of Bruno's own defense strategy. Bellarmine helped to prepare the list of theses he had to abjure but the latter's unwillingness to recant from the theses including the plurality of worlds (which he saw as a plurality of Copernican systems) led to his fatal end (Firpo 2000; see also Martínez 2018). Bellarmine was indirectly involved in the condemnation of Galileo, as well. In 1616, he was the person who imposed on Galileo the prohibition to disseminate and teach heliocentric astronomy—a fact that contributed to Galileo's later condemnation. Indeed, as the author of the *Dialogue on the Two Chief World Systems* (1632), Galileo was accused of ignoring Bellarmine's "injunction" (Mayer 2010; Blackwell 1991).

It is well documented that Bellarmine had a certain knowledge of astronomy as a college teacher. In his early years in Louvain, he taught

25. "Caelestia corpora neque intellectiva aut rationali, neque sensitiva, neque vegetativa anima sunt animata. [...] Probatur I. Autoritate Patrum, praesertim S. Cyrilli [...], S. Ambrosii [...] qui duo vel inde Origenem redarguunt, quod etiam ros et gelu, et frigus, et pruina dicenda esset animata, quia invitantur ad laudandum Deum; S. Gregorii Nazianzeni [...] ubi interprete Psello, damnat Platoniorum imposturas de anima caelorum; S. Chrysostomi [...] inter alia pronunciat: 'Nec enim Seol habet rationem, nec mentem, nec cogitationem.' [...] Lactantius [...] acute Gentiles insectatur eo argumento, quod si ob constantiam in motu videntur in De referenda sidera; potius inde non modo divinitate, sed intellectu ac voluntate carere colligendum erat." Cf. Marcacci 2018, pp. 197–203.

26. The issue of the modern de-animation of the cosmos and the rise of mechanic philosophy is a much-debated topic of intellectual history that I am not going to readdress here. It is sufficient to say that past dichotomies (a radical instantiation of which is Merchant 1980) have been replaced by more nuanced and historically careful interpretations, according to which mechanism and vitalism are not irreconcilable (see, e.g., Wolfe and Gal 2010; Wolfe 2019).

on spherical astronomy, possibly using Piccolomini's *Sfera* (Coyne and Baldini 1985, p. 105). In the *Lectiones Lovanienses* which began in October 1570, he engaged with a number of cosmological problems linked to the interpretation of Thomas Aquinas's *Summa Theologica* and the exegesis of the *Genesis*. This gave him the occasion to depart from Aristotle's cosmology on significant points in the name of a conception of the heavens that is more adherent to the letter of the Scriptures. Bellarmine's conception comprised the distinction of three heavens: sublunary, a fiery one for the celestial bodies and an empyrean heaven beyond the fixed stars. Also, he argued against the circular mathematical simplicity of the heavenly motions, their occurrence in a fluid medium, against the doctrine of the material spheres deputed to transport planets and stars, and he adhered to the doctrine of the fiery nature of the stars, which he also connected with the possibility of change and corruption in the heavens, against the doctrine of their quintessential nature (Coyne and Baldini 1985, pp. 106–7). As we will see, Bellarmine later mentioned some of these doctrines although in hypothetical terms.

In 1615, the year of Galileo's famous letter to Cristina of Lorraine on the Scriptural tenability of the Copernican system, Bellarmine gave to the press his small tract on the ascent of the mind to God by means of the contemplation of Creation, *De ascensione*. It is curious to observe that this work has generally escaped the attention of the historians of Renaissance astronomy despite the importance that is generally allotted to Bellarmine in the context of the epistemological and cosmological controversies of his time.²⁷ I assume that the reason of this negligence lies in the fact that this booklet was neither on natural philosophy nor on mathematical astronomy *strictu sensu*, but rather a work on piety. However, it was constructed on cosmological premises, which Bellarmine considered to be of great spiritual relevance. In turn, it reinforced specific views of the cosmos, as it stressed that nature reveals God and His attributes, mainly His wisdom and power.

The impact of Bellarmine's booklet is indirectly testified by its many editions. It was reprinted all over Europe throughout the seventeenth century and later. In 1615, it was printed in various localities at the same time: in Rome by Giacomo Mascardi; in Lyon by Jacques du Creux; in Cologne by Johann Kinckius and in Antwerp by Plantin. New editions appeared at a regular pace throughout the century. The *De ascensione* was reissued in Milan "apud Io. Baptistam Bidellium" in 1616. Lyonnese editions were printed for three consecutive years, in 1615, 1616, and 1617, as

27. For an epistemological assessment of Bellarmine, which is less obvious than Pierre Duhem's (1969, p. 117), see Feyerabend (1975, pp. 192–3).

well as 1624. The booklet was reprinted in Rouen in 1619 and in Cologne in 1626, 1634, and 1662. A special version appeared in Rome in 1637; it was a Greek translation promoted by the Holy Congregation *de propaganda fidei*, which covered the expenses. The astounding number of publications can be read as a sign of the cultural relevance that Bellarmine's supporters allotted to his cosmo-spiritual tract. They are especially revealing of the powerful means of dissemination of the Jesuit Order and its networks.

As Bellarmine declared to his dedicatee, Cardinal Pietro Aldobrandini, he wrote the *De ascensione* for his own personal use, in September 1614, when he was in a retreat and thus discharged from other institutional duties. Repeating a literary trope of modesty, Bellarmine declared that the initiative to publish was not his own. Unspecified friends had insisted and eventually convinced him to give the *libellum* to the press. He expressed his hopes that those most prominent in the Church government could particularly benefit from it:

In fact, if you look for some usefulness in these elucubrations of mine, they especially concern people busy with public duties, most prominently ecclesiastic princes. You are one of the first among those princes who carry the burden of ecclesiastic duties, as a Cardinal, Archbishop and Treasurer [*camerarius*] of the Holy Roman Church, one of those responsible of the Universal Inquisition Office, engaged in the defense of many and most serious causes. There is one more reason to dedicate this work to you, that is, to communicate to the next generations' memory a monument of your great favor toward myself and of my esteem toward you. (Bellarmine 1626, f. A3r-v)²⁸

Bellarmino remarked that the importance of a book should not be judged by its dimensions (*De ascensione* is a small, octavo format book), but rather from its fruits. He declared himself incapable of anticipating its influence. However, he stated that his writing had been very useful to himself. This

28. "Si qua enim utilitas ex hac mea lucubratione peti potest, ea praecipue ad homines occupatos publicis negotiis, quales in primis sunt Ecclesiae Principes, redundabit. Tu vero ex Principibus Ecclesiae negotiorum mole gravatis, unus in primis es: quippe Cardinalis, Archiepiscopus, sanctae Romanae Ecclesiae Camerarius, ex Praepositis universalis inquisitionis officio, et multarum gravissimarum protectionum sollicitudine distentus. Accessit et illa causa huius operis nuncupandi tibi, ut extaret ex me ad memoriam posterorum aliquod ingentium tuorum in me beneficiorum, et meae in te qualiscumque observantiae monumentum."

was the only book of his that Bellarmine felt necessary to re-read several times:

Normally, I do not read other books of mine, if I am not forced by circumstances, but I already re-read this one three or four times. I often promised myself to meditate the lessons [entailed in this book]. However, the reason that makes it so dear to me is not its own merit but perhaps love, for I generated it in my very old age like a Benjamin. (Bellarmine 1626, f. A4r)²⁹

The book looks like a collection of Biblical and patristic passages inviting the believer to a meditation aimed at gradually lifting one's soul to God. Although Bellarmine invited his readers to contemplate God in nature and through His Creation, he felt no need to resort to other sources than Scriptural and theological ones. Science and natural philosophy were obliterated in his treatment, but only at first sight, since natural and cosmological conceptions were ingrained in the structure of the argument. Indeed, the ambiguity emerges from the beginning, since Bellarmine merges two meanings of the adjective *coelestis* ("heavenly") to refer to both the heavens occupied by planets and stars, and those populated by angels and the blessed souls.³⁰

For Bellarmine, the cosmos includes material and immaterial entities, the elements, the heavenly bodies, and the stars, as well as angels. Bellarmine takes on the tropes of the cosmic travel, which is neatly represented in the frontispieces of later editions of the *De ascensione* (see Figure 1). The contemplation of God through nature typically receives legitimation from the *Liber sapientiae* and Paul's *Letter to the Romans*. Bellarmine declared that theology's maid, philosophy, confirms the possibility of a cosmological ascent. As he asserted, reason confirms (*ratio confirmat*) that the efficient cause can be known from its effects and the model (*exemplar*) from its image. Bellarmine argued that nature is the work of God, that is, the effect from which some knowledge of its Architect could be gained.

29. "Reliquos libros meos nisi necessitate cogente non lego: hunc sponte terque quaterque iam legi, et deinceps frequenter in eius lectione versari mihi propositum est, nisi forte chariorem illum mihi faciat, non meritum eius, sed amor, quod illum, ut alterum Beniaminum in extrema senectute genuerim."

30. "Porro S. Bernardus, ut Eugenium Papam, suum quondam disciplulum, serio admoneret, ut non tantum se actioni daret, sed quotidie certo tempore se colligeret, ac sancto otio et caelesti pabulo frueretur, scripsit libros quinque *De considerations*, in quibus non solum exhortatur illum ad assiduam meditationem rerum caelestium, sed etiam rationem et modum meditandi, et meditando ascendendi, et ascendendo transformandi se in Deum per intellectum et affectum, perspicue tradit."

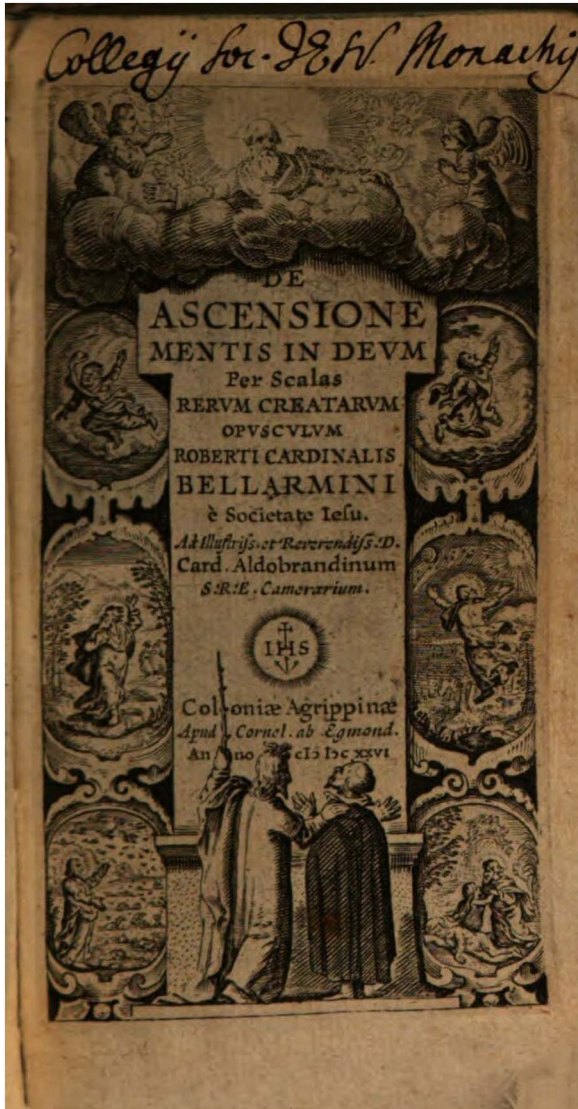


Figure 1. Frontispiece of the 1626 Cologne edition of Bellarmine's *De ascensione mentis in Deum per scalam rerum creaturarum*. Bayerische Staatsbibliothek, Munich (Germany).

Humans and angels are the image of God, from which the quality of their highest Creator has to be inferred (Bellarmine 1626, f. A7r).³¹

The tract is subdivided into fifteen sections, the first seven of which deal with the material world and the last seven with the immaterial world, in particular with God and His attributes. Chapter VIII, which connects those on the lower and the higher realms, or immanence and transcendence, is devoted to the rational soul seen as a bridge between the cosmos and the lofty spiritual realms. An overview of the topics of the booklet chapters here follows:

- I. Consideration of man, who is a smaller world,
- II. Consideration of the bigger world,
- III. Consideration of the disc of the earth,
- IV. Consideration of waters,
- V. Consideration of air,
- VI. Consideration of fire,
- VII. Consideration of the sun, moon and stars,
- VIII. Consideration of the rational soul,
- IX. Consideration of the angels,
- X. Consideration of God's essence,
- XI. Consideration of God's power,
- XII. Consideration of God's theoretical wisdom,
- XIII. Consideration of God's practical wisdom,
- XIV. Consideration of God's mercy,
- XV. Consideration of God's justice.³²

Although the book *prima facie* looks like a collection Biblical references on the various cosmic stages that lift the contemplative soul to God, at a closer look it is evident that Bellarmine's cosmology follows a basic cosmic scheme that matches with a Christianized version of Aristotle's world view. Chapters III through VI structurally follow Aristotle's theory of the

31. "Posse autem hominem per opera Dei, id est, per creaturas ascendere ad notiam et amorem Creatoris, docet liber Sapientiae, et Apostolus ad Romanos, et ratio ipsa satis confirmat, cum ex effectis causa efficiens, et ex imagine exemplar cognosci possit: et dubium esse nequeat, res omnes creatas esse opera Dei; et hominem atque Angelum, non solum opera, sed etiam imagines Dei esse Scriptura sancta nos doceat."

32. These titles are taken from the table of contents of the 1615 edition. They are slightly different in the heading of the corresponding book sections. Among other small changes, the first chapter is shortened as "Ex consideratione hominis." Other chapters are expanded as follows. Chapter X reads "Ex consideratione essentiae Dei, per similitudinem magnitudinis corporalis"; chap. XI "Ex consideratione magnitudinis potentiae Dei per similitudinem magnitudinis corporalis"; chap. XII "Ex consideratione magnitudinis sapientiae Dei per similitudinem magnitudinis corporalis"; chapter XV "Ex consideratione magnitudinis Iustitiae Dei per similitudinem magnitudinis corporalis."

elements. Bellarmine addresses them separately, in separate sections, in correspondence with the cosmic position of their concentric spheres in the sublunary world: the heavy element of the earth at the center and the other elements ordered according to their decreasing weight and increasing “lightness”. The considerations of Chapter VII concern the sun, moon and the stars. They are markedly pre-Copernican, if not “anti-Copernican.” As Bellarmine explained in the foreword to his perspective readers, the fifteen chapters constitute progressive steps upwards to God. An important motivation for him was the Augustinian precept to “meditate on God through the creatures” (*meditatio Dei ex creaturis*) (Bellarmine 1626, f. A7r–v).

The first degree of Bellarmine’s spiritual ascension is a reflection on man (*ex consideratione hominis*). Like all other chapters, this one takes its point of departure from a Biblical passage. In this case, Bellarmine refers to Moses’s recommendation, “*attende tibi*” (take care of yourself) to argue that “he who wishes to erect a stair to God must begin from himself” (Bellarmine 1626, 1).³³ As he explains, humans are made in God’s image. Although the authority Bellarmine refers to in the first place is Scriptural, his method is Aristotelian. After arguing for the importance of beginning the exploration of the world from oneself, that is, from man, he explains that one has to investigate man from four viewpoints, in accordance with the four “common causes.” These are the four Aristotelian causes: efficient, material, formal, and final. Accordingly, the relevant questions to ask in the investigation of man are the following ones: “Who is my Creator? Of what matter did He make me? What form did He give me? And to what end did He produce me?” (Bellarmine 1626, p. 1).³⁴ The fourth question, about the telos, is the most important one. The uppermost and most fundamental human goal, as Bellarmine contends, is to find God as the *summum bonum*.

The second degree of Bellarmine’s stair to God removes the sight from the *mundus minor*, the microcosm man, to the *mundus maximus*, the world as a whole. The main reason for the necessity of a contemplation of the cosmos in its entirety, as one reads, is to get a glimpse into God’s admirable power and wisdom through the wonderful multiplicity, variety and beauty of His creatures. Bellarmine’s starting quote for this section is Sirach 1:2–3: “*Latitudinem terrae, et profundum abyssi quis dimensus est?*” [“Who can measure the earth’s breadth and deep abyss?”]. Bellarmine on this

33. “Si quis vere cupiat scalas in Deum erigere, a sui ipsius consideratione incipere debet.”

34. “Sed ego in praesenti nihil aliud investigare decrevi, nisi quatuor communes causas; qui sit auctor meus, ex qua materia me fecerit, quam formam mihi dederit, et ad quem finem me produxerit.”

occasion refers to the astronomers (*astrologi*) to argue that we are like a point in relation to the world. If the stars of the firmament are bigger than the earth (*orbis terrarum*), as is generally accepted, who will be able to intellectually grasp (*cogitando*) the immensely wide heavens? The world teaches us modesty as it instills in us the awareness of how small we are: “Who will be able to count the multitude of things created by God, the Creator of the heavens and earth? As the Sirach says, *Who can count the grains of sand in the seas, the drops of rain?*” (Bellarmine 1626, p. 22).³⁵

After considering the micro-macrocosm, Bellarmine proceeds, as his next steps, to discuss the “main partitions” of the world, beginning with the terrestrial element. Although earth it is the lowest of all elements and might appear as the less noble, it is actually the most important as far as its “dignity” is concerned. The Scriptures sanction its unique value. In fact, in *Genesis*, it is said that in the beginning “God created the heavens and the earth” [*Deum fecisse caelum et terram*] (Bellarmine 1626, p. 37). Bellarmine interprets *Genesis* as asserting that the earth is one of the two main parts of the world. He explains that, while the heavens are the receptacle of God and the angels, the earth is a “palace” that was erected to the benefit of humankind. Just like the heavenly palace is embellished by brilliant stars, the earth is endowed with precious metals and stones in abundance, as well as with plants and animals.

According to Bellarmine, the dignity of the earth can be evidenced by considering three main characteristics: first, the stability of its foundations; second, the way it nourishes humans and animals through the production of food; and third, the fact that it produces [*producit*] a great wealth of materials. As for the first aspect, this is the most important in view of the Copernican controversies of the time, as it is directly linked to the immobility of the earth. The *auctoritas* is David who, in the Psalms asserted: “*Firmavit... orbem terrae, qui non commovebitur*” (Psalms 93:1, King James Bible: “the world also is stablished, that it cannot be moved”), and “*Fundasti terram super stabilitatem suam, non inclinabitur in saeculum saeculi*” (Psalms 104:5, KJV: “Who laid the foundations of the earth, that it should not be removed for ever.”). The immobility of the earth is put in connection with its symbolic meaning. It is the *symbolum Conditoris* [“The symbol of the Creator”] (Bellarmine 1626, p. 38). According to the Gospels (Matthew 7:24–5), it is like a house that God created for us on a solid rock that will resist rain, winds, and thunders (Bellarmine 1626, p. 42). Hence, it is the symbol of the stability of faith, too.

35. “Iam vero multitudinem rerum creaturarum ab uno Deo conditore caeli et terrae quis enumerabit? *Arenas maris, et pluviae guttas*, inquit Ecclesiasticus, *quis dinumeravit?*”

Chapter VII (the *gradus septimus*, the seventh step upwards to God) is of particular cosmological relevance. It deals with the sun, moon, and the stars. The most important Scriptural reference, the one that introduces this section stems from the Psalms: *Caeli enarrant gloriam Dei, et opera manuum eius annuntiat firmamentum* (Psalms 19:1, KJV: “The heavens declare the glory of God; and the firmament sheweth his handywork.”) (Bellarmine 1626, p. 102). As for the sun, the Holy Spirit extolls its merits through David’s words. The most important of its qualities is its indefatigable capacity to travel through the heavens “like a running giant” (Psalms 18:6, *Vulgata: ut gigans ad currendam viam suam*) (Bellarmine 1626, p. 102). Bellarmine explains that, as we can see with our own eyes, the sun accomplishes an entire circle around the earth in twenty-four hours and therefore it moves incredibly fast, as it makes thousands of miles per hour (*ut singulis horis multa milliariorum milia sol currendo conficiat*). Bellarmine himself experienced such rapidity making the following naïve experiment:

Once I desired to know, out of curiosity, how much time the sun takes to set in the sea, therefore I started to read the Psalm [51] *Miserere mei Deus* [Have mercy on me, O God] at the beginning of the sunset and I could barely read it twice in its entirety that the sun had already completely set. (Bellarmine 1626, p. 106)³⁶

This passage and its context are remarkable not just for the pious parody of an empirical observation of nature in a time of rising experimental science, but especially as a witness of Bellarmine’s attitude towards the standard conceptions on spherical astronomy of his time. In fact, no supporter of the material-spheres heaven would have ascribed the daily motion of the sun to the sun itself. The solar motion that the astronomical opponents of Copernicus rejected was the annual revolution along the ecliptic and by no means the daily rotation of the heavens, which was in fact ascribed to the sphere of the fixed stars and transmitted by them to the planets (including the sun). By contrast, Bellarmine suggests here a different cosmological conception, in line with the theses about the fluidity of the heavens on which he already taught in Louvain. As Ugo Baldini and George Coyne have pointed out, Bellarmine still defended in private and in his correspondence those conceptions in Rome. On 25 August 1618, he wrote to Cesi (in Baldini and Coyne’s translation, 1984, p. 4):

But that which I wished from Your Excellency [Prince Cesi] is not to know that the Sacred Scripture and the Fathers held that the heavens

36. “Ego ipse volens curiose aliquando cognoscere, quanto temporis spatio sol totus occumberet in mari; coepi ad initium occasus eius legere Psalmum *Miserere mei Deus*, et vix totum bis legeram, cum iam sol totus occumbisset.”

are fixed and the stars move and also that the heavens are not hard and impenetrable like iron but rather soft and very easy to penetrate like air; these things I knew already; but what I wished to learn from Your Excellency is how to save the motions of the sun and of the stars and especially of those which are fixed [...]. When I was young, I tried to save the motion of the planets from west to east [...] by saying that their motion from east to west was not in twenty-four hours for all of them but for the Sun it was twenty-four hours, for the moon it was twenty-four and a quarter, making it appear that the moon in its own motion had turned somewhat backwards, so that little by little it went away from and then approached the sun. As for the motion of the planets from the south to the north, I tried to explain it by saying that the motion of the planets was not a perfect circle but a spiral, and so little by little they would pass from the south to the north and then would return by the same route [...].

There is some additional indication in the 1615 booklet that Bellarmine's Biblical cosmology departed from the "Ptolemaic-Aristotelian paradigm" (to use Kuhn's expression) in relation to the causation of celestial motions through material spheres. In discussing the nocturnal motion of the moon and the stars, Bellarmine expressed some doubt concerning the quintessential nature of heaven:

"We are not unaware that some inferred from the motion of the stars that the nature of the heaven is a fifth essence, which is simple, incorruptible, and is continuously moved in circle [*in orbem*]. But we also know that others contended that the heaven is [made out of] elemental fire, which does not move in circle nor is incorruptible insofar as its parts are concerned. However, we do not seek for opinions but for certain science [*scientiam certam*] and the doctrine of faith. (Bellarmine 1626, p. 111)³⁷

For Bellarmine, the fixed stars are an indication of God's glory. God inhabits the heavens and illuminates the world through the sun, moon, and stars (Bellarmine 1626, p. 116). The most remarkable aspect of the fixed stars, as one reads, is that they move very rapidly and with different velocities (that is, varying linear velocities, depending on their latitude) but are able to always maintain the same configuration (*proportio cum aliis*)

37. "Non ignoramus quidem, non defuisse, qui ex motu siderum naturam caeli definerint quintam essentiam, simplicem, incorruptibilem, et quae perpetuo moveatur in orbem; sed scimus etiam, non defuisse alios, qui caelum esse voluerint elementum ignis, quod non moveatur in orbem, nec sit incorruptibilem secundum partes; nos autem non opiniones, sed scientiam certam aut doctrinam fidei quaerimus."

in the most harmonious manner (*concentus harmonicus*). As one reads in Job: *Quis enarrabit caelorum rationem, et concentum caeli quis dormire faciet?* (“Who can declare the order of the heavens, or who can make the harmony of heaven to sleep?”) (Job 38:37). As Bellarmine explains, this *concentum* is no vocal harmony but an admirable proportion of motions, which relates both to the fixed stars and the planets (Bellarmine 1626, pp. 117–18).

Bellarmino ascribes to the moon a special symbolic meaning. Its phases are a representation of the importance to join God and to mistrust natural reason. In fact, the moon represents man while the sun represents God. When the former is most distant from its source of light, its disk is fully illuminated and induces us to look down to terrestrial things. As a consequence, we forget the heavens and God. By contrast, when the moon is conjoined with the sun, its disk is entirely dark. In this manner we are induced to raise our eyes and souls to the starry heavens, and leave the lower nature behind (Bellarmine 1626, pp. 112–13). This is the reason wherefore Augustine established that Easter should be celebrated after the full moon, when the moon starts to rejoin the sun (Bellarmine 1626, p. 113). Hence, the moon is the symbol of human sin and redemption. In the moment in which it is more brilliant and invites the natural reason to look down to the illuminated earth, it is actually most deceitful.

Bellarmino asserts that after the contemplation of the material cosmos, the soul has to make a further step and abandon the external nature that is offered to the senses in order to focus on the inner world, which is immaterial. “Above all corporal things, we encounter the dignity of human souls” (Bellarmine 1626, p. 119).³⁸ From Section VIII onward, Bellarmine abandons the consideration of the corporeal world to discuss, in the second part of his ascension, the soul, the angels, and God. The ultimate importance of cosmology is located beyond cosmology. It prepares the contemplator of God’s Creation to reach beyond the “vanity of vanities” of this world. This position is antipodal with respect to Cremonini’s cosmology without transcendence.

5. Concluding Remarks

The Aristotelian philosopher Cremonini and the Jesuit theologian Bellarmine entered the cosmological controversies of the early seventeenth century by promoting cosmological conceptions that were closely tied to arguments from authority. Far from constituting a unique front according to the historiographical simplification of the “Ptolemaic-Aristotelian paradigm,” the interpretations that these intellectuals (geocentric, anti-Copernican, variously Aristotelian and, in Bellarmine’s case, theological)

38. “Iam vero supra omnium corporum dignitatem invenimus animas humanas.”

offered were quite different, especially as far as the crucial question of authority in matters of natural philosophy is concerned. The Paduan professor propagated a “radically secular” interpretation of Aristotle, while the Jesuit Cardinal and Inquisitor embraced a theological interpretation in line with the cultural requirements of post-Tridentine Catholicism. Bellarmine subordinated natural philosophy to exegesis and the authority of the Scriptures, whereas Cremonini adhered to a double truth position that insulated cosmology from revealed theology. The two thinkers also shared the criticism of the major astronomical innovation of their time, namely the planetary system of Copernicus and his followers, although their objections hinged on different worldviews and authorities, Aristotle and the Scriptures, respectively. Moreover, Cremonini supported a vision of celestial animation that was received with much concern by the Roman religious authorities as they feared that it might revive forms of paganism.

In summary, Cremonini and Bellarmine received the cosmological tradition, in particular the Aristotelian conception about the geocentric order of the cosmos, in very different, even opposite, manners, especially in relation to the connection of natural philosophy and theology, and the reconcilability of cosmology with the Scriptures. As a perspective of further research, it should be investigated how far such differences can be explained against the background of institutional and political conflicts between university education and Jesuit teaching, as well as between the interests of the political authority of Venice and the religious ones of Rome. To be sure, Cremonini was a champion of the autonomy of cosmology from theology as much as he was a defender of university autonomy from the Church.

As for his role and that of Bellarmine’s pious cosmology in the scientific debates of their time, Cremonini’s views were widely received and discussed by natural philosophers and theologians, as the reactions among Roman circles witness. As for Bellarmine, his booklet *De ascentione mentis* directly tackled the Scriptural concerns raised by cosmological debates and, less directly, the physical problem (i.e., natural philosophical) in a moment in which the Copernican debate made them of crucial cultural relevance in Italy. The time and impact (which still needs to be fully assessed) of these two publications makes the *Disputatio de coelo* and the *De ascentione mentis* particularly relevant sources in the context of early modern cosmological controversies and disputes of authority in matters of natural knowledge.

This reassessment of Cremonini’s and Bellarmine’s positions invites us to reconsider the pluralism that characterized the conceptions, the legitimation strategies, and authorities that were mobilized and reinterpreted in the polemical context of the early-seventeenth century. Just as there was no unified Aristotelianism that opposed the new cosmology, there was no

unified geocentrism, even before the geo-heliocentric option was established as an influential third way among Catholics who cared for orthodoxy, particularly the Jesuits, after the 1616 censorship of the Copernican system. There were multiple “Aristotles” whose authority was used in different instances, showing a high degree of flexibility in the use of his “authority.” In conclusion, we ought to reach a sharper and more differentiated vision of the conceptions and epistemic values, which were both intellectual and institutional, of the multiple fronts of the cosmological controversies, as these cannot be reduced to a “Copernican” or “Galilaeian” pro- or contra-battle. Building upon these premises, we can gain a more integrated picture and a more nuanced comprehension of the events, the actors’ choices, and their ideas in crucial years for the history of modern scientific culture.

References

- Baldini, Ugo. 1984. “L’astronomia del cardinale Bellarmino.” Pp. 293–305 in *Novità celesti e crisi del sapere*. Edited by Paolo Galluzzi. Florence: Giunti Barbèra.
- Baldini, Ugo, and George V. Coyne. 1984. “The Louvain Lectures (*Lectiones Lovanienses*) of Bellarmine and the Autograph Copy of His 1616 Declaration to Galileo.” *Vatican Observatory Publications, Special Series, Studi Galileiani* 1(2).
- Baldini, Ugo, and Leen Spruit, eds. 2009. *Catholic Church and Modern Science: Documents from the Archives of the Roman Congregations of the Holy Office and the Index*. Rome: Libreria Editrice Vaticana.
- Barreca, Francesco. 2013. “Cosmologia ed ermeneutica biblica nel *De ascensione mentis in Deum* di Roberto Bellarmino.” *Galilaeana* 10: 119–136.
- Bellarmino, Robert. 1615. *De ascensione mentis in Deum per scala rerum*. Lyon: Sumpt. Horatii Cardon.
- Bellarmino, Robert. 1626. *De ascensione mentis in Deum per scala rerum*. Cologne: apud Cornel ab Egmond.
- Biagioli, Mario. 1993. *Galileo, Courtier: The Practice of Science in the Culture of Absolutism*. Chicago and London: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226218977.001.0001>
- Bianchi, Luca. 1990. *Le verità dissonanti: Aristotele alla fine del Medioevo*. Rome; Bari: Laterza.
- Blackwell, Richard J. 1991. *Galileo, Bellarmine, and the Bible. Including a Translation of Foscarini’s Letter on the Motion of the Earth*. Notre Dame, IN: University of Notre Dame Press.
- Blackwell, Richard J. 2006. *Behind the Scenes at Galileo’s Trial. Including the First English Translation of Melchior Inchofer’s Tractatus syllepticus*. Notre Dame, IN: University of Notre Dame Press.

- Boner, Patrick J. 2013. *Kepler's Cosmological Synthesis: Astrology, Mechanism, and the Soul*. Leiden and Boston: Brill. <https://doi.org/10.1163/19789004246096>
- Bucciantini, Massimo, Michele Camerota, and Franco Giudice, eds. 2011. *Il caso Galileo: una rilettura storica, filosofica, teologica*. Florence: Olschki.
- Bucciantini, Massimo. 1995. *Contro Galileo: alle origini dell'affaire*. Florence: Olschki.
- Chang, Kevin. 2011. "Alchemy as Studies of Life and Matter: Reconsidering the Place of Vitalism in Early Modern Chemistry." *Isis* 102(2): 322–329. <https://doi.org/10.1086/660141>, PubMed: 21874692
- Contarini, Gasparo. 1571. *Opera*. Paris: Apud Sebastianum Nivellium.
- Coyne, George V., and Ugo Baldini. 1985. "The Young Bellarmine's Thought on World Systems." Pp. 103–111 in *The Galileo Affair; A Meeting of Faith and Science*. Edited by George V. Coyne et al. Vatican City: Specola Vaticana.
- Cremonini, Cesare. 1613. *Disputatio de coelo in tres partes divisa*. Venice: Apud Thomam Balionum.
- Cremonini, Cesare. 1998. *Le orazioni*. Edited by Antonino Poppi. Padua: Antenore.
- Del Torre, Maria A. 1966. "La cosmologia di Cremonini e l'inedito De coeli efficientia." *Rivista critica di storia della filosofia* 4: 373–397.
- Del Torre, Maria A. 1968. *Studi su Cesare Cremonini: cosmologia e logica nel tardo Aristotelismo padovano*. Padua: Antenore.
- Duhem, Pierre. 1969. *To Save the Phenomena: An Essay on the Idea of Physical Theory from Plato to Galileo*. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226381657.001.0001>
- Favaro, Antonio. 1878. *Lo Studio di Padova e la Compagnia di Gesù sul finire del secolo decimosesto*. Venice: Antonelli.
- Feldhay, Rivka. 1995. *Galileo and the Church: Political Inquisition or Critical Dialogue?* Cambridge: Cambridge University Press.
- Feyerabend, Paul. 1975. *Against Method: Outline of an Anarchistic Theory of Knowledge*. London: NLB.
- Finocchiaro, Maurice A. 1989. *The Galileo Affair: A Documentary History*. Berkeley: University of California Press.
- Firpo, Luigi. 2000. "Introduction." Pp. ix–cc in Giordano Bruno. *Documents I: Le procès*. Paris: Les Belles Lettres.
- Fracastoro, Girolamo. 1574. "Fracastorius sive de anima." Ff. 149r–161v in *Opera omnia*. Venice: apud Iuntas.
- Galilei, Galileo. 1901. *Le opere*, vol. 9. Edited by Antonio Favaro. Florence: Barbera.
- Galluzzi, Paolo. 2014. *'Libertà di filosofare in naturalibus': i mondi paralleli di Cesi e Galileo*. Rome: Scienze e Lettere.

- Galluzzi, Paolo. 2017. *The Lynx and the Telescope: The Parallel Worlds of Federico Cesi and Galileo*. Leiden and Boston: Brill. <https://doi.org/10.1163/9789004342323>
- Garin, Eugenio. 1966. *Storia della filosofia italiana*, vol. 2. Turin: Einaudi.
- Godman, Peter. 2000. *The Saint as Censor: Robert Bellarmine between Inquisition and Index*. Leiden: Brill. <https://doi.org/10.1163/9789004476387>
- Granada, Miguel Ángel. 2010. "A quo moventur planetae?: Kepler et la question de l'agent du mouvement planétaire après la disparition des orbes solides." *Galilaeana* 7: 111–141.
- Grant, Edward. 1994. *Planets, Stars and Orbs: The Medieval Cosmos, 1200–1687*. Cambridge: Cambridge University Press.
- Grendler Paul F. 2002. "I tentativi dei gesuiti d'entrare nelle università italiane tra '500 e '600." Pp. 37–51 in *Gesuiti e università in Europa (secoli XVI–XVIII)*. Edited by Gian Paolo Brizzi e Roberto Greci. Bologna: CLUEB.
- Guerrini, Luigi. 2010. *Cosmologie in lotta: le origini del processo di Galileo*. Florence: Polistampa.
- Kuhn, Thomas S. 1959. *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought*. New York: Random House.
- Kuhn, Thomas S. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lagalla, Giulio Cesare. 1622. *De coelo animato disputatio*. Heidelberg: Typis Voegelianis.
- Leinkauf, Thomas. 2017. *Grundriss Philosophie des Humanismus und der Renaissance (1350–1600)*. Hamburg: Meiner. <https://doi.org/10.28937/1978-3-7873-3132-1>
- Lerner, Michel-Pierre. 2004. "Copernic suspendu et corrigé: sur deux décrets de la congrégation romaine de l'index (1616–1620)." *Galilaeana* 1: 21–90.
- Mabilleau, Léopold. 1881. *Étude historique sur la philosophie de la Renaissance en Italie (Cesare Cremonini)*. Paris: Librairie Hachette.
- Marcacci, Flavia. 2018. *Cieli in contraddizione: Giovanni Battista Riccioli e il terzo sistema del mondo*. Perugia: Aguaplano.
- Mayer, Thomas F. 2010. "The Roman Inquisition's Precept to Galileo (1616)." *British Journal for the History of Science* 43(3): 327–351. <https://doi.org/10.1017/S0007087409990069>
- Martin, Craig. 2014. *Subverting Aristotle: Religion, History, and Philosophy in Early Modern Science*. Baltimore: Johns Hopkins University Press.
- Martínez, Alberto A. 2018. *Burned Alive: Giordano Bruno, Galileo and the Inquisition*. London: Reaktion Books.
- Mayer, Thomas F. 2014. *The Roman Inquisition on the Stage of Italy, c. 1590–1640*. Philadelphia: University of Pennsylvania Press. <https://doi.org/10.9783/19780812209341>

- Merchant, Carolyn. 1980. *The Death of Nature: Women, Ecology and the Scientific Revolution*. San Francisco: Harper & Row.
- Nifo, Agostino. 2009. *L'immortalità dell'anima: Contro Pomponazzi*. Edited by José Manuel García Valverde. Turin: Arago.
- Nifo, Agostino. 2011. *De intellectu*. Edited by Leen Spruit. Leiden and Boston: Brill.
- Omodeo, Pietro Daniel. 2014. *Copernicus in the Cultural Debates of the Renaissance: Reception, Legacy, Transformation*. Leiden and Boston: Brill. <https://doi.org/10.1163/9789004254503>
- Omodeo, Pietro Daniel. 2019. "A Cosmos without a Creator: Cesare Cremonini's Interpretation of Aristotle's Heaven." *Journal of Early Modern Studies* 8: 9–42. <https://doi.org/10.5840/jems20198211>
- Omodeo, Pietro Daniel. 2020. "Presence/Absence of Alexander of Aphrodisias in Renaissance Cosmo-Psychology." Pp. 175–193 in *Alexander of Aphrodisias in the Middle Ages and the Renaissance*. Edited by Pietro B. Rossi, Matteo Di Giovanni, and Andrea A. Robiglio. Turnhout: Brepols. <https://doi.org/10.1484/M.SA-EB.5.120542>
- Omodeo, Pietro Daniel, and Jürgen Renn. 2019. *Science in Court Society: Giovanni Battista Benedetti's Diversarum speculationum mathematicarum et physicarum liber (Turin, 1585)*. Berlin: Edition Open Access.
- Pomponazzi, Pietro. 2013. *Tutti i trattati peripatetici*. Edited by Francesco Paolo Raimondi and José Manuel García Valverde. Milan: Bompiani.
- Poppi, Antonino. 1992. *Cremonini e Galilei inquisiti a Padova nel 1604: nuovi documenti d'archivio*. Padua: Antenore.
- Prins, Jacomien. 2015. *Echoes of an Invisible World: Marsilio Ficino and Francesco Patrizi on Cosmic Order and Music Theory*. Leiden/Boston: Brill. <https://doi.org/10.1163/9789004281769>
- Regier, Jonathan. 2014. "Kepler's Theory of Force and His Medical Sources." *Early Science and Medicine* 19(1): 1–27. <https://doi.org/10.1163/15733823-00191p01>, PubMed: 24988759
- Riccioli, Giovanni Battista. 1651. *Almagestum novum astronomiam veterem novamque complectens*. Bologna: Ex Typographia Haeredis Victorii Benatii.
- Rossi, Paolo. 1977. "La negazione delle sfere e l'astrobiologia Di Francesco Patrizi." Pp. 401–439 in *Il Rinascimento nelle corti padane: società e cultura*. Bari: De Donato.
- Sangalli, Maurizio, ed. 1998. *Apologie dei Padri Gesuiti contro Cesare Cremonini (1592)*. Padua: La Garangola.
- Sgarbi, Marco. 2017. "What Does a Renaissance Aristotelian Look Like? From Petrarch to Galilei." *HOPPOS* 7(2): 226–245. <https://doi.org/10.1086/693421>
- Spruit, Leen. 2000. "Cremonini nelle carte del Santo Uffizio romano." Pp. 93–206 in *Cesare Cremonini: Aspetti del pensiero e scritti*, 2 vols.,

- vol. 1. Edited by Ezio Riondato and Antonino Poppi. Padua: Accademia Galileiana di Scienze, Lettere ed Arti.
- Swerdlow, Noel M. 2004. "An Essay on Thomas Kuhn's First Revolution: *The Copernican Revolution*." *Proceedings of the American Philosophical Society* 148(1): 64–120.
- Westman, Robert S. 1994. "Two Cultures or One? A Second Look at Kuhn's *The Copernican Revolution*." *Isis* 85(1): 79–115. <https://doi.org/10.1086/356728>
- Westman, Robert S. 2011. *The Copernican Question: Prognostication, Skepticism, and Celestial Order*. Berkeley, Los Angeles, and London: University of California Press. <https://doi.org/10.1525/9780520948167>
- Wolfe, Charles. 2019. *La philosophie de la biologie avant la biologie: Une histoire du vitalisme*. Paris: Classiques Garnier.
- Wolfe, Charles T., and Ofer Gal, eds. 2010. *The Body as Object and Instrument of Knowledge: Embodied Empiricism in Early Modern Science*. Dordrecht: Springer. <https://doi.org/10.1007/978-90-481-3686-5>
- Wolfson, Harry Austryn. 1973. "The Problem of the Souls of the Spheres from the Byzantine Commentaries on Aristotle through the Arabs and St. Thomas to Kepler." Pp. 22–59 in *Studies in the History of Philosophy and Religion*, vol. 1. Edited by Isadore Twersky and George H. Williams. Cambridge, MA: Harvard University Press.
- Zabarella, Jacopo. 1597. *De rebus naturalibus libri XXX... editio tertia*. Cologne: Sumptibus Lazari Zetzneri.