The Attitude of The Chinese and Vietnamese Ruling Class Towards Western Astronomy From the 16th to the 18th Centuries

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Abstract

From the 16th century to the 18th century, in order to realize the goal of promoting its propaganda and strengthening the influence of Christianity in China and Vietnam, Western missionaries, especially Jesuit missionaries, applied the method of “missionary academic” and “missionary bibliography” thoroughly, effectively and creatively. As a result, Western science and technology in general, and astronomy in particular, were gradually introduced into these two countries. The ruling class in China and Vietnam still had a few critical and negative reactions to such moves, but in general openness to and active acceptance of Western astronomical achievements were always the dominant attitudes of emperors, kings and mandarins in these two countries.

On the basis of taking advantage of the original historical data sources and research achievements of Chinese, Vietnamese and international scholars, and at the same time combining the application of the research method of historical science along with other approaches, especially the comparative research method, this article will thoroughly analyse the attitude of the ruling class of China and Vietnam in receiving Western astronomy. This article also clarifies the main cause for the difference in the reception of Western astronomy by emperors, kings and mandarins in these two countries, thereby making a contribution to the study of the history of East-West cultural exchanges in China and Vietnam in the 16th, 17th and 18th centuries.

Keywords: Chinese, Vietnamese, ruling class, Jesuit missionaries, Western astronomy

Odnos kitajskega in vietnamskega vladajočega razreda do zahodne astronomije od 16. do 18. stoletja

Izvleček

Zahodni misijonarji, zlasti jezuiti, so od 16. do 18. stoletja temeljito, učinkovito in ustvarjalno uporabljali metodo »misijonarja akademika«, da bi promovirali in utrdili vpliv

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Introduction

Upon arrival in China and Vietnam in the 16th to 18th centuries, Jesuit missionaries soon realized that these countries were either one of the cradles of Oriental astronomy (in the case of China) or received and thoroughly applied the foundations of Oriental astronomical knowledge (in the case of Vietnam) from a very early period. They also recognized the attitude of respecting and highly appreciating observational and astronomical work by the emperors and mandarins of these lands, where there was always an astronomical agency with mandarins who were knowledgeable about performing scientific tasks, such as creating calendars and carrying out surveys and calculations of solar and lunar eclipses, star observations, weather forecasting and also spiritual and mystical tasks, such as the evaluation of Fengshui 風水, prediction of a good or bad dates and times, and the prediction of good and evil from abnormal astronomical and natural phenomena (Yao 2004, 43; Shi 2002, 54; Truong 2017, 28–29). Besides, they also discovered that the calculation and forecasting of the solar and lunar eclipses of the contemporary Chinese and Vietnamese astronomers were often not completely accurate or correct (Zhao 1977a, 1657; Borri 1931, 373–74). As a result, Jesuit missionaries decided to use Western astronomical knowledge to help the rulers in these two countries overcome their weaknesses in these areas, thereby hoping to access and convert the ruling class, or at least receive the sympathy of the Chinese and Vietnamese emperors, kings and mandarins for the Christianity propaganda they were tasked with spreading. Meanwhile, at certain stages or times, and due to a variety of causes and purposes, when hearing that Jesuit missionaries had arrived in an imperial
city or other area, the emperors, kings and mandarins of China and Vietnam often issued a summoning command to invite the missionaries to the palace so that they to directly interact with these foreigners and so acquire Western knowledge in general and astronomy in particular. There were thus extremely favourable conditions for Western astronomy to be introduced and accepted by the ruling class in both China and Vietnam in the 16th, 17th and 18th centuries.³

**Chinese Ruling Class: Openly Receiving Western Astronomy for Cultural Exchange**

Jesuit missionaries arrived in China in the late Ming dynasty. However, right from the beginning they encountered boycotts and opposition from the court and the people. Matteo Ricci – the pioneer of missionary work in China – noted that the Chinese followed the concept of “respecting God” profoundly, as well as “considering agriculture as a foundation” of the nation, but he also discovered that the astronomical achievements in China, and especially the calendar, had some shortcomings (Zhao 1977a, 1657). So he used Western astronomy to help the Ming

³ From the 16th century to the 18th century, in response to the introduction of European science and technology into China, including astronomy associated with the role of Jesuit missionaries, a small part of the ruling class in China had a critical attitude towards receiving Western achievements in astronomy, leading to boycotts and other forms of rejections. Although the Datong Calendar that was used in the late Ming dynasty had many errors and was carefully corrected by Jesuit missionaries, some mandarins, notably Xu Dashou 許大受 and Lin Qilu 林啟陸, had a conservative view, criticized the Jesuit missionaries and stubbornly defended traditional concepts with regard to calculating and issuing the calendar used in China. They said that calculating and issuing the calendar was the court’s business, and other forces in society were not allowed to engage in such work. Therefore, the act of calculating and revising the calendar, as carried out by the Jesuit missionaries, was suspected of being intended to upset the Ming dynasty. The mandarins expressed their scepticism about the accuracy in calculating the calendar and astronomic events as practiced in the West. During the Qing dynasty, and under the reign of Kangxi 康熙, a conflict between Chinese and Western astronomy erupted, when several mandarins of headed by Yang Guangxian 楊光先 fiercely criticized Johann Adam Schall von Bell and other Jesuit missionaries, and argued that the calculation and compiling of the calendar produced by these missionaries had many errors. In Vietnam, during the 16th, 17th and 18th centuries, although the historical data sources from the royal court do not mention any strong criticisms from Vietnamese mandarins with regard to Western astronomy, and certainly not to the extent seen in China, some Jesuit missionaries noted their debates with the mandarins in charge of astronomy and the calendar, in particular in terms of the timing of solar and lunar eclipses. Despite this, the boycott and antagonism of some Vietnamese and Chinese mandarins with regard to Western astronomy from the 16th century to the 18th century was a single phenomenon, albeit not popular and continuous, so it was not a dominant trend in society. On the contrary, the openness and proactive acceptance of Western astronomical achievements were still the dominant attitudes of the ruling class in both countries. (Sun 2015, 55; Zhao 1977c, 10021‒024; Huang 1991, 12‒15; Wang 2008, 22; Borri 1931, 376‒81; Luis 1628,122‒23).
dynasty revise the Datong Calendar 大統歷 to realize his missionary purpose. In Ricci’s opinion, Western astronomy and the revised calendar could create a connection between two completely different cultures that made it possible for the Christian God to be in harmony with the royal authority of Chinese emperors. In short, if astronomy was not applied, the mission could not be successful (Pfister 1932, 175). Thus in 1605 Ricci pleaded with the Roman Pope to urgently dispatch astronomers and others who were familiar with calculating calendars to Beijing (Stürmer 1989, 6). Meanwhile, the emperors and mandarins of the Ming dynasty were also quite open to using missionaries and receiving the achievements of Western astronomy. In fact, in the late Ming dynasty—the first half of the 17th century—and in response to the introduction of Western science associated with the promotion of Christianity into China by the Jesuits, many contemporary mandarins and intellectuals were attracted by the new astronomical knowledge originating from Europe. Of these, Li Zhizao 李之藻 and Xu Guangqi 徐光啟 are two of the most prominent names (Liang 2001, 321). They repeatedly petitioned to the Emperor of the Ming dynasty to approve the establishment of a specialized agency to use the Western method to revise the applicable Datong Calendar 大統歷 which had many errors (Fang 1966, 424). That was then also approved by Chongzhen 崇禎—the last emperor of the Ming dynasty. In 1629, the Calendar Bureau was established, using Jesuit missionaries Nicholas Longobardi 龍華民, Johann Schreck 鄭玉涵, Johann Adam Schall von Bell 湯若望 and Giacomo Rho 羅雅谷 to revise the calendar.2 With the constant efforts of the missionaries, until 1634, the Western-style revised calendar was completed and called the Chongzhen Calendar 崇禎曆書. In particular, recognizing the necessity for the Western astronomical instruments for observational and astronomical activities, Xu Guangqi 徐光啟—one of the typical mandarins at that time advocated speeding up the acceptance of the Western astronomical and calendar achievements; he had petitioned Emperor Chongzhen 崇禎 of the Ming dynasty twice in July and September of 1629 for approving the manufacture of some new Western astronomical instruments that the Chinese had never known before such as the Quadrant 象限儀, the Sextant 紀限儀, the Astrolabe 星盤, the Celestial globe 天球儀, the Terrestrial globe 地球儀, the Sun-dial 日晷, the Star-dial 星晷, and the

2 When the Calendar Bureau 歷局 was founded in 1629, two Jesuit missionaries named Niccolo Longobardi 龍華民 and Johann Schreck 鄭玉涵 involved in revising the calendar here. However, because missionary Niccolo Longobardi paid more attention to the mission, in fact, the work of revising the calendar was in charge of missionary Johann Schreck. After Johann Schreck died (1630), two other Jesuit missionaries named Johann Adam Schall von Bell 湯若望 and Giacomo Rho 羅雅谷 continued to revise the calendar here. Thus, from 1629 until 1634—the time to complete the revision of Datong Calendar 大統歷, there were a total of four Jesuit missionaries working at Calendar Bureau 歷局 (Xu 1984, 343–44, 427–28; Song 2006, 122–23).
Telescope 望遠鏡 (Xu 1984, 336, 341‒42). Subsequently, the design and manufacture of these astronomical instruments were assigned by the Emperor Chongzhen 崇禎 to the missionary Johann Schreck 鄧玉涵, Johann Adam Schall von Bell 湯若望, and Giacomo Rho 羅雅谷. Until 1634, along with the completion of revising the Datong calendar by the Western method, these astronomical instruments were also manufactured (Xu 2004, 436). These were typical examples of the interest and willingness of the ruling class of the Ming dynasty at that time to receive the Western astronomical achievements brought by the Jesuit missionaries.

In the Qing dynasty, in recognition of the superiority of Western astronomy compared with the traditional astronomical and calendar system, the emperors of Qing dynasty ruling the country in the 17th and 18th centuries, including Shunzhi 顺治, Kangxi 康熙, Yongzheng 雍正, and Qianlong 乾隆, consistently followed the thought of respecting the missionaries and openly receiving the Western astronomical knowledge and technology, although at that time their attitude towards Christianity was quite complicated and constantly varied. However, in the late Ming dynasty period, the use of Western missionaries in the field of astronomy was only limited to revising the calendar, while in the 17th and 18th centuries, the Western missionaries were increasingly engaged in various professional jobs at Qin Tian Jian 欽天監—astronomical agency of Qing dynasty, especially holding the highest management positions of this agency. In fact, from Kangxi 康熙 of the 8th imperial year (1669), the appointment of the Western missionaries to hold the position of Zhili lifa 治理曆法 (the position specialized in the calculation and compilation of the calendar) was applied (Zhao 1977b, 3325) and lasted until Yongzheng of the second imperial year (1723). From 1724 to the late 18th century, the use of the Jesuits in the management of the Bureau of Astronomy of the Qing dynasty was raised to a new and breakthrough level when the missionaries of this society were gradually appointed into positions of Jianzheng 監正 (Director) and Jianfu 監副 (Vice Director)—the highest management positions of the Astronomical Agency of Qing Dynasty (Shi 2001, 333). According to the statistics of the author of Wu Boya 吳伯婭, in the 17th and 18th centuries, three emperors Kangxi 康熙, Yongzheng 雍正, Qianlong 乾隆 appointed a total of 16 Western missionaries to hold positions in the Bureau of Astronomy (Wu

3 The 17th century and 18th century were the periods of time of recording a constant change in the attitude of the Qing dynasty emperors toward Christianity. Under the reign of Shunzhi 顺治 (1644–1661), this emperor applied an extremely open and friendly policy towards Christianity and missionaries. However, under the reign of Kangxi 康熙 (1662–1722), he began to enforce the policy of banning the religion, expelling missionaries, but not really drastically. From 1723 to 1795, during the reign of two emperors of Qing dynasty named Yongzheng 雍正 (1723–1735), Qianlong 乾隆 (1736–1795), the prohibition of Christianity became even more fierce and drastic (Zhang 2016, 131–32).
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2002, 223), in which there were 14 Jesuit missionaries, including Johann Adam Schall von Bell 湯若望, Ferdinand Verbiest 南懷仁, Thomas Pereira 徐日昇, Antoine Thomas 安多, Philippus Maria Grimaldi 闵明我, Bernard Kilian Stumpf 纪理安, Ignaz Kögler 戴進賢, Andreas Pereira 徐憊德, Augustin Ferdinand von Hallerstein 劉松齡, Felix da Rocha 傅作霖, Joseph d’Espinha 高慎思, Anore Rodrigues 安國寧, Antoine Gogeisl 鮑友管 and Joseph Bernard d’Almeide 素德超. Along with the appointment of the Jesuits to the professional and managerial positions at the Bureau of Astronomy, the emperors of the Qing dynasty also entrusted them with many important tasks such as compiling and revising the Western-style calendar (Pfister 1934, 653; Pegg 2019, 46; Yang 2002, 4), renovating and manufacturing new astronomical instruments (Zhang 2000, 161‒70; Yao 2004, 44; Needham and Wang 1959, 451‒52) or establishing star tables (Yao 2004, 44‒45). Thus, the presence of Jesuit missionaries in the Qing dynasty court, especially their activities at Qin tian jian 欽天監—the astronomical and calendar research agency of this dynasty during the 17th and 18th centuries, regardless of the increasingly negative attitude of the Qing dynasty’s emperor and mandarins towards Christianity later, once again showed the openness of the Chinese ruling class in receiving Western astronomical achievements for cultural exchange.

Vietnamese Ruling Class: Proactively Receiving Western Astronomy for Political Purpose

In Vietnam, right from the end of 16th century, the struggling status for dominion made political forces at that time actively call for Western missionaries to the land where they governed with the aim that through the presence of missionaries in those areas, they could attract European merchants to bring goods, especially weapons for trading. Evangelistic historical data in Vietnam during this period showed that from 1556 to 1589, the government of the Le clan in Thanh Hoa (Southern dynasty) sent a representative four times to Macao and once wrote a letter to Melchior Cameiro, the Father Superior of this Diocese, in order to request sending missionaries to this area for mission (Nguyễn 1959, 22‒34). Meanwhile, also at that time, with the aim of gaining the presence of missionaries in the territory under its rule, strengthening trade relations with the Western countries, and thereby reinforcing its economic and military potentials, the Government of Mac clan in Thang Long (Northern dynasty) also wrote a letter to the

4 From 1527 to 1592, there was a war between the Southern dynasty and the Northern dynasty in Vietnam between the Mac clan in Thang Long (Northern dynasty) and the Le clan in Thanh Hoa (Southern dynasty). To find out the specific development of this political situation, see (Chapuis 1995, 113‒19; Taylor 2013, 237‒57).
Franciscans Giovanni Battista da Pesaro and Father Superior of the Diocese of Macao Melchior Cameiro in 1581 (Du Caillaud 1915, 17–18, 20–21, 30, 36–38; Nguyễn 1959, 22–34). Although, at that time, the appeal of the monarchy government in Vietnam failed to be satisfied because the number of missionaries in Macao was too small to meet the missionary requirements of the country, and the territory managed by this Diocese, including China, Japan, Vietnam and the Malay Archipelago (except the Philippines), however, that proactive attitude in such an appeal, in addition to political purposes, at a certain level, also showed the openness and initiative in receiving the Western civilization achievements by the Vietnamese kings during this period. This created an important premise, positively affecting the process of East-West cultural exchange in many fields, including astronomy.

In the 17th century, the flexible, creative and thorough application of the “missionary academic” guideline as well as the policy of “adaption to indigenous culture” of the Jesuit missionaries in Vietnam not only made the mission to achieve positive results but also started a process of spreading and receiving the Western scientific and technological achievements, including astronomy in this country.

In the course of preaching the Gospel, Jesuit missionaries realized that Vietnamese kings highly appreciated their astronomical work (Borri 1931, 373). When calculating the calendar, especially the time of solar and lunar eclipses, the Vietnamese astronomers working in the astronomical agency of the government of Lord Nguyen in Cochinchina and Lord Trinh in Tonkin5 often made errors (ibid., 373–74). Therefore, on the basis of grasping the psychology of “deification” and “spiritualization” of Vietnamese people’s astronomical phenomena,6 as well as recognizing the limitations and errors in surveying these phenomena, the Jesuits

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5 In the 17th and 18th centuries, the astronomical and calendar research agency in the government of King Le Lord Trinh in Tonkin was called Tu Thien Giam (Directorate of Astronomy and Calendar), while called Chiemain Ty (Office of Imperial Observatory) in the government of Lord Nguyen in Cochinchina. In 1657, Zhu Shunshui 朱舜水, an exiled mandarin of the Ming dynasty, refers in Annan gongyi jishi 安南供役紀事 (Chronicle of Service in Annam) to the fact that he met a mandarin of the Calendar Bureau 治曆局 of Lord Nguyen in Ngoai Dinh Sa (Quang Tri Province). The Calendar Bureau 治曆局 mentioned by Zhu Shunshui was probably Office of Imperial Observatory mentioned by Vietnamese historical records. (Phan 2006, 545–46, 591; Quốc sử quán triều Nguyễn 2001, 97; Zhu 1982, 21).

6 In a letter written by a Jesuit missionary in Tonkin, Vietnam to the missionary Cibot in Beijing, China (at an unknown time), it was clearly stated that the Tonkin people adored the sky, moon, and stars. Once the lunar eclipse occurred the people believed that a dragon was fighting the moon and wanted to annex it. Therefore, they had to immediately gather to save the moon. When the lunar eclipse was over, they returned home with satisfaction as if they had just won a great victory. That was mentioned in a report about Cochinchina by Cristoforo Borri (Du Halde 1781, 203–07; Borri 1931, 373–75).
used Western astronomical and mathematical knowledge to calculate and give accurate predictions in order to gradually make the Vietnamese king and mandarins feel curious, respect and admire the practice and accuracy of Western astronomy. The missionaries would thus gradually approach the ruling class of Vietnamese society and attempt to convert them, or otherwise take advantage of the conditions created by such high individuals’ political and economic status for the development of Christianity.

Although the historical data sources recorded by Jesuit missionaries in Vietnam in the 17th and 18th centuries are not vast, there is enough to see the initiative and openness of Vietnamese emperors in receiving Western astronomical achievements. In *Histoire du Royaume de Tonquin*, the Jesuit missionary Alexandre de Rhodes mentions the extremely enthusiastic and excited attitude of Lord Trinh in Tonkin when listening to the explanations of a solar eclipse, lunar eclipse as well as the movement of stars in the sky in 1627 (De Rhodes 1651, 152–53; 1653, 91–92). In the same document, Alexandre de Rhodes also mentions the admiration and praise of Lord Trinh expressed for the specific and accurate prediction of the time of appearance as well as the development of the lunar eclipse in 1628 (De Rhodes 1651, 195). In fact, in the 17th and 18th centuries Jesuit missionaries took the initiative in using Western astronomy as one of the most effective ways to reach Vietnamese authorities and thus obtain the opportunity to stay for a long time and expand the spread of Christianity in the country. Meanwhile, the Vietnamese king also realized that the stable and long-time presence of Western missionaries in the territory he ruled was one of the important factors that ensured the European merchant ships frequently came for trade, thus bringing many goods, especially weapons and ammunition. For all these reasons the Vietnamese king proactively communicated directly with the missionaries and so acquired Western astronomical knowledge from them. The fact that the Italian Jesuit missionary Baldinotti was invited by the Lord Trinh to his palace in Tonkin to preach and discuss astronomical issues in 1626 was thus not unusual (Baldinotti 1903, 71–78).

Meanwhile, in Cochinchina, from the 17th to 18th centuries, and with a clear awareness of the importance of establishing relationships with the West in order the strengthening his economic and military potential to fight against his political rival Lord Trinh in Tonkin, Lord Nguyen at first showed a relatively open attitude in using Jesuits who had some scientific and technological knowledge that was then lacking among the Vietnamese people, with astronomy being one such topic. According to the scholar Truong Ba Can, right from the first half of the 17th century Jesuit missionaries operating in Cochinchina began to use their knowledge of astronomy, especially about solar and lunar eclipses, to find a way to approach
and leave a good impression on Lord Nguyen (Trương 2008, 527). However, from the second half of the 17th century onwards the use of Western missionaries was encouraged by the Cochinchina ruler. Then there was an official presentation of several Jesuit missionaries who were also astronomers and mathematicians in the palace of the Lord, such as Antoine Arnedo, Jean Baptiste Sanna, and Francisco de Lima (Saraiva 2013, 32–33; Dehergne 1973, 16, 152, 239–40; De Montézon et al. 1858, 387–88). During the 1730s there was no decrease in the desire for Jesuit missionaries to teach on astronomy and mathematics, and in 1731 Lord Nguyen Phuc Tru asked the Diocese of Macao to send missionaries good at math, and especially astronomy, to help in this regard. In response to Lord Nguyen’s call, in 1738 two missionaries, Jean Siebert and Grueber, were sent to Cochinchina to work as astronomer–mathematicians for Lord Nguyen (Saraiva 2013, 32; De Montézon et al. 1858, 389), and they received an extremely respectful and joyful reception from the royal family (De Montézon et al. 1858, 261–63), especially from the mother of Lord Nguyen Phuc Khoat, who succeeded Lord Nguyen Phuc Tru in 1738. From 1740 to the time when the Cochinchina government was overthrown by the Tay Son peasant movement (1777), Lord Nguyen continued to welcome two other Jesuit missionaries to Cochinchina, namely Jean de Loureiro and Joseph Neugebeaur, to take over the role of astronomer–mathematicians in the royal palace (Maybon 1919, 141; Li 1998, 72–73).

Here, the Jesuit missionaries used their knowledge of Western astronomy to attract the attention of those with the highest political power, along with the Vietnamese ruler (Maggs 2000, 446). In the 17th and 18th centuries, the Jesuit missionaries also used the achievements and knowledge of Western astronomy to accurately calculate and forecast solar and lunar eclipses phenomena during. In some cases they had the opportunity to set foot in both Tonkin and Cochinchina, and gained sympathy and a positive attitude from the mandarins in order to impart their knowledge in this scientific area. In the *Histoire du Royaume de Tonquin*, the Jesuit missionary Alexandre de Rhodes mentioned a case that occurred in 1629—while preaching in Nghe An province (Tonkin), he also calculated the time, drew images of the solar eclipse that was coming on August 25, and gave notice four days prior to the event to the mandarin leading the area. Everything then happened as predicted by Alexandre de Rhodes. That surprised the mandarin of Nghe An province, and made him admire the accurate understanding that de Rhodes had of the secrets in the sky and stars, an ability that completely exceeded the abilities of Vietnamese people at that time (De Rhodes 1651, 237–38). In Cochinchina, documents from Jesuit missionaries operating in this area in the early 17th century also recorded similar cases about the active attitudes of mandarins and intellectuals in the process of receiving Western astronomy through the
missionaries’ activities of calculating and forecasting solar and lunar eclipses, as seen in the reports on the missionary situation in Cochinchina written by Cristoforo Borri and Gaspar Luis (De Rhodes 1651, 237–38; Luis 1628, 122–23; Borri 1931, 376–79).

Despite this, from a comparative perspective, it can be seen that during the 17th and 18th centuries in China the attitude of the ruling class towards Christianity became increasingly critical. That said, this did not greatly affect the positive attitude of Chinese emperors and officials to the appointment of Western missionaries to managerial and professional positions in Qin Tian Jian 欽天監, the astronomical research agency of the Ming dynasty and Qing dynasty. Meanwhile, in Vietnam although in the organizational structure of the government of King Le and Lord Trinh in Tonkin and Lord Nguyen in Cochinchina there was an astronomical and calendar research agency, no documents from the history recording agency of these two governments, nor from the Western missionaries in Vietnam, mention the fact that Vietnamese leaders appointed Jesuits to hold managerial and professional positions at the state’s astronomical and calendar research agency, as in China. This shows that the use of the Jesuits to carry out astronomical research work in Vietnam was unofficial. Their presence in the palace of Lord Nguyen (Cochinchina) and Lord Trinh (Tonkin) in the 17th and 18th centuries was simply to serve to explain some of the Western astronomical and mathematical concepts that the Vietnamese kings and lords were curious about, or to help calculate the timely forecast of solar and lunar eclipses (Trương 2008, 529). What caused this? It must be acknowledged that in the 17th and 18th centuries Vietnamese rulers were greatly attracted to and felt curious about and interested in Western astronomical instruments, as well as the novelty of the knowledge in this field carried by the Jesuits. However, political conflicts at that time limited the openness to receiving such Western astronomical knowledge. It was important for the Vietnamese leaders to establish relationships with Westerners in order to ensure the presence of missionaries as well as the continued supply of weapons and ammunition. That was the ultimate objective, and no matter how accurate and miraculous the instruments and knowledge of Western astronomy that the missionaries brought, if Western merchant ships failed to come for a long time or came but did not carry what the Vietnamese needed, then Christianity would be strictly banned, the missionaries would be deported, and the opportunity for Vietnamese people to learn about Western astronomy would cease. And indeed in the 17th and 18th centuries the banning and banishing missionaries was regularly ordered by the government of Lord Nguyen and Lord Trinh in Vietnam (Zhang 2016, 44–56), due to instabilities in trade relations with the West. Therefore, although the process of receiving Western astronomy took place directly in this period through the presence of Jesuits in the Vietnamese royal courts, it was
continuously interrupted. This is one of the reasons why the process of receiving Western astronomy in Vietnam in the 17th and 18th centuries was not as profound as that seen in China.

Conclusion

From the 16th to the 18th centuries, and in order to promote the preaching of the Gospel in China and Vietnam, European missionaries, especially Jesuit ones, used Western scientific and technological achievements, including astronomy, to attract and win the favour of the upper classes. In that context, emperors, kings and mandarins in China and Vietnam generally expressed an active and open attitude to receiving Western astronomy. However, the difference in a historical and political contexts as well as an actual objective that the ruling classes in China and Vietnam pursued when receiving Western astronomy made this process develop differently in each country. In China, primarily for the purpose of cultural exchange, the Ming and Qing dynasties basically showed a consistent attitude in appreciating the missionaries and their scholarly knowledge about astronomy. The Jesuit missionaries’ early involvement in the managerial and professional work at the astronomical research agency of the Ming and Qing dynasties made the process of receiving Western astronomy in China more acceptable. It took place directly in the court and palace as well as being maintained continuously throughout the 16th, 17th and 18th centuries, despite negative and increasingly critical reactions of emperors and mandarins of this country towards Christianity at that time. Meanwhile, in Vietnam, the great upheavals created by the power struggles between the political forces from the 16th to 18th century made the ruling class’s openness to receiving Western knowledge of astronomy and the active use of Jesuit missionaries in calculating and forecasting some astronomical phenomena only a way to express goodwill and establish relationships and keep missionaries on their territories. The ultimate aim was to attract frequent visits by Western merchant ships carrying essential goods, especially weapons and ammunition to use in the struggle for political power. Because the political aim was more important than cultural exchange, no matter how accurate and preeminent Western astronomy was, it would never appeal to the Vietnamese ruling class more than Western goods and weapons. Therefore, whenever there was an inconvenience or dissatisfaction arising in trade relations with the West, the Vietnamese kings strictly banned Christianity and expelled the missionaries, including Jesuit missionaries who were the leading force in spreading European science and technology into the countries of the Far East. As such, the process of transmitting Western astronomy to the Vietnamese ruling class from the 16th to 18th century was often interrupted, and so this exchange was much more limited than that seen in China.
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