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The Chinese Compass: How the Jesuits Created and Spread the Myth

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Abstract

The compass is now widely acknowledged as one of China's four great inventions, alongside paper, printing, and gunpowder. Simon Winchester emphasized this in his 2008 biography of Joseph Needham, titled *Bomb, Book and Compass: Joseph Needham and the Great Secrets of China*. However, it was actually seventeenth-century Jesuit missionaries who first credited China with inventing the compass. This paper examines how the Jesuits constructed this historical narrative and reveals their complex attitudes toward this attribution. The Jesuits held a nuanced view: while they recognized the compass as evidence of China's historical excellence in science and technology, they also maintained that Western modern science had ultimately surpassed Chinese achievements. In their assessment, China's most significant contribution to civilization was not technological but philosophical—specifically the influence of Confucian thought on Chinese culture and society. The Jesuits argued that Confucian philosophy contained universal wisdom valuable even to Western societies.

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Following Francis Bacon (1561–1626), who highlighted the role of three inventions—paper, the magnetic compass, and gunpowder—in modern history, Joseph Needham listed twenty-six Chinese inventions, including the magnetic compass, as significant technological contributions to the world.[1] Accordingly, Chinese pilots had first used the magnetic compass by 1090, just about a century before its appearance in the West.[2] Needham also stated that the magnetic compass could have been utilized by Chinese pilots as early as 850, and then spread to the Indian Ocean.[3] Concerning the mutual influence between Chinese and Arab navigators, Needham honestly admits that we hardly know enough to answer.[4] From the perspective of the historian of science of the twentieth century, the magnetic compass for navigation was in use in China before it was used in the West.[5] However, without proof of a technological transfer, the magnetic compass has remained a field of competing narratives. Western historians of science may recognize an early use by the Chinese and yet claim that it was independently discovered in Europe—only lately—and, furthermore, that its modern use quickly superseded the Chinese compass, making it obsolete.

In this paper, we aim to examine the role of early missionaries to the East in the use of the magnetic compass from the sixteenth to the eighteenth centuries. In 1954, in his very detailed investigation into the origin of the compass, the scientist Li Shuhua 李書華 (1890–1979) mentioned and quoted reports

1 This paper was given orally at the Needham Conference "Science and Civilisation: The Magnetic Compass and Maritime Navigation" at Sun Yat-sen University, Guangzhou, on 10 December 2024. Many thanks to the anonymous scholar who reviewed this paper for *JJS*. For the transliteration of Chinese words, we have used the Mainland *pinyin*.

2 Joseph Needham, *Science and Civilization in China*, 26 vols. (Cambridge University Press, 1971), 4.3:62. In fact, the Italian physician and mathematician Gerolamo Cardano (1501–76), and not Bacon, was the first to make the claim about gunpowder, printing and magnetic compass as three modern inventions.

3 Needham, *Science and Civilization in China*, 4.3:576.

4 Needham, *Science and Civilization in China*, 4.3:573.

5 Besides Needham, American historians of the Middle Ages asserted the same; see Frances and Joseph Gies, *Cathedral, Forge, and Waterwheel: Technology and Invention in the Middle Ages* (New York: HarperCollins, 1995), 93.

of Jesuit missionaries on the magnetic compass.[6] However, Li Shuhua relied solely on French sources and limited his investigation to the eighteenth century. In fact, we need to investigate how Jesuits in the seventeenth century created and shaped the discourse on the Chinese compass. More recently, Alexander Statman examined the origin of the Chinese compass in the work of the French sinologist Michel-Ange Le Roux Deshauterayes (1724–95), showing that he relied on both Chinese and seventeenth-century Jesuit sources. Yet, Statman does not explain in any detail how Jesuits could assert the origin of the compass in the Zhou dynasty (1046–256 BCE).[7]

Only a precise reading of the Jesuits' early accounts allows us to deconstruct how the narrative of the compass's mythical antiquity was created and transmitted to the West. We shall focus here on Martini's account, not the first to mention the Chinese compass, but the first to describe its origin based on Chinese sources. We shall also look at other reports, printed or manuscript, in Latin, Portuguese, or Spanish, by other missionaries in the seventeenth century, and we shall more briefly discuss the legacy of Martini's account in Europe.

Martini's Data on Magnetic Declinations from 1639 to 1642

Magnetism in seventeenth-century Europe is closely associated with the German Jesuit and polymath Athanasius Kircher (1602–80), who published the influential work *Magnes, sive de arte magnetica* (The Magnet, or about Magnetism) in Rome in 1641. Jesuits working in Rome often asked fellow missionaries to gather scientific information during their travels and in their mission regions. In his section about oceanic observations, Kircher includes data provided by three Jesuit missionaries to three Jesuit teachers in Europe: letters to Christopher Clavius (1538–1612) from the Italian Giulio Aleni (1582–1649) while he was in India in 1609 en route to China; to Christoph Grienberger (1561–1636) from the Croatian Ivan Vreman (1583–1620) from Macao in 1616; and to Christoph Scheiner (1573–1650) from the Portuguese Gaspar Rues (dates unknown) from Porto Belo in 1617. However, more detailed data came from Kircher's own student, the Italian Jesuit Martino Martini (1614–61).

6 Li Shuhua, "Origine de la Boussole," *Isis* 45, no. 1 (1954): 78–94, and no. 2 (1954): 175–96.

7 Alexander Statman, "The First Global Turn: Chinese Contributions to Enlightenment World History," *Journal of World History* 30, no. 3 (2019): 363–92. Deshauterayes wrote "Dissertation sur l'origine de la Boussole" (1754), Institut de France, ms. 5409, fols. 1–23.

Giuliano Bertuccioli (1923–2001) retrieved Martini's letters and included them in the first volume of Martini's *Opera omnia* (Complete works). This consists of the five extant letters *in extenso* to Kircher, dealing with the magnetic field. Three letters were written during Martini's final preparation in Portugal before sailing to the East. The first letter, dated February 6, 1639, was written from Évora. At the end of his letter, Martini refers to Kircher's work *Magnes*, which was not yet published, and mentions it there as *Philosophia magnetica* (Magnetic philosophy). This allowed him to inform Kircher that he had personally witnessed a magnetic machine in Florence. In May 1639, Martini sailed from Lisbon down to the coast of Guinea, but the ship encountered a severe storm, which compelled him to return to Portugal. On November 8, 1639, Martini wrote a second letter to Kircher in Coimbra, noting the magnetic declination at 11 points along their failed trip. In this letter, Martini describes his method to obtain the latitude with a compass card (*rosa nautica*) and the height to the pole with a compass inside a spherical vase (*acus nautica in vase spherico interius*).[8] On March 16, 1640, Martini wrote his last letter from Lisbon before his successful journey to India. He acknowledged having received in January 1640 Kircher's answer to his own letter of May 1639, and he requested Kircher to send him copies of his *Magnes* either through Antonio Freire de Andrade (1580–1634), the Jesuit procurator in Goa, or even better through Álvaro de Semedo (1586–1658), a Portuguese Jesuit who was already teaching mathematics in China.[9]

Martini arrived in Goa on September 19, 1640. On November 8, 1640, he wrote a lengthy letter to Kircher, reporting on the magnetic declination at twelve points along their trip and explaining his method for finding the coordinates.[10] Martini had to wait for one year and three months in Goa, until December 19, 1641. He finally arrived in Macao on August 4, 1642. There, on November 1, 1642, he wrote his last letter to Kircher. Same as the two previous letters, Martini provided the magnetic declinations, but the data are much more precise as he explains his method to determine the latitude and longitude, thanks to a combined use of coordinate tables on the seas (*hydrographica mappa*), astrolabe, English quadrant, and trigonometry.[11]

8 Martini, *Opera omnia*, 1:71–86; Athanasius Kircher, *Magnes*, Liber II, Pars V, Caput II, "De observationibus oceanis" (Rome: Scheus, 1641), 434–35.

9 Martini, *Opera omnia*, 1:87–94.

10 Martini, *Opera omnia*, 1:141–53.

11 Martini, *Opera omnia*, 1:155–66. Kircher had already published his *Magnes* in 1641 and could not include those new data by Martini.

Martini's Confusion between the Magnetic Compass and the South-Pointing Chariot

Martini's *Sinicae historiae decas prima* (The first ten books of Chinese history) was published in 1658 in Munich by Joannes Wagner. The following year, it appeared in Amsterdam. Later, it was translated into French by Claude Le Pelletier (1630–1711) and published in Paris in 1692 by Claude Barbin under the title *Histoire de la Chine*. It is considered the first book on Chinese history published in Europe, though it covers only the period from Fuxi 伏羲 to the birth of Christ. Martini intended to write the Second Part, but it has not yet been discovered.

In Book 4, Martini describes the reigns of the rulers of the Zhou dynasty, and, regarding its second ruler, Cheng Wang 成王 (r.1042–21 BCE), he notes, "an embassy from Cochinchina, also called in Chinese Jiaozhi 交趾." The embassy offered, as a tribute, a white chicken (*alba gallina*) or a pheasant (*phasania*). It delivered the message that their king is convinced that China enjoys prosperity and peace because "there is someone inside China whose holiness is extraordinary."[12] This cannot refer to Confucius, who was not born at that time; it must refer to Cheng Wang. As the embassy was about to return, it received from Zhou Gong 周公 (r.1042–35 BCE), the uncle of Cheng Wang and the regent of the kingdom, "a highly sophisticated machine which automatically and constantly pointed to the south, showing a sure path for people traveling either on land or on the seas."[13]

The *Shangshu dazhuan* 尚書大傳 (Great commentary of the book of documents), compiled during the Han dynasty (206 BCE–220 CE), mentions an early diplomatic encounter between the Zhou dynasty and the Yuechang 越裳 people. Although the ambassadors informed Zhou Gong of the difficulties of their travels, there is no record that Cheng Wang or his uncle, Zhou Gong, offered them any chariots. There is no scholarly consensus today about the location of the Yuechang people (Yunnan, Laos, Cambodia, or Vietnam).

Indeed, Martini's account is drawn directly or indirectly from a post-Han text, the *Gujin zhu* 古今注 (Notes to things old and new) by Cui Bao 崔豹 (*fl.*290–306 CE), where the core element of Martini's account can be found: the gift of a sophisticated machine pointing south, or *zhinanche* 指南車, made by Zhou Gong to ambassadors coming from the region of Vietnam. Clearly, Cui Bao projected the south-pointing chariot of the Han dynasty back to the Zhou

12 Martini, *Sinicae historiae decas prima*, Liber quartus, Secundus imperator Chingus, in *Opera omnia*, 4:91; French translation, *Histoire de la Chine*, 234.

13 Martini, *Sinicae historiae decas prima*, 91.

dynasty. Martini carried over the story made up by Cui Bao about the gift of the south-pointing chariot by Zhou Gong to the Vietnamese ambassadors.

Cui Bao notes the attribution of the machine to Zhou Gong. Still, in fact, he personally favored another attribution, even older: it was the soldiers of the Yellow Emperor who built the machine when they were fighting amidst fog against the tribal leader Chiyou 蚩尤.[14] Perhaps Martini wanted to hide the fact that the south-pointing chariot was used to capture a rebel leader, preferring the more pacific and diplomatic use of the machine given by Zhou Gong. As we shall explain below, there was a more crucial reason for Martini to attribute the chariot to Zhou Gong. Today, the invention is credited to Ma Jun 馬鈞, who lived during the Three Kingdoms period 三國時期 (220–80 CE).

Crucially, Cui Bao describes only a south-pointing chariot without any connection whatsoever with the magnetic compass. As Needham describes the south-pointing chariot, "it was in fact essentially a self-regulating device, involving a system of gear wheels such that a pointer would maintain an originally fixed direction by continually compensating for any excursions of the vehicle away from that direction."[15] However, Martini understood that the machine was used for traveling "either on land or on the seas," and this clearly shows that, for him, the machine must have been equipped with a magnetic compass to board a chariot or a boat. As he explicitly says: "The machine was called with the two Chinese characters *zhinan* 指南, which today mean magnetic needle."[16] This is the clearest evidence of Martini's confusion between the ancient south-pointing chariot, or *zhinanche* 指南車, and the much later magnetic needle, or *zhinanzhen* 指南針.

Though the magnetic lodestone spoon was used since the Han dynasty, it was not used for navigation, and even less so for maritime navigation. In other words, there was no technological connection in ancient China between the south-pointing chariot and magnetism. We hypothesize that Martini confused the mechanical south-pointing chariot with the magnetic needle because he could not understand how the chariot worked, and it was plausible for him to assume it was equipped with a magnetic compass. This led him to argue that the magnetic compass was used in China for navigation since the early Zhou: "Without any doubt, the magnetic needle was invented by the Chinese at that time."[17] For Martini, this was another proof of the high antiquity of Chinese

14 Cui Bao 崔豹, *Gujin zhu* 古今注, *juan shang* 卷上, *yufu diyi* 輿服第一.
15 Needham, *Science and Civilisation in China*, 4.1:229.
16 Martini, *Sinicae historiae decas prima*, 91; Martini, *Histoire de la Chine*, 235.
17 Martini, *Sinicae historiae decas prima*, 91; Martini, *Histoire de la Chine*, 235.

civilization at a time when many intellectuals in Europe were skeptical of the authenticity of Chinese history.

In comparison to Cui Bao, the introduction of the magnetic compass inside the legendary machines of Zhou Gong is indeed an addition by Martini. However, as we discuss below, this addition was not a pure invention of Martini and has textual support in Chinese literature. Martini made another addition to the text of Cui Bao, i.e., the ambassadors' praise of Cheng Wang, taken from the *Shangshu dazhuan*: "We received instructions from our country's elders saying that it has been long since there were no fierce winds or thunder and rain; perhaps there is a sage in China? If so, why not go and pay homage?" (吾受命吾國之黃耆曰：久矣，天之無烈風雷雨，意者中國有聖人乎？有則盍往朝之？). In brief, Martini's narration had combined the text of Cui Bao's *Gujin zhu* with the text of the *Shangshu dazhuan*. Now we need to see the third source, which is the origin of the confusion between the south-pointing chariot and the magnetic compass in Martini's account.

The Chinese Origin of Martini's Confusion

Martini was not the first to confuse the two devices. As Li Shuhua 李書華 has shown, it already happened in the Song dynasty (960–1279). First, we need to note that the magnetic needle was discovered in the eleventh century, and the maritime compass in the twelfth century. According to Li Shuhua, Shen Kuo 瀋括 (1031–95) was the first to describe the preparation and use of the magnetic needle in the *Mengxi bitan* 夢溪筆談 (Dream torrent essays, 1088), and Zhu Yu 朱彧 (Northern song) was the first to describe the application of the magnetic needle to navigation in the *Pingzhou ketan* 萍洲可談 (*Pingzhou* table talks, 1119). The family of Zhu Yu lived in Canton, and so he was knowledgeable about the navigation of Chinese boats in that port.[18] Both Shen Kuo and Zhu Yu discuss only the magnetic compass, and neither causes any confusion with the south-pointing chariot of the Han dynasty.

According to Li Shuhua, shortly after the discovery of the maritime compass, authors began conflating it with the south-pointing chariot, leading them to credit Zhou Gong with its invention incorrectly. Martini uncritically accepted the opinions of Chinese scholars who attributed many inventions to ancient rulers. But can we more precisely identify the source that caused Martini's confusion? Regarding the sources for Martini's *Sinicae historiae decas prima*,

18 Li Shu-hua, "Origine de la boussole II," *Isis* 45, no. 2 (1954): 175–96, at 183.

scholars hold different views. Since Sima Guang 司馬光 (1019–86) begins his *Zizhi tongjian* 資治通鑑 (Comprehensive Mirror for the Aid of Government, 1084) with king Weilie 威烈 (fifth century BCE), there is no record of the invention of the machine under the Yellow Emperor or Cheng Wang. However, many writers after Sima Guang expanded the history to earlier periods. According to Wu Liwei 吳莉葦 and Luisa Paternicò, Martini had used official histories, like Zhu Xi's *Zizhi tongjian gangmu* 資治通鑑綱目 (Comprehensive mirror and outline for the aid of government, 1172), Jin Lüxiang 金履祥's (1232–1303) *Zizhi tongjian gangmu qianbian* 資治通鑑綱目前編 (Prologue to the comprehensive mirror and outline for the aid of government, 1264), a work by Nan Xuan 南軒 (1518–1602) with the same title and published in 1595, as well as Chen Jing 陳桱's (Early Ming) *Zizhi tongjian xubian* 資治通鑑續編 (Sequel to the comprehensive mirror and outline for the aid of government).[19] In those official histories, authors were careful not to admit facts without historical proof, like attributing to Zhou Gong the invention of the south-pointing chariot and the magnetic compass, which in reality appeared respectively one thousand years and two thousand years after his death.[20]

19 Wu Liwei only investigated Martini's history from Fuxi to Diku 帝嚳; see Wu Liwei 吳莉葦, *Dang Nuoya fangzhou zaoyu Fuyi Shennong: Qimeng shidai Ouzhou de Zhongguo shanggushi lunzheng* 當諾亞方舟遭遇伏羲神農：啟蒙時代歐洲的中國上古史論爭 (When Noah's Ark met Fuxi and Shennong: The debate about ancient Chinese history in Europe of the Enlightenment period), Beijing: Zhongguo Renmin daxue chubanshe, 2005. Paternicò had extended the research to the whole work of Martini, and concluded that Martini used Chen Jing's *Zizhi tongjian xubian* for Pangu till Emperor Ku; Jin Lüxiang's *Zizhi tongjian* (*gangmu*) *qianbian* from Yao to King Kao of Zhou 周考王 (the end of Martini's book 4); and Zhu Xi's *Zizhi tongjian gangmu* for the subsequent period until Emperor Ai of Han (book 5 till the end of book 10). In addition, he used *Shiji*, *Shujing* and Sima Guang's *Zizhi tongjian* as constant references. Both the structure and concrete examples given by Paternicò would indeed lead to this conclusion. See Luisa M. Paternicò, "La scelta delle fonti per la compilazione della *Sinicae historiae decas prima*," in Martino Martini, *Opera omnia*, Federico Masini and Luisa M. Paternicò, eds. (Trent: Università degli Studi di Trento, 2010), 1, xv–xxxix.

20 Standaert suggested that the main sources for Martini may have been the *gangjian* tradition, especially Yuan Huang 袁黃 (袁了凡's, (1533–1606) *Guben lishi dafang gangjian bu* 古本歷史大方綱鑑補 (Supplement to the historical outline and mirror), and Zhong Xing 鍾惺's (1574–1624) *Zizhi gangjian zhengshi daquan* 資治綱鑑正史大全 (General history according to the outline and mirror for the aid of government; Ming Chongzhen era). For example, Standaert shows that the miraculous birth of Diku after his mother had seen a red dragon and had a pregnancy of fourteen months are all details that appear in the *gangjian* texts and not in Chen Jing or Nan Xuan's. See Nicolas Standaert, "Jesuit Accounts of Chinese History and Chronology and their Chinese Sources," *EASTM* 35 (2012): 11–88. If we want to look for a possible mention of the magnetic compass at the time of Zhou Gong, we may examine the *gangjian* tradition. We have checked Yuan

We did not find the confusion in Zhu Xi's *Zizhi tongjian gangmu*. Statman notes that "probably, Martini had read about it in the Song historian Jin Lüxiang." However, Statman provides no precise reference, and it appears that he drew the clue from Needham, who had made this hypothesis, but again without any supporting reference.[21] In fact, Jin Lüxiang does not mention at all the south-pointing chariot, either at the time of the Yellow Emperor or at the time of Zhou Gong. Jin Lüxiang had a critical mind and was unwilling to attribute the south-pointing chariot to the Zhou dynasty, as many incorrectly did following Cui Bao.

Li Shuhua noticed that the *Zizhi tongjian gangmu qianbian* in the edition of 1595 has a note explaining that the south-pointing chariot has a magnetic needle to indicate the four cardinal points.[22] This refers indeed to a passage from Nan Xuan, who is precisely one of the sources of Martini:

> 陳殷曰：指南車，古制不可考。唐憲宗始定其制，車上有樓，四角刻木為龍，又刻仙人於上，車雖回轉，手常指南。軒轅用之，以定四方，示軍士也。或曰：車上用子午盤針以定四方，亦通。擒蚩尤，戮于中冀。
>
> Chen Yin says: "It is impossible to investigate how the south-pointing chariot was made. The emperor Xianzong of the Tang dynasty began to determine its construction: the chariot has one tower with four corners carved in the wood as dragons, and there is a wooden sculpture of an immortal on the top; when the chariot turns, the immortal's hand always points south. The Yellow Emperor used it to determine the four directions, and to show them to the soldiers." Someone else says: "A *ziwu* plate-needle is used on the chariot to determine the four directions; this

Huang's work, but we did not find in his comment on the south-pointing chariot any mention of magnetic needle; Yuan Huang 袁黃, *Guben lishi dafang gangjian bu*, juan 2, 周成王 12b. More recently, Dong Shaoxin 董少新 has shown that Martini was not so much relying directly on Chinese sources, but on Gouvea's work, *Monarchia da China dividida por seis idades*. Indeed, before returning to Europe as procurator for the China mission in 1650, Martini spent some time in Fuzhou with Gouvea, and brought with him an early draft of the work of Gouvea, which became one of Martini's sources, though Martini failed to acknowledge it. See Dong Shaoxin 董少新, "Wei Kuangguo Zhongguo lishi yu He Dahua zhuzuo zhi guanxi chutan" 衛匡國〈中國歷史〉與何大化著作之關係初探, *Aomen ligong daxue xuebao* 澳門理工大學學報 93, no. 1 (2024): 72–87. We did not find in the manuscript of Gouvea any reference to the supposed compass of Zhou Gong.

21 Needham, *Science and Civilisation in China*, 4.1:229.

22 Li Shu-hua, "Origine de la boussole," *Isis* 45, no. 1 (1954): 78–94, at 91.

> is also possible/plausible. [The chariot was used] to capture Chiyou and to kill him in central Ji."[23]

The commentator Chen Yin acknowledges the historical gap that prevents him from having precise knowledge of the ancient south-pointing chariot, and he describes the machine only from the Tang dynasty. However, Nan Xuan cannot resist returning to the ancient model, creating a complete anachronism by reporting that someone said a *Ziwu* plate-needle (*ziwu panzhen* 子午盤針) was placed in the Yellow Emperor's chariot. This refers to a geomantic or feng shui compass, or *luopan* 羅盤, on which the characters *ziwu* 子午 are inscribed to indicate directions. Initially, geomancers included a magnetic needle in the device, and mariners did so only occasionally in the tenth century. Nan Xuan was unsure how the south-pointing machine of the Han dynasty (attributed to Zhou Gong by Cui Bao) worked, and not realizing that the magnetic needle was a recent invention, he placed the magnetic needle inside the south-pointing chariot of the Yellow Emperor.[24]

Yet, Nan Xuan traces back the invention of the south-pointing chariot with its compass not to Zhou Gong, but to the Yellow Emperor. We hypothesize that Martini read about the Yellow Emperor's magnetic compass in Nan Xuan. However, Martini may not have been entirely satisfied because the Yellow Emperor uses the device only for a relatively short distance to capture and kill Chiyou. In contrast, the story of Zhou Gong giving the machine to ambassadors to help them return home was a more effective way to demonstrate the magnetic compass's efficiency over long distances. Therefore, out of the two attributions of the south-pointing machine by Cui Bao, Martini did not retain the favored version of Cui Bao (the attribution to the Yellow Emperor). Still, he retained the second (the attribution to Zhou Gong). Furthermore, he intentionally attributed the use of the south-pointing chariot with its compass to Zhou Gong rather than to the Yellow Emperor, as Nan Xuan mentioned. This way, Martini significantly altered the meaning of the *Shangshu dazhuan* and Cui Bao's *Gujin zhu*. These textual manipulations were intended solely to support the claim that, for over two thousand years, the Chinese had used a magnetic compass for long-distance land and sea travel. This was indeed a bold claim by Martini

23 Nan Xuan 南軒, "Zhu Chiyou yu Zhuolu" 誅蚩尤于涿鹿 [Execute Chiyou at Zhuolu], *Zizhi tongjian gangmu qianbian* 資治通鑑綱目前編 (1595), in *Siku quanshu* 四庫全書 (1707).

24 Another hypothesis is that Nan Xuan would have known about the novelty of the magnetic needle, but to show reverence to the sages, he deliberately attributed its invention to the Yellow Emperor.

compared to the more modest assertions made by Cui Bao and Nan Xuan. We have not discovered another history book, besides the one by Nan Xuan, which conflates the magnetic compass with the south-pointing chariot.[25] However, another hypothesis is that Martini read elsewhere about a supposed connection between the magnetic needle and the chariot attributed to Zhou Gong. For example, the *Yusui zhenjing* 玉髓眞經 (*The True Classic of the Jade Marrow*) in 54 *juan* by Zhang Dongxuan 張洞玄 (Song dynasty) explicitly says that "Zhou Gong made the magnetic needle and placed it on the chariot, which is called south-pointing."[26] It is yet quite unlikely that Martini consulted this work of Daoist geomancy directly. We remain wedded to the hypothesis that Martini read the connection between the magnetic needle and the south-pointing chariot in Nan Xuan's history, but Martini did not follow Nan Xuan in attributing the invention to the Yellow Emperor; he adopted the second attribution proposed by Cui Bao, to Zhou Gong.

Confusion between Two Embassies

From Nan Xuan's fantastic idea that the Yellow Emperor invented the magnetic compass to defeat Chiyou, Martini could only assert a terrestrial use of the magnetic compass in ancient China. However, its terrestrial use is limited because people traveling on land may have maps or other geographic references to guide them. The Yuechang people's return home via a terrestrial route does not demonstrate the compass's advantage.

In his account, Martini considers that the ambassadors returned home by sea with the help of the compass. This is quite anachronistic because during the Zhou dynasty, there was no ship capable of making such a long voyage to

25 Chen Jing does mention the invention of the south-pointing chariot under the reign of Cheng Wang, but he does not mention the compass. This is the same for Zhang Juzheng 張居正 in his *Zizhi tongjian zhijie* 資治通鑑直解 (Direct explanation of the comprehensive mirror for the aid of government, 1573). The *Shunfeng xiangsong* 順風相送 (Voyage with a tailwind), composed in the period 1573–93, mentions that "Zhou Gong established the method for pointing the south that was transmitted from the ancient classics and which has circulated very widely and for a long time." The work attributes the use of the magnetic compass for maritime navigation not to Zhou Gong directly, but to a larger tradition which had started with Zhou Gong. Following Nan Xuan, Martini erased the historical intermediary development, claiming that the magnetic compass was used by Zhou Gong.

26 Zhang Dongxuan, *Yusui zhenjing* 玉髓眞經 (The true classic of the jade marrow), edition under Ming emperor Jiajing 嘉靖, 1522–66, last *juan* 卷, section 11 子午針髓第十一 Ziwu zhensui 11.

Vietnam. Only when mariners of the Song dynasty began using the compass was navigation greatly facilitated. Martini projects his knowledge of maritime navigation back to ancient China. Moreover, he conflates two diplomatic encounters. In the first event, the Yuechang people (identified as Vietnamese) came to pay tribute to Cheng Wang, and Zhou Gong supposedly offered them the south-pointing chariot to go home, according to Cui Bao (the chariot, in fact, was invented a thousand years later). A second diplomatic encounter occurred during the Song dynasty. It was not an embassy of people traveling to China, but an embassy sent to Cambodia by the Mongol emperor ruling over China. According to a report from Zhou Daguan 周達觀 (1266–1346), the embassy sailed in 1296 from Mingzhou 明州, now Ningbo in Zhejiang province, to the port of Bà Rịa 巴地 in South Vietnam, and then reached the capital Angkor Thom 大吳哥 by the river. The Yuan embassy sailed using a magnetic compass, as Zhou Daguan states in his *Record of Cambodia*, or *Zhenla fengtu ji* 真腊風土紀.[27]

In short, we have analyzed Martini's claim about the ancient origins of the Chinese compass and its maritime use. He combined the account of an embassy of the Yuechang people under Cheng Wang's reign, from the *Shangshu dazhuan*, with Cui Bao's assertion that Zhou Gong might have provided them with a south-pointing chariot to return home. Martini used Nan Xuan's idea that the Yellow Emperor invented the magnetic compass and applied it to Zhou Gong. Lastly, he proposed a maritime route for the ambassadors, similar to the one Zhou Daguan took during the Song dynasty. While Nan Xuan credited the compass to the Yellow Emperor out of ignorance or to honor the past, Martini's attribution to Zhou Gong was part of the Jesuit strategy to demonstrate China's antiquity and superiority from a global historical perspective and to justify their mission of adapting to Chinese culture, society, and politics. His account of the antiquity of the magnetic compass was very influential among his fellow Jesuits in China, as we will see, and through their publication in Europe, the legend that the Chinese had used the maritime compass for more than two thousand years spread quickly. Another strong claim of Martini was that the magnetic needle "moved from China to other countries," though he did not have any definitive proof for such transmission.

27 See Zhou Daguan, *A Record of Cambodia: The Land and Its People*, trans. Peter Harris (Seattle, WA: University of Washington Press, 2007). There are two French translations: Jean-Pierre Abel-Rémusat, *Description du royaume de Cambodge par un voyageur chinois qui a visité cette contrée à la fin du XIII siècle, précédée d'une notice chronologique sur ce même pays, extraite des annales de la Chine* (Paris: Imprimerie de J. Smith, 1819); Paul Pelliot, "Mémoires sur les coutumes du Cambodge de Tcheou Ta-Kouan," in *Bulletin de l'École française d'Extrême-Orient* 2 (1902): 123–77.

Magalhães and the 2,700 Years of the Chinese Compass

In 1665, Yang Guangxian 楊光先 (1599–1669) initiated the Calendar Case against the German Jesuit Adam Schall von Bell (1591–1666). During his period of semi-captivity in Beijing, the Portuguese Jesuit Gabriel de Magalhães (1610–77) wrote an overview of China, divided into two parts: the first on the country, the second on the Catholic mission. Although the Catholic mission was halted with all churches being closed, Magalhães still presents a very positive view. In 1668, he finished his Portuguese manuscript and sent it to Europe, but it was never published. From 1683 to 1686, the French Abbé Claude Bernou (*c.*1638–1716) was in Rome. Being interested in maritime activities outside Europe, he found the unpublished manuscript of Magalhães and translated the work into French. The French version was published for the first time in 1688 in Paris, with the title of *Nouvelle Relation de la Chine*.[28] The same year, John Ogilby (*c.*1600–76), who had previously translated into English some Jesuit works on China, like Kircher's *China illustrata*, translated and published the work of Magalhães from the French translation of Bernou.[29]

Magalhães discusses in Chapter 3 the antiquity of China, and like Martini, he begins the chronology with Fuxi in 2952 BCE.[30] In Chapter 5, discussing the spirit of the Chinese and their main works, he starts with the very generous statement that the Chinese should be preferred to other nations because they have invented: "letters, paper, printing, gunpowder, fine porcelain, and their own characters."[31] Interestingly, Magalhães does not mention the compass. However, when he presents in the same chapter, Zhou Gong, he does mention the compass:

> He [Zhou Gong] was, according to the report of the Chinese, [the one] who, above two thousand seven hundred years ago, first found the use

28 French edition: Gabriel de Magaillans, *Nouvelle relation de la Chine contenant la description des particularités les plus considérables de ce grand Empire*, trans. Claude Bernou (Paris: Claude Barbin, 1688).

29 English edition: Gabriel de Magaillans, *A New History of China*, trans. John Ogilby (London: Thomas Newborough, 1688).

30 Magalhães mentions several indications for its reliability. First, the Chinese history includes some astronomical events which match records in the West. Second, the deeds of Yao were written by the secretaries of his successor Shun. Third, the durations of reigns are very precise, with many facts corresponding to the Bible like the long lives of ancient Chinese like Fuxi, Shennong, etc. Magalhães, English edition, 65–67; French edition, 80–82.

31 Magalhães, English edition, 87; French edition, 108.

> of the needle and compass. For the emperor, his nephew [Cheng Wang], having received the honor of an embassy, and the acknowledgment of a tribute from a country called Tum Xim [Dongjing], and Cochinchina, or Kiaochique [Jiaozhi guo], and all by means of the industry and prudent conduct of his protector, the same governor [Zhou Gong] presented the ambassadors with a kind of compass, by the direction of which they might return the nearest way home, without exposing themselves to the toil and hardships of those round about windings and wanderings through which they had labored in coming to the court.[32]

The account by Magalhães is very similar to the one by Martini, with the same confusion between the ancient south-pointing chariot and the magnetic compass. Unlike Martini, Magalhães does not explicitly suggest a maritime use, nor does he confirm that the compass was transmitted from China to the rest of the world. While Martini only mentions Cochinchina, Magalhães uses the Western names Tonkin and Cochinchina for Đàng Ngoài 唐外 and Đàng Trong 唐冲, respectively, with the latter also rendered in Chinese transliteration as Jiaozhiguo 交趾國. These Western names for Vietnam first appeared in Alexandre de Rhodes's *Dictionarium Annamiticum Lusitanum et Latinum* (1651).

Intorcetta and the Ambiguity of the Chinese Compass as "Antiquity"

Since the 1580s, the Jesuits had been translating the Four Books, and during their exile in Canton from 1666 to 1671, the Sicilian Prospero Intorcetta (1625–96) and the Flemish Philippe Couplet (1623–93), along with two other Jesuits, completed the translation work. Couplet did the final editing in Paris in 1686, and the translations were ultimately published in 1687 as *Confucius Sinarum Philosophus*. In the first chapter of the preface, titled "Origin and purpose of this work," Intorcetta argues that Confucius's works were the best gift missionaries could bring back to Europe. However, they could have brought other things:

> As a small gift, we could have brought copper coins, even older, remarkable, and characteristic of the Chinese Empire, or this magnetic instrument

32 See Magalhães, English edition, 94–95; French edition, 117–18.

> that the brother of the emperor, Zhou Gong, once gave to the ambassadors of the king of Vietnam, so that they could more safely and more certainly return home by going south. Indeed, we could have brought back from the ancient people such great gifts for display. Although it may well be that this coarse and unattractive instrument, eaten by so much rust, cannot be compared with the splendor and elegance of similar instruments abounding now in Europe, it would surely benefit Europeans to know that it has already existed for two thousand four hundred years in the Far East.[33]

Here we find the main element of the story, as told by Martini and Magalhães: the use of a magnetic compass during the Zhou dynasty to reach Vietnam. Notably, Intorcetta speaks as if the instrument of Zhou Gong still existed and as if he had seen it. He recognizes the antiquity of the Chinese compass, which is 2,400 years old, but the instrument is already rusted and completely outdated, given Europe's technological advances. The Chinese compass might be valuable as a historical artifact to display in a museum, but it has no practical use for navigation today. Intorcetta uses the Chinese magnetic compass to symbolize a country that achieved great things in the past but now falls behind. However, Intorcetta does not mention the magnetic compass solely for antiquarian interest. In fact, he aims to emphasize that China has something far more important to offer—the teaching of Confucius—which is highly relevant not only to Christianity in China but also to Europe as a whole.

Regarding the discovery of the magnetic compass in China, Martini and Magalhães apparently saw no need to compare it with its recent discovery in Europe. However, Intorcetta was interested in making a parallel. On the manuscript of the *Confucius Sinarum Philosophus*, which is still preserved in the Bibliothèque de France, there is a marginal note in Latin by Intorcetta that reads: "the magnetic compass was invented in Europe by Flavio Gioia Malfesosi in 1303."[34]

Being Sicilian, Intorcetta probably knew the early reference to the use of the compass by the Amalfi mariners near Naples in 1303.[35] However, the attribution to Flavio Gioia Malfesosi is dubious, as it appears only in the middle of

33 See Thierry Meynard, ed., *The Confucius Sinarum Philosophus: The First Translation of the Confucian Classics* (Rome: Institutum Historicum Societatis Iesu, 2011), 95.

34 BNF, ms. Latin 6277, fol. IX(5)b; Latin transcription: "In Europa acus nautica inventa a Flavia Giaia Malfesosi, anno Christi 1303."

35 Johann Adam Weber, *Discursus Curiosi & Fructuosi Ad præcipuas Totius Litteraturæ Humanæ Scientias Illustrandas accommodate* (Salzburg, 1673), 442: "acus nautica inventa est Anno Christi 1303."

the fifteenth century. Unlike Martini, Intorcetta does not explicitly confirm a transmission from China to Europe, but since he dates the invention of the magnetic compass in China to the early Zhou, this could suggest a slow transmission over more than two thousand years. Furthermore, he believes that since Europeans began using the magnetic compass in 1303, they have made rapid progress, rendering the Chinese compass obsolete.

When Couplet edited the final version of the *Confucius Sinarum Philosophus* in Paris in 1686, he crossed out Intorcetta's marginal note. Similar to Martini, Magalhães, and Intorcetta, Couplet also believed in the high antiquity of the Chinese compass, which he attributed in his *Chronological Tables* to Zhou Gong at around 1100 BCE.[36] Perhaps he deleted the mention of the European discovery of the compass by Malfesosi because he did not want to engage himself in the debate whether the discovery of the magnetic compass in Europe was independent or not from China.

The Spanish Dominican friar Domingo Navarrete (1610–89) was also present in Canton with Intorcetta, Couplet, and the other Jesuits during their forced five-year stay from 1666 to 71. After returning to Spain, he published accounts of his travels and his descriptions of China. In Chapter 19 of the second *tratado*, he discusses China's government and mentions the name Zhou Gong. Like the Jesuits, Navarrete credits Zhou Gong with the discovery of the magnetic compass and notes that the use of the compass in Europe is relatively recent, quoting Spanish scientist Nicolás Bautista Monardes (1493–1588) from his *Dialogue on iron and its excellencies*, stating that the *aguja de marear* was discovered by a sailor of the city of Melfi in Italy.[37] Since the city of Melfi in Southern Italy is far away from the coast, Monardes meant Amalfi near Naples, as Intorcetta correctly mentioned in the manuscript of the *Confucius Sinarum Philosophus*. However, unlike Martini, Navarrete does not affirm a historical transmission from China to Europe, and like Magalhães and Intorcetta, he only suggests it.[38]

36 Philippe Couplet, *Tabula chronologica Monarchiae Sinicae* (Paris: Bibliothèque du Roi, 1686), 10.

37 Nicolás Bautista Monardes, *Diálogo del hierro y de sus grandezas* (1574), 74.

38 Domingo Navarrete, *Tratados* II (Madrid, 1676), Chapter 19; English translation: *A Collection of Voyages and Travels* (London: Churchill, 1704), 115.

Late Hesitations of Gaubil about the Antiquity of the Compass

As demonstrated earlier, Martini, following Nan Xuan's comment, confused the south-pointing chariot with the magnetic compass. Li Shuhua had mentioned the role of the French Jesuits in the eighteenth century in spreading this mistake.[39] Indeed, none of them corrected the mistaken opinion of Nan Xuan, even though this opinion had remained relatively marginal among Chinese commentators.

Li Shuhua first mentions Antoine Gaubil (1689–1759) and his "Histoire abrégée de l'astronomie chinoise," published in Paris in 1732, where it states that, according to Chinese chronology, the Yellow Emperor and Zhou Gong used the magnetic compass. Gaubil references a commentary of the *Zizhi tongjian gangmu*, quoting Nan Xuan about the south-pointing chariot being a magnetic compass.[40] As we saw, Nan Xuan's comment was at the root of Martini's mistake. Like Martini, Gaubil considers Nan Xuan's textual reference authoritative. However, Gaubil notes the double attribution of the compass to the Yellow Emperor and Zhou Gong. This indicates that Gaubil does not rely on Nan Xuan alone but retains the dual option first suggested by Cui Bao. Additionally, Gaubil mentions that he found a Han dynasty book explicitly referencing the magnetic needle.[41] Unfortunately, Gaubil does not provide any reference, and Li Shuhua categorically states that no one has ever seen such a book.[42] Gaubil strongly believes in the use of the magnetic compass in ancient times, and he feels the need to explain why it is not clearly mentioned during the Han dynasty. According to him, the Han dynasty still used the south-pointing chariot of the Yellow Emperor or Zhou Gong but had completely forgotten about the magnetic needle, which was mounted on the chariot.[43] It does not appear to cross Gaubil's mind that the south-pointing chariot was invented after the Han, and that Chinese authors following Cui Bao had incorrectly attributed it either to the Yellow Emperor or Zhou Gong.

39 Li Shu-hua, "Origine de la boussole II," *Isis* 45, no. 2 (1954): 175–96, at 178.

40 See Antoine Gaubil, "Histoire abrégée de l'astronomie chinoise," in Etienne Souciet, *Observations mathématiques, astronomiques, géographiques, chronologiques et physiques* (Paris: Rollin, 1732), 94–95.

41 Gaubil, "Histoire abrégée de l'astronomie chinoise," 94.

42 Li Shu-hua, "Origine de la boussole II," *Isis* 45, no. 2 (1954): at 178.

43 See Gaubil, "Histoire abrégée de l'astronomie chinoise," 95.

In 1739, Gaubil writes in his translation of the *Shujing* 書經 that Zhou Gong was an astronomer and used the compass.[44] He does not doubt that the ancient south-pointing chariot, or *zhinanche* (指南車), is what the Chinese today call a compass, *zhinanzhen* (指南針). He expresses no doubt about the antiquity of the invention, and only mentions a debate in China whether the invention dates to Zhou Gong or is even older, still referring to the work of Nan Xuan, attributing the invention of the compass to the Yellow Emperor.[45] Ten years later, in 1749, Antoine Gaubil completed the manuscript of his *Traité de la chronologie chinoise*, making an important correction to Martini's account: the Chinese records do not mention ships, and it seems that the embassy came through the land and also returned that way.[46]

In all his writings up to 1749, Gaubil consistently asserts a very high antiquity for the Chinese compass.[47] However, at the very end of his life, he completed a more detailed *Histoire de l'astronomie chinoise*, which was published posthumously for the first time in 1783 and again in 1819. There, he shows much more caution in attributing the compass to the Yellow Emperor or Zhou Gong, and he says that he would like to see more ancient textual evidence.[48] Unlike the Jesuits of the seventeenth century, Gaubil was a member of a scientific mission and corresponded with scientists in Europe. At the end of his life, he developed critical ideas and more nuanced views about the antiquity of the compass.

Parrenin and the Compass as an Illustration of the Innovative Spirit of the Chinese

The second Jesuit briefly mentioned by Li Shuhua is Jean-Baptiste Du Halde (1674–1743). He was not a missionary but the editor in Paris of the famous *Description … de la Chine* (1735) in four volumes. Du Halde inserted an

44 Antoine Gaubil, *Le Chou-King, un des livres sacrés de la Chine* (1739), ed. Joseph de Guignes (Paris: Tilliard, 1770), partie 4, chapitre 13, 214n4.

45 See Gaubil, *Le Chou-King* …, partie 4, chapitre 21; Kiun-tchin, 262n2 & chapitre 27 Liu-hing, 291–92n1.

46 See Antoine Gaubil, *Traité de la chronologie chinoise, divisé en trois parties*, ed. Silvestre de Sacy (Paris: Treutell, 1814), 36–37.

47 Dehergne affirms that Gaubil had shown some hesitation. However, we do not detect any hesitation before 1749. See Joseph Dehergne, "Gaubil, historien de l'astronomie chinoise," *Bulletin de l'Université Aurore* 3, no. 6 (1945): 168–227.

48 See Antoine Gaubil, "Histoire de l'astronomie chinoise," in *Lettres édifiantes et curieuses, écrites des missions étrangères* (1819), 14:305–447, here 350–51.

abridged history of China, written by Dominique Parrenin (1665–1741), who worked for forty years at the imperial court, in the first volume. Like Martini and Gaubil, Parrenin relies on Nan Xuan's comments, which associate the chariot with the magnetic compass. However, unlike Martini, who attributed the compass to Zhou Gong alone, and unlike Gaubil, who mentions both the Yellow Emperor and Zhou Gong, Parrenin attributes the compass to the Yellow Emperor alone.[49]

The French scholar Virgile Pinot (1883–1936) compared the Parrenin manuscript at the Bibliothèque Nationale de France with the text edited by Du Halde, showing that Du Halde deleted a very negative comment about the compass. Indeed, Parrenin regarded the compass as an ancient scientific tool, but, when used as a geomantic or *fengshui* compass, he viewed it as a magical tool in the popular religions of Daoism and Buddhism. Du Halde simply deleted the passage.[50] In fact, Parrenin was correct in supposing that the invention of the magnetic compass in China was connected to its religious use for divination.[51] However, this did not occur during the Yellow Empire, as Parrenin believed; rather, the transformation from a geomantic device to maritime navigation was a long historical process.

Parrenin was in correspondence with scientists in Europe, including the astronomer and botanist Jean-Jacques d'Ortous de Mairan (1678–1771), who was also Director of the Academy of Sciences in Paris. Since Mairan had expressed doubts about the antiquity of Chinese science,[52] Parrenin, in a letter dated September 20, 1740, took the example of medicine to show that the ancient Chinese possessed both the theory and the practice, whereas contemporary Chinese employed only practice. He also defended the innovative spirit of the Chinese and their intelligence, taking the example of the compass.[53] Parrenin, who died in 1741, seems to have believed to the end in the great antiquity

49 See Dominique Parrenin, "Fastes de la Monarchie Chinoise ou Histoire abrégée et selon l'ordre chronologique de ce qui s'est passé de plus remarquable sous chaque empereur," in Jean-Baptiste Du Halde, ed., *Description … de la Chine* (1735), 1:275.

50 Virgile Pinot, *La Chine et la formation de l'esprit philosophique en France (1640–1740)* (Genève: Slatkine Reprints, 1971), 177–79.

51 Historical texts, such as Shen Kuo's *Dream Torrent Essays*, describe the use of the magnetic needle for both navigation and geomancy, highlighting the shared technological basis of the two devices.

52 See Parrenin's letter to de Mairan on September 20, 1740, in Charles Le Gobien, ed., *Lettres édifiantes et curieuses, écrites des missions étrangères*, 14 vols. (Lyon: J. Vernarel, 1819), 12:46–87.

53 See Parrenin's letter to de Mairan on September 20, 1740, in Le Gobien, ed., *Lettres édifiantes et curieuses*, 12:279. See Marie-Julie Frainais-Maitre, "The Edifying and Curious Letters: Jesuit China and French Philosophy," in Yangwen Zheng, ed., *The Chinese*

of the Chinese magnetic compass, and it was only after 1749 that Gaubil began to express doubts.

Li Shuhua finally mentions the name of Joseph-Anne-Marie de Moyriac de Mailla (1669–1748), confusing the south-pointing chariot and the magnetic compass. Indeed, in the section on Cheng Wang, we read that the chariot offered by Zhou Gong was equipped with a compass and boarded the boat of the ambassadors.[54] Li Shuhua does not mention Joseph de Prémare. Still, for the sake of exhaustivity, we need to mention that Prémare translated many excerpts of the *Shujing*, which were included in the second volume of Du Halde's work. In discussing Zhou Gong, Prémare states that "the invention of the magnetic needle is attributed to him," and he narrates briefly the embassy from Tonkin and Cochinchina.[55]

Conclusion

To conclude, the Jesuit missionaries in China emphasized China's antiquity to support their missionary policy of inculturation. They traced Chinese thought and technological inventions back to an early stage of humanity before the contamination of superstitions. The magnetic compass was, for them, a good example of this. Martini and the other Jesuits did not claim to have invented it, nor did they claim to have ancient origins. As we have shown, Nan Xuan incorrectly asserted that the Yellow Emperor invented the magnetic compass to find and kill the rebel Chiyou. Most likely following Nan Xuan, Martini attributed the invention of the magnetic compass to Zhou Gong, and he also affirmed its use for oceanic navigation, creating the legend of the maritime compass used in China for more than two thousand years. This legend spread to Europe, reinforced by several Jesuit writers for a century. Only at the end of

Chameleon revisited: From the Jesuits to Zhang Yimou (Newcastle upon Tyne: Cambridge Scholars Publishing, 2013).

54 See Joseph-Anne-Marie de Moyriac de Mailla, "Tching-ouang," *Histoire générale de Chine ou Annales de cet Empire, traduites du Tong-kien-kang-mou*, ed. Abbé Grossier, 12 vols. (Paris: Ph.-D. Pierres, 1777), 1:317–18.

55 See Joseph de Prémare, "Le Shujing, Second livre canonique du premier ordre," in Jean-Baptiste Du Halde, ed., *Description … de la Chine*, 2:297. According to Landry-Deron, Prémare could have used the *Shujing zhengyi* 書經正義 of Kong Yida 孔穎達, *Shangshu riji* 尚書日記 with the commentaries of Wang Qiao 王樵, the *Shujing zhijie* 書經直解 of Zhang Juzheng 張居正, the *Shujing daquan* 書經大全, and the *Rijiang shujing jieyi* 日講書經解義; Isabelle Landry-Deron, *La preuve par la Chine, la description de J-B. Du Halde, jésuite, 1735* (Paris: Éditions de l'École des hautes études en sciences sociales, 2002), 197–98.

his life did Gaubil reject Martini's assertion that the magnetic compass had been used for maritime navigation, and he also expressed doubts about its early antiquity. The Jesuit accounts of the compass demonstrate cumulative yet slow progress as they dealt with complex historical materials that required critical evaluation.

According to Jesuit reports, many intellectuals in seventeenth- and eighteenth-century Europe believed that the magnetic compass was invented in China during early antiquity. Modern research has confirmed that the maritime compass was indeed first created in China, but not in early antiquity; it was during the Song dynasty. Martini's second claim was that the maritime compass originated in China and was transmitted to Europe, but there is still no scholarly consensus on this point. Notably, the legend of the magnetic compass's early antiquity returned to China in the nineteenth century, and in the twentieth century, popular literature often adopted this view to promote patriotism.