

## Review

Luís SARAIVA, and Catherine JAMI, eds., *The Jesuits, the Padroado and East Asian Science (1552–1773)* (London: World Scientific, 2008). xiii+229 pp.

The book is the outcome of the third conference on the “History of Mathematical Sciences: Portugal and East Asia” held in 2005. The previous, second conference held in 1998 resulted in the publication of *Scientific Practices and the Portuguese Expansion in Asia (1498–1759)*, edited by Luís Saraiva, one of the editors of the book under review. Compared with the previous volume, the contributors to the present volume include scholars from the younger generation, especially those from East Asia, who actively study the subject today.

The Portuguese word “*padroado*” in the title means “patronage” in English and, as the editors explain in their introduction, it denotes “a set of privileges granted by the Pope to the Portuguese crown,” including the administration of funding and the nomination of persons to be sent to overseas territories. The historical significance of this concept is shown in the paper by the other co-editor, Catherine Jami. (Chapter numbers are not allocated to the papers in the book.) In it, Jami focuses on the activity of a Portuguese Jesuit, Tomé Pereira, who served at the court of the Kangxi Emperor for 35 years, from 1673 until Pereira’s death in 1708. Jami first shows Pereira’s service as a skillful maker of clocks and musical instruments, which impressed the Chinese imperial audience, including the Emperor. She then discusses the issues relating to the *padroado*. The Jesuit missionaries sent to East Asia were not solely Portuguese, but also included other nationalities, and the different national loyalties sometimes caused political conflict among the missionaries working abroad. From the 17th century, Portugal declined, while France rose under Louis XIV. With this political background at home, the Portuguese Pereira attempted to keep control of the Jesuit missionaries under the Portuguese. When French Jesuits arrived in Beijing with a set of astronomical instruments offered by the King, Pereira ordered them not to carry these instruments outside the college, thus practically forbidding their observational activity and preventing them from acquiring higher recognition in the Imperial court. Through the study of Pereira’s career, Jami reminds readers that Jesuit missionaries in fact worked in the milieu of “the political, social, and cultural intricacies.”

The contents of the other eight chapters will be explained below.

In the first paper, Saraiva cites the extraordinary work on the history of Portuguese mathematics composed by the mathematician Francisco de Borja Garção Stockler as early as in 1819. In it, the 19th-century mathematician blamed Jesuits’ too rigid pedagogical pol-

icy for the decline of Portuguese mathematics. Saraiva explains the history of Portuguese mathematics and discusses its historiographical issues, tracing the works composed by five scholars, from the pioneering treatise by Stockler to the one by Pedro José da Cunha in 1940. Besides the historiographical problems raised by Stockler, Saraiva notes several findings in the cited works which will interest modern readers.

Ugo Baldini contributes a paper which provides basic and useful information on the thematic subject of the symposium. The content of this 47-page, densely annotated article is precisely indicated by its unusually long title: “The Jesuit College in Macao as a meeting point of the European, Chinese and Japanese mathematical traditions. Some remarks on the present state of research, mainly concerning sources (16th–17th centuries).” The paper provides not only basic knowledge about the social, institutional, and pedagogical backgrounds of Jesuit missionaries in East Asia, but also information about available archival sources and possible research themes for the sake of research-oriented readers. In 1594, Alessandro Valignano “the great visitor of Asian Jesuit missions” founded a college in Macao with a curriculum to teach grammar, rhetoric, philosophy, and theology, following those courses given at colleges in Goa and elsewhere. The three-year course on philosophy contained the subjects of logic, natural philosophy, and metaphysics, and for teaching natural philosophy, they usually relied on Sacrobosco’s astronomical textbook *Tractatus de sphaera* before teaching Aristotle’s works. This educational policy formed the background for the initial introduction of Western cosmology to Japan and China. Both *Tianwenlüe* (*Compendium of Astronomy*) and *Kenkon Bensetsu* (*Discussion of Heaven and Earth*) had contents similar to, though not identical to, that of the medieval textbook. Baldini further introduces Jesuit mathematicians who came to Macao, and indicates Macao as a hub of daily and scientific communication between Europe and East and South East Asia. These historical explanations are followed by the historiographical accounts of archival sources and suggestions for possible research topics. Baldini shows the availability of teaching and administrative materials and correspondence in Europe, and expects that still more are to be found in the case of informal letters from missionaries to their superiors, masters, and friends.

Hiraoka Ryuji addresses the earliest books which introduced Western cosmology in Japan. They were all based on the textbook on spherical astronomy written by the Jesuit Pedro Gomez in 1593 to teach astronomy at the Jesuit colleges founded in Japan. Gomez’s book became the origin and source of four Japanese books composed in the mid-17th century: *Nigi Ryakusetsu*, *Kenkon Bensetsu*, *Nanban Unkiron*, and *Tenmon Biyo*. In his paper, Hiraoka mainly discusses the availability—number and location—of the existing copies of these four works, after his brief explanation about their contents and their characteristics.

In the next two papers, Henrique Leitão and Rui Magone pick up Manuel Dias’s *Tianwenlüe*, and explore its scientific contents, its historical contexts, and its subsequent textual traditions. Like Gomez’s book, Dias’s book was also a textbook on celestial spheres for Jesuit students. Aside from this traditional content, it notably referred to the telescopic observations made by “a famous Western scientist,” Galileo. As Leitão emphasizes, this reference by the Jesuits living in China was made only a few years after the Italian discovery. Reading the description in the book, Leitão conjectures that the author knew about

Galileo's novel observations either from correspondence or conversation, and speculates on several possibilities for this route of communication.

The Korean historian Lim Jongtae examines how Chinese literati scholars accepted or rejected Western cosmology in the early 17th century. He first cites the famous remark of Fang Yizhi (方以智): "The learning from the Far West is detailed in 'zhice (質測)', but deficient in speaking about 'tongji (通幾)'." Though this remark has often been interpreted to mean the Chinese acceptance of Western science and their rejection of Western religion, Lim argues that Fang and other scholars of his group questioned and criticized the epistemological foundations of Western science. He particularly pays attention to the criticism by Jie Xuan (揭暄) of the implicit assumption of Western optics that light travels in a straight line. If light could also travel along a curved line, as Jie Xuan asserts, the observational foundation of Western astronomy would be undermined. Fang agreed with Jie, and further argued, interestingly, that a defect of Western learning exemplified by this criticism can be attributed to Westerners' obsession with precise measurement and fast calculation. Although Fang, Jie, and their friends introduced and accepted some part of Western scientific knowledge, they also criticized its fundamental concepts and epistemological grounds.

The Chinese historian Shi Yunli turns attention to the Korean scholars who introduced Western astronomy through Chinese textbooks. He especially examines the transmission and apprehension of *Lixiang Kaocheng Houbian* (曆象考成後編), which introduced Kepler's planetary laws and Newton's mechanics. The work was purchased by the Translator Officials sent from Korea to Beijing. It was Sō Ho-su who first authored astronomical works based on the scientific content of this Chinese treatise. Shi cites an episode which made Sō believe in his scientific superiority over Chinese astronomical experts. In contrast to official astronomers, who tended to focus only on the technical aspects of the treatise, Ch'oe Han-gi, who worked outside the official institution, accepted its heliocentric cosmology and discussed the natural philosophy implied in it.

Alexei Volkov explores the astronomical activity in 17th-century Vietnam through the reports of Jesuit visitors. Christoforo Borri, who stayed in Cochinchina from 1618 to 1622, predicted the lunar eclipse in Vietnam, and according to his account, successfully converted Vietnamese to Christianity because of his successful prediction. Volkov examines this episode through other Jesuit accounts and develops its plausible story. Reading Borri's and others' accounts, he also infers the institutional conditions of Vietnamese astronomers at the time: the existence of the two different types of astronomers under the king and under the prince, the defects in Vietnamese astronomy due to the use of an inadequate astronomical table, and the decent mathematical ability of Vietnamese astronomers. As is stated in the beginning, "The readers will see that the exploration of the Western sources provides interesting and sometimes unexpected answers to the questions concerning Vietnamese astronomy that cannot be answered solely on the basis of the analysis of the Vietnamese sources." This observation would be shared by the Japanese and Chinese cases as well.

All the papers collected in the book are well-documented and well-investigated products describing the Jesuits' activities in East and South East Asia and native scholars' responses to them. All of the papers are informative and instructive, enumerating primary

and secondary sources and covering basic background knowledge as well as thematic issues about the subject. This is an excellent collection of papers authored by symposium participants of different nationalities. The fruitful collaboration of participant presenters and their contributions to this volume are owed, in no small part, the reviewer assumes, to the editorial and coordinating efforts of the two editors who have successfully overcome the possible historiographical and linguistic differences among participants. The book is recommended for all general and scholarly readers who are interested in the introduction of Western science to East Asia, whether they aim to research this subject or not.

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