

The First Astronomical Text Published in the American Continent

Marco Arturo Moreno-Corral and William J. Schuster

Institute of Astronomy, Universidad Nacional Autónoma de México,
Apartado Postal 106, Ensenada, Baja California, 22800, México
email: mam@astro.unam.mx
email: schuster@astro.unam.mx

Abstract. In 1539 the Italian Giovanni Paoli, better known as Juan Pablos, began operating in Mexico City the first printing press that existed in the New World. The first books he printed were religious texts, vocabularies of some indigenous languages of Mexico, and compilations of ordinances and laws. In 1556 followed the *Sumario compendioso de las cuentas*, a text of arithmetic and algebra that was the first American mathematics book. A year later, he printed the *Physica Speculatio* by friar Alonso de la Veracruz, a text of Natural Philosophy that dealt with Aristotelian works such as Physics, On the Heavens, and Meteorology. As part of this book, was included the text of geocentric astronomy written during the thirteenth century by the Italian mathematician Giovanni Campano de Novara, entitled *Tractatus de Sphaera*, where the author discussed, from a geometric perspective, the cosmic structure and the stellar distribution. No doubt this is the first astronomical treatise that was published in the entire American continent, which is why it is emphasized here.

Keywords. Juan Pablos, New World, *Physica Speculatio*, Aristotle, *Tractatus de Sphaera*, astronomical text

1. Alonso de la Veracruz and the *Physica Speculatio*

In 1551 the Royal University of Mexico was created, beginning courses in 1553. Among the first professors was friar Alonso de la Veracruz, who was trained at the University of Salamanca, Spain, where, before moving to the New World, he had taught courses in Natural Philosophy. Within the university structure of the time, this was where students were taught disciplines such as astronomy, physics and geometry. In 1557 he wrote and published in New Spain a voluminous text in Latin, entitled *Physica Speculatio*, which he used to teach to the young university students the foundations of the Aristotelian physics. In the part that he dedicated to explain geocentric astronomy, he discussed Aristotle's *De Caelo*. However, because de la Veracruz considered the cosmogony model of the Stagirite insufficient, he included as an appendix of his work a complete geocentric book. This followed the geometric ideas, that in the second century A.D., Ptolemy had written to explain the movement of the stars and planets.

2. Giovanni Campano de Novara and the *Tractatus de Sphaera*

This book was the *Tractatus de Sphaera* written by the 13th century Italian astronomer Giovanni Campano de Novara, which was printed for the first time in 1518 (Toomer 1971). This work consists of 54 chapters dealing with topics such as the main themes of the *Almagest*, such as the shape of the Heavens, the central place of the Earth, the main circles of the celestial sphere, the movement of the wandering stars, the sphere of the fixed stars, as well as solar and lunar eclipses (De la Veracruz 2012). This medieval book, that

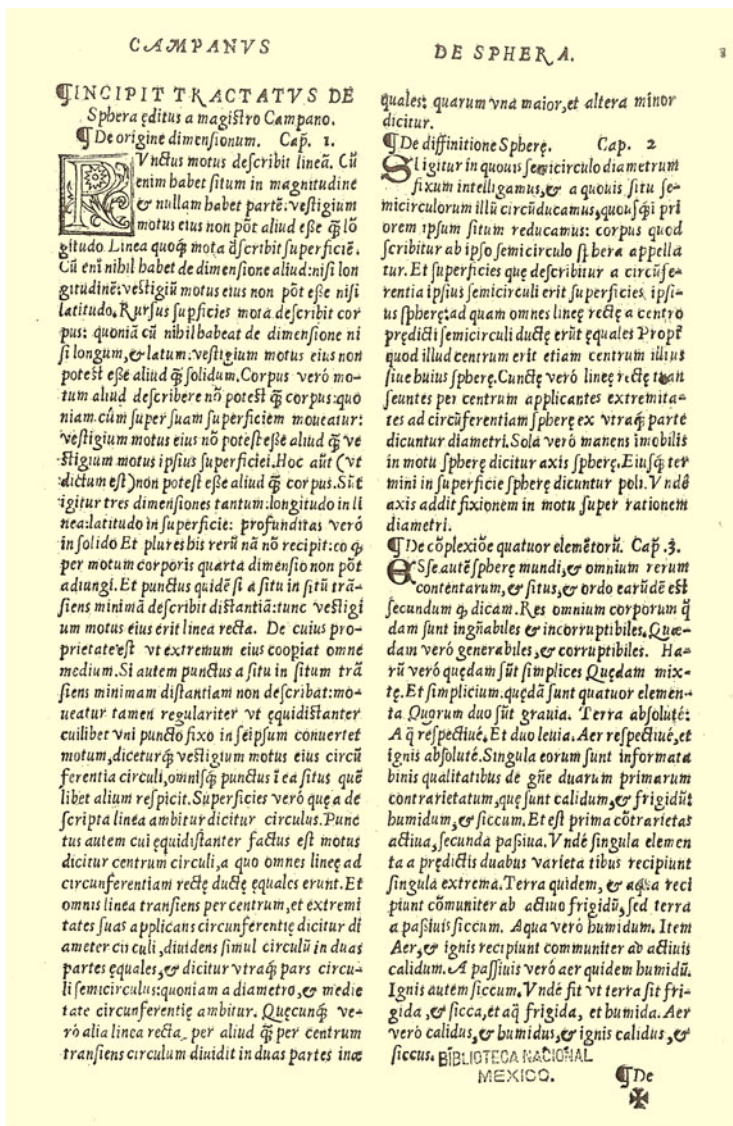


Figure 1. First page of the *Tractatus de Sphaera* in the Mexican edition of 1557 (De la Veracruz 2012).

also explained the retrograde movement of the planets, did not have the philosophical weight of the Aristotelian works, because it put emphasis on the geometric study of the movement of the stars and planets (Moreno-Corral 2004), more than the physical representation of the sky and its philosophical interpretation. To put that knowledge in context, it must be remembered that this was the astronomical science that was then taught in European universities, so it should not be surprising that the same happened in the courses of Natural Philosophy that from 1553 were taught in New Spain, using books like *Tractatus de Sphaera*.

3. Conclusion

Without a doubt Campano's astronomical book was the first text that was used in the New World for the university-level teaching of astronomy. The students learned from him

the generalities of geocentrism and the way in which this knowledge was applied to the practical determination of the movement of the celestial bodies and very particularly the calculation of eclipses, which were used in New Spain of the sixteenth century especially with cartographic purposes (Portuondo 2009). Another important fact of this work that has generally gone unnoticed is that although it is a text of geocentric astronomy, in it a brief mention was made of heliocentrism and geoheliocentrism, which happened at a time when neither of these two systems of the world were accepted. This makes the *Tractatus de Sphaera*, the first book published in America that referred to these issues, undoubtedly remarkable.

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