of the book; for each, she prints a star map showing the location of the stars (but, curiously, not the planets). For example, a map of 23 October 23 42 BCE is given for the Second Battle of Philippi, which saw the death of Brutus, chief assassin of Julius Caesar. On the night after the battle, Brutus is said to have looked up at the vault of the heavens, which Plutarch says was studded with stars. A philosopher by his side recorded the words spoken by Brutus that night. "Zeus, let it not escape your notice who is the cause of the evils." (page 221). Lewis says that as Brutus looked up, he would have seen Jupiter (Zeus) in Aries.

The author shows that the "… first record of an attempt by one of Rome's leading citizens to use celestial display in a political context …" was in 63 BCE when Cicero wrote a poem about Urania, the Muse of Astronomy (page 54). In that poem, he placed in the mouth of Urania words that defended his actions as consul when he controversially approved the murder of five men who were conspiring against Rome. Having translated Aratus' *Phaenomena* into Latin, Cicero was regarded as

> Rome's preeminent authority on observational astronomy … This translation had created the Latin astronomical lexicon. (page 86).

On page 99, Lewis tempers this assessment when she calls Cicero "… one of Rome's preeminent experts in observational astronomy." In any case, it is known that Octavius was familiar with the lexicon Cicero created. To spread his work further, Cicero placed a summary of his translation in the second book of his *De Natura Deorum*; it included the names and locations of 45 constellations. Lewis speculates that

> Octavius could have written down these selected verses from Cicero's translation for future reference and included rudimentary sketches. (page 100).

Lewis devotes 27 pages to a detailed description and analysis of this Ciceronian astronomical 'curriculum' that was likely used by many young Romans.

This study has never been done before, and is thus a unique contribution to the history of Roman astronomy. Curiously, Lewis does not use the name Pleaides when listing the seven daughters of Atlas, but rather calls them the Vergiliae (page 121). The link is, however, made on page 151 "Vergiliae (Pleaides)," although I note that neither 'Vergiliae' nor 'Pleaides' is indexed.

The "celestial inclination" of Augustus, which is explicitly mentioned on page 173, is the animating principle of this excellent book. It is exemplified by an account of what he did in the early hours before the Battle of Actium, which eliminated Marc Antony and Cleopatra as his final rivals. In the dark, he encountered a man and his donkey. The man, who would soon become Augustus,

> … realised that the name of the man Eutychos was related to the word Virgo, which had a special celestial significance for him in relations with Antony. Octavian considered this encounter so significant that he commemorated it later by placing a statue of the donkey named Nikon and the man at the campsite memorial. (page 267).

Octavian regarded this chance meeting with a stranger named Good Fortune, driving a donkey named Conquering, as clothed in great meaning. As Lewis notes, when he looked up that morning, the young man on the verge of a naval victory that would change history for all time could see Jupiter in the sky, and Saturn was in Gemini. Its stars Pollux and Castor "… were considered protectors on the battlefield, symbols of victory, and saviors of mariners." (page 269).

Lewis goes into great detail about the plethora of celestial signs Augustus paid homage to during his long reign as the first Roman Emperor. This is an important contribution to our understanding of how Roman society was in many ways regulated by the celestial inclinations of Augustus.

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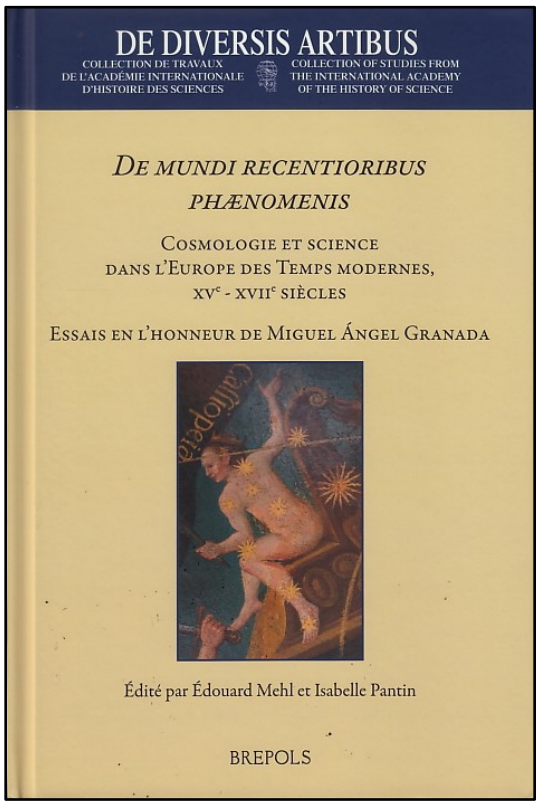
***De Mundi Recentioribus Phænomenis: Cosmologie et Science dans l'Europe des Temps Modernes, XV^e – XVIII^e Siècles, Essais en l'Honneur de Miguel Ángel Granada,* edited by Édouard Mehl and Isabelle Pantin. (Turnhout, Brepols, 2022). Pp. 484. ISBN 978-2-503-60092-5 (hardback), 160 × 240 mm, €95.**

This book is a tribute to Miguel Ángel Granada, a Catalan scholar well known for his studies of the scientific revolution of the six-

tenth and seventeenth centuries. It contains a complete bibliography of Granada's works, and 19 essays about this fascinating period for astronomy and for science in general. The Introduction and 8 essays are in French, 7 in English, 2 in Italian and 2 in German. This raises a problem: very few readers will be able to understand the totality of these papers and, furthermore, the numerous texts in Latin are not translated into French or English. Some readers will have recourse to the electronic version, which includes automatic translation software, but this is not always adapted to old languages. Probably the publisher anticipated that, and decided to sell the e-book at the same price as the printed version!



These concerns aside, this is an interesting book. The first text, in French by Isabelle Pantin, places the discussions about the 1572 supernova (not nova!) and the great comet of 1577 within the controversies about religion at the University of Rostock. Strangely, David Chytraeus, Professor of theology in this university, found a relation between these two astronomical events, the birth of Luther and the placarding of his theses at Wittenberg: they all occurred in November! The celestial events were considered as supports for the original ideas of Luther (the *Formule de Concorde*), against their numerous deviations.

Then comes an essay in English by Peter Barker, who describes in detail Copernicus' debt to Islamic astronomy, as well as other contacts with it at the same epoch (Guillaume Postel as an example). He also discusses the revival of interest for Islamic astronomy in the seventeenth century, essentially in the Netherlands, England and France, linked to travels in the Orient and Morocco. Astronomers like Hevelius asked for a translation of Persian and Arabic texts, that were not easily available: in 1634, William Laid stated that

> There is a great deale of Learning and that very fitt and necessary to be knowne, that is written in Arabicke, and there is a great defect in both our Universities [Oxford and Cambridge] … which we impute … as partly to the great scarcity and want of Arabicke and Persian Bookes. (page 71).

The next essay (in Italian) of Dario Tessicini recalls that the term of *cosmologia* seems to have been first used in 1570 by the French Antoine Mizault (ca. 1512–1578), a pupil of Oronce Fine, as the title of a re-edition of his *Cosmographiae, seu Mundi Sphaerae Libri Tres …,* with important variants. Mizault also introduced the term of *cometographia*. However, the *Encyclopédie* of Diderot and D'Alembert attributed the introduction of the word *cosmology* to Christian Wolff in 1731. But what was the meaning of this word and did it differ from *cosmography*? *L'Encyclopédie* writes:

> Cosmography differs from Cosmology in that the latter treats of the construction and formation of the Universe, while Cosmography is only its technical description. (page 78,

This is close to the modern meanings. For Mizault also, cosmology dealt with the causes and cosmography was a mere description. Kepler did not use the word cosmology but found that some contemporaries have not grasped the purpose of his *Mysterium Cosmographicum* because cosmography was then almost identical to geography.

Next, Victor Navarro Brotons discusses in English the impact of 'Celestial Novelties' in Spain between 1572 and 1618. Tycho's 1572 supernova was generally considered as a comet, but a real scientific study was made by Jerónimo Muñoz (ca. 1520–1591) who determined its position, found its absence of measurable parallax and concluded that it was "more like a star than a comet" (page

97). His manuscripts show that he was giving up many Aristotelian ideas. His book about the supernova inspired many critics and insults but Muñoz's fame was such that it had a great impact in Spain in spite of the fact that he had decided to "hide his works" (page 99). Many other Spanish authors wrote about the supernova and the great comet of 1577: the best known is Josep Micó, who observed the comet and considered that it was more distant than the Moon. Brotons discusses the ideas set forward by these authors, which covered the whole ensemble of facts and fancies about comets. Kepler's 1604 supernova raised less interest than Tycho's, with the important exception of Núñez Zamora who wrote a big book about it and more generally about the origin and nature of comets, as he considered the supernova as a comet although he could observe its lack of parallax. His ideas about the formation of comets were a compromise between the Aristotelian doctrine which states that they are formed from terrestrial exhalations and the one advocated by Muñoz, for whom comets are generated in the heavens and are celestial bodies; all this mixed with astrological considerations, of course. Brotons concludes that

> … the many questions raised by the novae and comets contributed significantly, in Spain as well as the rest of Europe, to the crisis of the Aristotelian cosmos. (page 117).

The following, short essay in English by Patrick J. Boner, is devoted to Kepler's ideas about the cosmos, largely inspired by those of Cornelius Gemma and triggered by the appearance of the 1572 supernova.

Pietro D. Omodeo and H. Darrel Rutkin then discuss (in English) the political dimensions of the astrology of Tommaso Campanella (1568–1639), with particular attention to his utopian vision in the *City of the Sun*. We can see here how people like him were still very far from a scientific vision of the world.

My knowledge of Italian is too rudimentary to be able to report about the paper that follows, by Saverio Ricci, entitled "Chi paga I ribelli?" (who pays the rebels?) with the translated subtitle "Aristocracy and philosophy in Naples at the end of XVIth century."

The next paper, by Natacha Fabbri, is in French and its title can be translated as "Relentless war and *moderatio* of the opposites: the cosmological order of Telesio." The Italian philosopher Bernardino Telesio (1509–1578) was one of the first who attempted to get rid of Aristotle's philosophy. In his *De Rerum Natura,* he developed a world system resting on a war between the principles of cold and heat, inspired by Parmenides. The paper describes this system, which concerns cosmology but extends to relations between humans.

In another study in French, Antonella del Prete examines the origin and development of the ideas of Giordano Bruno on the elements and the nature of celestial bodies.

Some time before Bruno, Paracelsus had discussed the Creation, as exposed by Didier Kahn in his essay in French. Whether or not he adopted creation of matter *ex nihilo* is still debated. On the other hand, he discussed the creation of natural bodies, proposing in particular that the minerals originate from water and grow within earth.

In a long, well-illustrated essay in German, Olivier Ribordy discusses the work on comets of Johann Baptist Cysat (1587–1657), a Jesuit who was Christoph Scheiner's assistant of at Ingolstadt. For him, in his *Mathemata Astronomica*, comets are supralunar. Unfortunately, my knowledge of German is insufficient to render a proper account of this paper.

Next, Massimo Bucciantini (in English) discusses the strange case of Paolo Antonio Foscarini (1565–1616), a Carmelite Friar who wanted to create a sort of Copernician theology. He wrote a *Letter on the Pythagorean and Copernican Opinions* which was communicated to Galileo in 1615, in the middle of controversies about the latter's discoveries, but was soon condemned by the Congregation of the Index. Foscarini defended himself, but was rebutted by Cardinal Bellarmine in a letter that was in fact a warning addressed to Galileo. The whole story, which is not very well known, is vividly reported in this paper.

The following paper by Chantal Grell, in French, relates the complicated and eventually unfruitful quest by Hevelius and in parallel by Gassendi for the manuscript observations of Tycho Brahe. However, these observations are still preserved and have been published by Dreyer (1923). I take this opportunity to mention that F. Verbunt and R. H. van Gent (2010) have analyzed the extraordinarily good quality of Tycho's stellar observations.

The final part of the book is devoted to Kepler. Édouard Mehl discusses first (in French) a note by Kepler about 'the admirable proportion of the world,' kept at Darmstadt amongst various manuscript documents by Kepler and contemporaries. It shows that Kepler was obsessed throughout his life by his polyhedral model of the Solar System, and more generally by proportions: the ratio between the distance to the fixed stars and the distance of Saturn to the Sun equal to that between the latter distance to the diameter of the Sun, etc. Guy Claessens then recalls (in English) Kepler's Platonism in his *Harmonice Mundi* (the polyhedrals having their origin in Plato) and shows that he has been more influenced by Plato himself than by the neo-Platonism of Proclus. Natacha Fabri discusses (also in English) the theological and cosmological implications of the conjectures in the Epilogue of *Harmonice Mundi*. It becomes clear when reading all this that Kepler was still a man of the Middle Ages and Renaissance, and does not belong to the generation of the more 'modern' scientists such as Galileo and followers.

An essay by Pierre Jeandillou (in French) then comments on Hegel's 1801 thesis *Dissertatio philosophica de Orbis Planetarum*, in which he wanted to make intelligible the planetary system through a fundamental principle: to conceive the nature by reason. I must confess having difficulties in understanding Hegel's reasoning, in which he admired Kepler's approach while rejecting that of Newton: this is too far from the mind of today's scientists.

The last part of the book contains a long comment by Nicolas Roudet (in French) on two unpublished horoscopes of the French King Henri IV, dated 1591 and 1595. Their texts, respectively in German and in Latin, are unfortunately not translated into English (these translations should be made available through a link to the internet). The same can be said about the unpublished letters from and to Kepler presented by Friedrich Seck in the last chapter of the book. They are certainly of high interest, and the author not only presents the letters but gives short biographies of the correspondents. Unfortunately, my very limited knowledge of German and Latin does not allow me to comment about all this.

To conclude, I found what I could read of this book interesting, but it is going to be essentially used by specialists.

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***William Dawes: Scientist, Governor, Abolitionist: Caught Between Science and Religion*, by Richard de Grijs and Andrew Jacob. (Cham, Springer, 2023). Pp xi + 272. ISBN 978-3-031-38773-9 (hardback), 235 × 155 mm, US$79.99.**

Early European visitors to Australia, including James Cook and the astronomer Charles Green in 1770 and Lapérouse's astronomer, Joseph Lepaute Dagelet, in 1788, made astronomical observations. However, William Dawes was the first European astronomer to set up a longer-term observatory in Australia. He came on the First Fleet as a Second Lieutenant of Marines with the task of setting up an observatory to search for a comet. That comet had been first suggested by Edmond Halley and, subsequently, by the Astronomer Royal, Nevil Maskelyne.

Dawes set up his observatory on the west side of Sydney Cove in the area that became known as Dawes Point (although recently its Aboriginal name of Tar-Ra has been revived). From this site he searched for the mooted comet, finding that it did not eventuate, and made other astronomical observations, as well as keeping meteorological records. He did much else besides. On the voyage of the fleet from England he helped to track the position of the ships, while in Sydney he was also given a number of non-astronomical tasks, such as engineering, exploring and surveying. On his own initiative, he made friends with the local First Nations people and compiled notes on their language. It is this last project that is Dawes' most lasting legacy.

As related in this new book on Dawes' life, he had a complex personality. He was a high-performing individual with compulsive