



Sinicization of Western Learning and the Global History of Knowledge:

A Case Study of Huang Baijia's *Comment in Song Yuan Xue'An*

Hao WANG  <https://orcid.org/0009-0000-4932-9120>

Shanghai University

Wanghaotang2005@163.com

Abstract: Huang Baijia has made a lengthy comment on meteorological change in *Song Yuan Xue'an*, generally, scholars regard it as Huang Baijia's own synthesis of western learnings. In fact, Huang's comment derived from *Zhengshi Lüeshuo*, which was written by Chinese Catholic scholar Zhu Zongyuan. Zhu's book is a work of apologetics; it refers to many Jesuits' books, such as *Taixi Shuifa* of Sabatino de Ursis, *Huanyou Quan* of Francisco Furtado, *Kouduo Richao* of Giulio Aleni, etc. In Huang's citation, he pruned all the materials relating to Catholicism while sustaining western secular knowledge. Carefully comparing the valuable copies of Chinese Catholic literature, namely, *Zhengshi Lüeshuo* of Zhu Zongyuan, *Tianjiao Mingbian* of Zhang Xingyao, and *Xingxue Xingmi* of Chen Xun, we can clearly see the western origin of Huang Baijia's comment as well as his alteration. This provides us with a specific case of the circulation, transformation and sinicization of western learning in the early Qing period, as well as the globalization of modern scholarship.

Keywords: *Songyuan Xue'an*, *Zhengshi Lüeshuo*, Huang Baijia, Zhu Zongyuan, sinicization of western learning

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Introduction

According to *Songyuan xue'an* 宋元学案, Zhang Zai 张载 (1020-1077) explained the formation of natural phenomena such as wind, rain, dew and thunder in his *Zhengmeng* 正蒙, saying:

Yin coalesces and yang disperses. When yin gathers, yang will disperse, and its momentum is evenly dispersed. When yang is exhausted by yin, it falls as rain; when yin is gained by yang, it rises as clouds. Therefore, the clouds are spread out in the void, yin is driven by the wind, converged and not dispersed. When the yin gas coalesces, the yang within is not allowed to come out, it will fight with the birth of thunder. When the yang outside is not allowed to enter, it will be around with the birth of wind. 阴性凝聚，阳性发散。阴聚之，阳必散之，其势均散。阳为阴累，则相持为雨而降；阴为阳得，则飘扬为云而升。故云物班布太虚者，阴为风驱，敛聚而未散者也。凡阴气凝聚，阳在内者不得出，则奋击而为雷霆；阳在外者不得入，则周旋不舍而为风。

This interpretation by Zhang Zai was generally accepted among the subsequent scholars and was highly influential. In explaining natural phenomena such as hail, clouds, wind and thunder, Lu Dian 陆佃 (1042-1102) stated in his *Piya* 埤雅: “Clouds are of *yang* but derived from *yin*, winds are of *yin* but derived from *yang* 云，阳而出于阴；风，阴而出于阳”. (Lu 1936, pp. 500-1, 510) Zhu Xi 朱熹 (1130-1200), in explaining the cause of the formation of rain, claimed that: “Hengqu’s explanations of the formation of wind, thunder, cloud and rain are most reasonable and powerful 横渠《正蒙》论风雷云雨之说最分晓”. (Zhu 2010, p. 141) Wang Sanpin 王三聘 (1501-1577) also relied on Zhang Zai’s *Zhengmeng* when explaining wind and thunder, clouds and rain, and snow and fog in his *Gujin shiwu kao* 古今事物考. (Wang 1987, pp. 1-2) In short, as Benjamin A. Elman puts it, the common feature of these explanations, which have been passed down for thousands of years, is that natural phenomena such as rain, clouds, thunder and lightning are produced by the interaction of *yin* and *yang*. (Elman 2005, p. 49)

Huang Baijia 黄百家 (1643-1709) has a lengthy comment following this quotation from *Zhengmeng*, recorded below:

Baijia carefully commented: Master Zhang Zai used the doctrine of yin and yang to explain the occurrence of wind, rain, dew and thunder, etc. Modern Westerners discussed these topics very detailed, in brief, the scientific mechanism is like this: from the earth up to the heaven, the height is two hundred and sixty li or so, this is the gas field. The gas field is divided into three layers, near the ground is the mild layer, and above is the cold layer and then the hot layer. Various climate

changes all happen in this gas field. The four elements of water, fire, earth and air on ground are attracted by the heavenly bodies and rise up into the gas field, gathering together to become clouds, and dispersing to become rain... 百家谨案：此先生以阴阳之气测想风雨露雷之由也。近代西人之说甚详，略述大旨：自地而上二百六十里有奇，为气域。气域分为三际，近地者为和际，中为冷际，上为热际。种种变化，悉在此气中。下地水火土为天行所吸，则腾聚于气中，郁然成云，散而为雨…… (Huang 1986, pp. 678-9)

Previous researchers have paid attention to this comment and regarded it as an important case for examining Huang Baijia's view of western learning. (Yang and Feng 1996; Xu 2000; Yang 2001; Liu 2009) However, most of the existing literature overlooked his statement that: "Modern Westerners discussed these topics very detailed 近代西人之说甚详". Generally speaking, scholars mostly regard this length comment as Huang Baijia's personal synthesis of previous writings of western learning, without further exploring the sources of this paragraph. This article finds that Huang Baijia's comment is derived from the book *Zhengshi lüeshuo* 拯世略说 written by Zhu Zongyuan 朱宗元 (courtesy name Weicheng 维城, ca. 1616-1660), a Catholic scholar at the end of the Ming Dynasty and the beginning of the Qing Dynasty, for which a more detailed analysis is provided in the following sections.

Huang Baijia's comment is based on Zhu Zongyuan's work

There are six kinds of Catholic literature related to this piece of Huang Baijia's writing: three block-printed copies of Zhu Zongyuan's *Zhengshi lüeshuo*, one hand-written copy of Zhang Xingyao's 张星曜 (ca. 1633-1715) *Tianjiao mingbian* 天教明辨, and two hand-written copies of Chen Xun's 陈薰 (courtesy name Ou'ting 鸥汀, date of birth and death unknown) *Xingxue xingmi* 性学醒迷.

The French National Library (Bibliothèque Nationale de France) has two block-printed copies of *Zhengshi lüeshuo*, and two kinds of each, numbered Chinois 7139/Chinois 7140 and Chinois 7141/Chinois 7142, respectively. The rest block-printed copy in the Vatican Library's collection was from the *Yunjian jingyitang* 云间敬一堂藏板, which were photocopied and published by the *Zhengzhou daxiang chubanshe* 郑州大象出版社 in 2014, and included as the fourteenth volume in the first series of *Mingqing zhongxi wenhua jiaoliushi wenxian congkan* [Series of the Chinese and Western Cultural Exchange History in Ming and Qing Dynasties Literature] 明清中西文化交流史文献丛刊.¹ (Zhang

¹ There were multiple re-block-printed version of *Zhengshi lüeshuo* in the late Qing and Republican periods, such as the Shanghai *Cimutang* 慈母堂 version of the twelfth year of the Tongzhi period (1873), the Beijing *Jiushitang* 救世堂 version of the fifth year of the Guangxu period (1879), the lead-printed

2014; Zhou 2005; Chan 2002, pp. 191-2, 220; Dudink 2011) The original of *Tianjiao mingbian* is now in the Xujiahui Library (Bibliotheca Zi-ka-wei), which is a hand-written copy consisting of twenty volumes, photocopied and published by the Ricci Institute in Taipei 台北利氏学社 in 2013, and included in *Xujiahui cangshulou mingqing tianzhujiao wenxian xubian* [Sequel of the Ming and Qing Dynasty Catholic Literature from the Xujiahui Library Collection]徐家汇藏书楼明清天主教文献续编. It should be added that Ma Xiangbo 马相伯 (1840-1939) had sent a copy of *Tianjiao mingbian* to Ying Lianzhi 英敛之 (1867-1926) and Chen Yuan 陈垣 (1880-1971) in Beijing for proofreading in early Republican China. Now this copy is in the Chinese National Library. (Xiao 2019, p. 39) The two hand-written volumes of *Xingxue xingmi* are also collected by the Xujiahui Library. One volume (actually a fragment) (27cm × 13.5cm) is numbered 00095794B, and the other of two-volume (24.5cm × 14.5cm) is 00095795-95796B. The whole *Xingxue xingmi* was also photocopied and included in the prementioned Xujiahui sequel.

Huang Baijia supplemented *Songyuan xue'an* after Huang Zongxi's 黄宗羲 (1610-1695) death. (Huang 1986, p. 15) As Huang Baijia died in 1709, this comment in question was roughly written between 1695 and 1709. The preface of *Tianjiao mingbian*, edited by Zhang Xingyao, is signed "the year of *xinmao* of the Kangxi reign 康熙辛卯", i.e., 1711, and in fact, this book was edited earlier than 1711. (Xiao 2019, p. 39) Both the one-volume and two-volume hand-written copies *Xingxue xingmi* have a preface written by Sun Zhimi 孙致弥 (1642-1709), the grandson of Sun Yuanhua 孙元化 (1581-1632), a famous Confucian Christian at the end of the Ming Dynasty. There is a big difference in the two prefaces, yet both prefaces signed that they were written in the autumn of year of *xinsi* 辛巳年, namely, the 40th year of Kangxi reign 康熙四十年. It can thus be known that *Xingxue xingmi* was completed before the year of *xinsi* of the Kangxi reign (1701). The "Tiandi yuanshi [the origin of heaven and earth]天地原始" entry in *Zhengshi lüeshuo* stated that: "There have been 6,844 years since the beginning of the heaven and the earth until now, in the year of *jiashen* of Shunzhi reign.自有天地至今顺治之甲申, 仅六千八百四十四年". (Zhu n.d.a, p.16) It can be seen that this book was written in the year of *jiashen* of the Shunzhi reign (1644). However, as scholars have noticed, it is unlikely that this

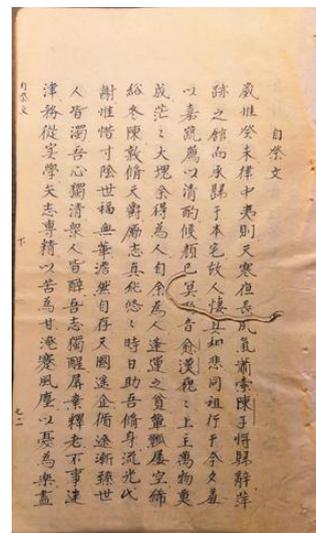
version of the *Xishiku* 西什库 Catholic Church in Beijing in the nineteenth year of the Republic of China (1930), and the lead-printed *Tushanwan* 土山湾 version of the twenty-fourth year of the Republic of China (1935) in Shanghai. These editions appeared later, and whatever textual changes they may have made have had no effect on the discussion in this paper. The three editions covered in this paper were highly likely to be printed in the early Qing Dynasty. In addition, the Xujiahui Library has a block-printed copy of *Yunjian jingyitang* version, and the Jesuit Archives in Rome has three block-printed copies, the same as those in the French National Library (Chinois 7139/Chinois 7140).

book was actually printed in 1644, because the Jiangnan 江南 region were still under the rule of the Southern Ming Dynasty until 1645, and books such as this one, which is directly dedicated to the Qing dynasty, “basically impossible to be printed and circulated”. (Gong 2006; Sachsenmaier 2018, p. 50)

Zhang Xingyao stated at the beginning of “*Biantian lei* 辨天类” in *Tianjiao mingbian* that “Master Chen Ou’ting said”, showing that this discussion is based on Chen Xun’s *Xingxue xingmi*. When Huang Baijia made his comment, Zhu Zongyuan had already passed away for many years, so it can be seen that Huang Baijia’s words must have appeared later than Zhu Zongyuan’s *Zhengshi lüeshuo*. What needs to be compared now is the sequence between Zhu Zongyuan’s *Zhengshi lüeshuo* and Chen Xun’s *Xingxue xingmi*, and we do not know much about Chen Xun’s date of birth and death. According to the German sinologist Dominic Sachsenmaier, Zhu Zongyuan’s “*Zixu* [Self-Narration] 自序” in *Zhengshi lüeshuo* says: “I used to debating in the beginning years, and therefore wrote the book *Da ke wen* [Answer to Guests’ Questions], and now I am going to express some of the main truths again, taking the name of *Zhengshi lüeshuo* [Saving the World in a Nutshell]. What was discussed in detail in the previous book will be briefly mentioned here. (吾) 始也好辯, 为《答客问》行世。今标大义数端, 曰《拯世略说》, 大约详于彼者, 则略于此”. The word “*Shi* 始 [beginning]” implies that Zhu Zongyuan was a young man, and that he went through “an important period of transition” between the writing of the two books. It is assumed that Zhu Zongyuan did not complete his *Da Ke Wen* until 1640, and the word “*Shunzhi* 顺治” in *Zhengshi lüeshuo* indicates that the book was written in the Shunzhi reign. Zhu Zongyuan died in the reign of Shunzhi, so “what we can be sure of is that *Zhengshi lüeshuo* was completed before Zhu Zongyuan’s serious illness in 1659, and it was probably printed quickly after its completion.” In other words, Sachsenmaier believed that the book was written and printed between 1644 and 1659. The author believes that this statement is valid, but the time limit is perhaps too loose. According to Gong Yingyan 龚缨晏, “the book was written in the last year of the Ming Dynasty, but was printed in the early Qing Dynasty”. (Gong 2006) This view may be closer to the reality.

The two-volume version of *Xingxue xingmi* includes the essay “*Ziji wen* 自祭文”, which has sentences such as “Master Chen resigned from his teaching position and returned to his home in the year of *guiwei* 岁惟癸未……陈子将归, 辞萍迹之馆, 而承归于本宅”, “My second wife passed away in lunar November of the year of *xinchou* 辛丑冬仲, 继室复殒” and “The moon went down, the apes were roused, and my poor little son made it all the more mournful 哀哀幼子, 月落猿惊”. (Chen n.d.a, p. 72) Chen Xun had been in Wang Honghan’s 王

宏翰 house to teach his two sons: Wang Zhaowu 王兆武 (courtesy name Shengfa 圣发) and Wang Zhaocheng 王兆成 (courtesy name Shengqi 圣启). (Wang 2020) Wang Honghan was born in 1648, if the year of *guiwei* in “Ziji Wen” refers to 1643, then when Chen Xun resigned, Wang Honghan had not yet been born, which is not reasonable. Therefore, here, the year of *guiwei* should be 1703, and the year of *xinchou* should be 1721. If the book *Xingxue xingmi* was written before *Zhengshi lüeshuo*, we may propose a most logical assumption: the latest possible publication year of *Zhengshi lüeshuo* was 1659, which is 62 years from 1721. Chen Xun’s *Xingxue xingmi* was published in the same year as Zhu Zongyuan’s *Zhengshi lüeshuo*, but earlier. At this time, Chen Xun was fifteen years old, and his mind had just become mature, so this means that he was born in 1644 at the latest. According to this assumption, by 1721, Chen Xun was already at least 77 years old, which seems to be inconsistent with the situation of “second wife 继室” and “little son 幼子” in “Ziji wen”. Therefore, it is unlikely that *Zhengshi lüeshuo* was written after *Xingxue xingmi*. In addition, Sun Zhimi, who wrote the preface of *Xingxue xingmi* and signed his name as “junior or younger schoolmate 教(眷)弟”, was born in 1642. This can further prove that Chen Xun was much younger than Zhu Zongyuan, and the book of *Xingxue xingmi* should have been written later than *Zhengshi lüeshuo*.²



² It should be pointed out that Sun Zhimi composed the preface for Chen Xun’s *Xingxue xingmi* in 1701, which means that the completion of the book should be no later than 1701. It brings up the question why the two-volume version include “Ziji wen”, completed in 1721 by the earliest? One of the understandings is that the format should be taken into consideration, which is hand-written, with “Kangxi xinsi [the year of xinsi of Kangxi reign]”, “Zhimi kaishi sunxiansheng bianzuan [edited by Sun Zhimi]” and “Jiusitang chaolu [transcribed by Jiusitang]” (fig.1). *Xingxue xingmi* compiled by Sun Zhimi may be published, but this published version has not been found yet. “Ziji wen” is unlikely to be included in the Sun-edited version, because Sun died in 1709, at least ten years before this essay was written. This article must have been later added to Sun’s book and preserved in the Jiusitang version, which is the last article in the second volume (fig. 2).

Fig.1 Cover of the two-volume version of *Xingxue xingmi*

Fig. 2 “*Ziji wen*” in the the two-volume version of *Xingxue xingmi*, vol.2, p. 72.

Hence, Zhu Zongyuan’s *Zhengshi lüeshuo* was the earliest book, and it is justifiable to regard it as the source of Huang Baijia’s text. However, these Catholic documents are also very complicated in terms of the origin of their versions, which need to be sorted out and clarified. First of all, *Tianjiao mingbian* and *Xingxue xingmi*: as the contents of the two hand-written versions differ considerably, it is necessary to determine which text of *Xingxue xingmi* is the source of *Tianjiao mingbian*. A few excerpts of the texts are compared:³

***Tianjiao mingbian*:** 气域分为三际，近地者为和际，中为冷际，近火者为热际。……水升仅到气之和际，则为雨为露。入于冷际，遂成霜雪。入冷再深，则为雹。……顾七政经星，性情不齐，有阻有悖之势。同度相值，则能阻其本效，使不得遂。(Standaert 2013, vol. 7, pp. 5-8)

One-volume Version of *Xingxue xingmi*: 气域分为三际，近地者为和际，中为冷际，近火者为热际。……水升仅到气之和际，则为雨为露。入于冷际，遂成霜雪。入冷再深，则为雹。……顾七政经星，性情不齐，有阻有悖之势，同度相值，则能阻其本效，使不得遂。(Chen n.d.b, no page number)

Two-volume Version of *Xingxue xingmi*: 界中分为三际，近地者为和际，中者为之冷际，近火者为之热际。……水升仅到气之和际，则为雨为雾。入于冷际，则遂成霜雪。入冷再深，遂成雹。……顾七政经星，性情不齐，有阻有悖，同度相值，则能阻其本效，使不得遂。(Chen n.d.a, vol.1, pp. 5-7)

It is not difficult to see that the texts of *Tianjiao mingbian* and the one-volume version of the *Xingxue xingmi* are basically the same. From the point of view of textual similarity, *Tianjiao mingbian* should have originated from the one-volume *Xingxue xingmi*.

Secondly, the relationship between Huang Baijia’s comment and these Catholic documents, some texts are again extracted for textual comparison:

Comment by Huang Baijia: 气域分为三际，近地者为和际，中为冷际，上为热际。……火土并蒸，则或风止而继之以雨，或甚而风以散之，或甚而风雨并作，总视其势之先后盛衰焉。……冬云需缓而广，非经数日，云气不成，

³ In the textual comparisons here and below, the reader can determine the direction of the source flow between the texts based on the addition, deletion and alteration of Chinese words and phrases in the different versions, this task can only be reviewed and discerned in the Chinese context, and therefore these texts have not been translated into English.

故至冷际而结为霜雪者，常然也。

Tianjiao mingbian: 气域分为三际，近地者为和际，中为冷际，近火者为热际。……火土并蒸，则或风止而继之以雨，或甚而风以散之，或甚而风雨并作，总视其势之先后盛衰焉。……冬云舒缓而广，非经数日，云气不成，及其成雨，施被亦远。

One-volume Version of Xingxue xingmi: 气域分为三际，近地者为和际，中为冷际，近火者为热际。……火土并蒸，则或风止而继之以雨，或甚而风以散之，或甚则风雨并作，总视其势之先后盛衰焉。……及其成雨，施被亦远。

Two-volume Version of Xingxue xingmi: 界中分为三际，近地者为和际，中者为之冷际，近火者为之热际。……火土并蒸，则或先风而后雨，或风雨并作，总视其势之先后盛衰焉。……冬云舒缓而广，非越日不雨，雨亦广被也。

French National Library Version of Zhengshi lüeshuo (1): 气域分为三际，近地者为和际，中为冷际，近火者为热际。……火土并蒸，则或风止而继之以雨，或甚而风以散之，或甚则风雨并作，总视其势之先后盛衰焉。……冬云需缓而广，非经数日，云气不成，及其成雨，施被亦远。(Zhu n.d.a, pp. 53-6)

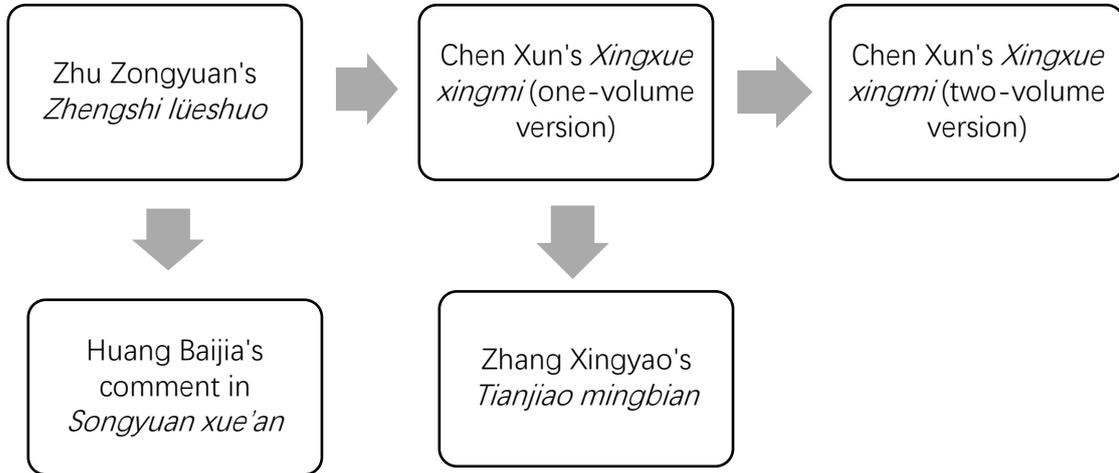
French National Library Version of Zhengshi lüeshuo (2): 气域分为三际，近地者为和际，中为冷际，近火者为热际。……火土并蒸，则或风止而继之以雨，或甚而风以散之，或甚则风雨并作，总视其势之先后盛衰焉。……冬云需缓而广，非经数日，云气不成，及其成雨，施被亦远。(Zhu n.d.b, pp. 51-4)

Vatican Library Version of Zhengshi lüeshuo: 气域分为三际，近地者为和际，中为冷际，近火者为热际。……火土并蒸，则或风止而继之以雨，或甚而风以散之，或甚则风雨并作，总视其势之先后盛衰焉。……冬云需缓而广，非经数日，云气不成，及其成雨，施被亦远。(Zhang 2014, vol. 14, pp. 305-11)

Obviously, the two-volume *Xingxue xingmi* has the greatest differences from the other versions. In addition, it can also be seen that the comment of Huang Baijia is basically the same as that of *Zhengshi lüeshuo*, while slightly different from *Tianjiao mingbian* and the one-volume *Xingxue xingmi*. For example, Huang Baijia's comment states that “冬云需缓而广”, which is the same in all three versions of *Zhengshi lüeshuo*. While the text of this paragraph in the one-volume *Xingxue xingmi* is missing, the text in the two-volume *Xingxue xingmi* and *Tianjiao mingbian* is “冬云舒缓而广”.

From this, we can judge that Zhu Zongyuan's *Zhengshi lüeshuo* should be

the reference source of Huang Baijia's comment. In addition, the relevant text in *Zhengshi lüeshuo* is also the source of the relevant text in Chen Xun's *Xingxue xingmi*. As far as this text is concerned, the origin and development between the above documents can be represented by the following diagram:



As a matter of fact, the text of the French National Library version Chinois 7141 is identical to that of the Vatican Library version, and there are minor textual differences between them and the other French National Library version Chinois 7139. With further comparison made, it can be judged that the direct source of reference for the Huang Baijia's comment should be the French National Library version Chinois 7141 or the Vatican Library version:

Comment by Huang Baijia	French National Library Version of <i>Zhengshi lüeshuo</i> (Chinois 7139)	French National Library Version of <i>Zhengshi lüeshuo</i> (Chinois 7141)	Vatican Library Version of <i>Zhengshi lüeshuo</i>
其有风而不雨者，火之升也，不受水迫，即返下土，为气遏抑，未获遽达，遂横奔动气而为风。	其有风而不雨者，火之升也，不受水迫，即退下土，为气遏抑，未获遽达，遂横奔动气而为风耳。	其有风而不雨者，火之升也，不受水迫，即返下土，为气遏抑，未获遽达，遂横奔动气而为风耳。	其有风而不雨者，火之升也，不受水迫，即返下土，为气遏抑，未获遽达，遂横奔动气而为风耳。
夏时炎烈，上升之势锐，能直入冷之最深处，故结而为雹；冬则上升之	夏时炎烈，上升之势，锐然直入冷之最深处，故结而为雹；冬则上升之	夏时炎烈，上升之势锐，能直入冷之最深处，故结而为雹；冬则上升之	夏时炎烈，上升之势，锐能直入冷之最深处，故结而为雹；冬则上升之

势缓，仅及冷际，遂为霜雪也。	势缓，仅入冷际，遂为霜雪也。	势缓，仅及冷际，遂为霜雪也。	势缓，仅及冷际，遂为霜雪也。
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After clarifying the source of the text, it is logical to understand that Zhu Zongyuan's *Zhengshi lüeshuo*, as one of the Chinese Catholic documents, has formed two channels of circulation after its publication, one is "within the Catholic Church" and the other is "outside the Catholic Church". The genealogy of its circulation and the impact it had in these two paths deserve to be explored in depth.

Zhu Zongyuan's work is based on Jesuits' Chinese Books

Zhu Zongyuan was an upper-middle-class scholar in Ningbo in the mid-17th century who played a pivotal role in bridging the European missionaries with the local scholarly and religious communities. (Sachsenmaier 2018, pp. 54-6) As discussed above, the relevant texts in Zhu Zongyuan's *Zhengshi lüeshuo* should be the direct source of Huang Baijia's comment. While Zhu Zongyuan's statement seems to be a synthesis of a few Catholic works by the Jesuits in the late Ming dynasty: Sabatino de Ursis' 熊三拔 (1575-1620) *Taixi shuifa* 泰西水法, Francisco Furtado's 傅汎际 (1587-1653) *Huanyou quan* 寰有诠, and Giulio Aleni's 艾儒略 (1582-1653) *Kouduo richao* 口铎日抄.

Taixi shuifa was written in 1612, the year *renzi* of the Wanli reign 万历壬子年, and was published by Li Zhizao 李之藻 (1565-1630) in the first year of the Chongzhen reign 崇祯元年 and included in the *Tianxue chuhan* 天学初函. Firstly, we will compare some of the texts and sentences in *Zhengshi lüeshuo* with those in *Taixi shuifa*:

<i>Zhengshi lüeshuo</i> (Zhu n.d.b, pp. 51-4)	<i>Taixi shuifa</i>
若盛夏炎热，水气干，不能升，火土独上，势重则久凝，为彗为慧。势轻则奔散，而为流星焉。火既破气而出，成为雷霆，若火已尽，则不复风。……土自独上，奔散之际，则成黄霾昼晦。	气受三行，如云气上升，激成雷电，有火分也。阴霾昼晦，黄雾四塞，有土分也。……积火所然，土石为烬，复乘气出，共成炎上。隔于云雨，郁为雷霆，升于晶明，上成彗孛。(de Ursis 1965, vol. 3, pp. 1638-9)
故登高山之巅，则雷雨风云，咸出其下。	每有高山之上，俯瞰云雨，皆在其下，下视震雷，如水发沓也。(de Ursis 1965, vol. 3, pp. 1657-8)

<p>火在于中，为气水所束，不得 出走，则殷殷有声。及于得路， 破裂而走，遂成大响，而电正其 光之奔飞者也。若土之升，亦在 气中，为奔炎所炼，遂成霹雳楔， 同电降地，即拾则可得之。入土 久，仍化为土矣。</p>	<p>阴云逼迫，既不相容，火土之势，上下不 得，亦无就灭之理，则奋迅决发，激为雷霆。 是其破裂之声，电是火光，火迸上腾，土经 火炼，凝聚成质。质降于地，是为劈历之楔 矣。……其土势太盛者，有声有迹，下及于 地，或成落星之石，与劈历同理焉。若更精 更厚，结聚不散，附于火际，即成彗孛。(de Ursis 1965, vol. 3, pp. 1661-3)</p>
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It can be seen that a number of discussions in *Zhengshi lüeshuo* are a synthesis and paraphrase of *Taixi shuifa*. Zhu Zongyuan integrated the relevant contents of *Taixi shuifa*, which can be proved by the use of same wording, such as “为孛为彗”, “黄霾昼晦”, “登高山之巅” and “遂成霹雳楔”.

In addition to *Taixi shuifa*, Zhu Zongyuan should also refer to and draw on *Huanyou quan*. It is a book translated by Francisco Furtado, orated by Li Zhizao, who also wrote its preface, and also published in the first year of Chongzhen reign (1628). (Xu 2010, p. 147) *Zhengshi lüeshuo* said that: “These weather changes are formed naturally. The reason behind them is the will of the Lord of Heaven. The sun shines on the earth and is able to attract the four elements of the earth. The moon is likewise able to attract the four elements of the earth... The sun, the moon, Venus, Jupiter, Mercury, Mars, and Saturn can all have an effect on the earth, and their effects are different, and they have different effects at different locations. Therefore astronomers are able to project the weather conditions of the year based on the relative positions of the above celestial bodies and the Earth 种种变化，悉出自然，而其所从，咸因天德。日光所照，能吸引下地之四元，惟月亦然。……诸星之德，各能施效。顾七政经星，性情不齐，有阻有悖之势，同度相值，则能阻其本效，使不得遂。故天文之家，推此年之躔度，即可知此年之水旱”。 This passage actually reflects a kind of astrology in Europe at that time, which believed that meteorological changes were influenced by the operation of the *qizheng* 七政, and some scholars named it “astrometeorology”. (Huang 2018, p. 81; Han 2018, pp. 19-37) *Huanyou quan* has a systematic introduction to this school of knowledge. Comparing the statements of *Huanyou quan* and *Zhengshi lüeshuo*, the author believes that the former should be the source of the latter. *Huanyou quan* states:

日月星施效，各有不同，乃知雨暘寒燠之候，可以出作入息，故云司备候占。(Furtado 1628, vol. 1, pp. 37-8)

论下域之体，其顺动之利，义固有二：一为各受天德所施，二为凡物因性之情，各所自有之动也。(Furtado 1628, vol. 2, p. 41)

又按，笃禄谋及占星之说，咸谓七政之情，自分冷热，间有感下土之气者。(Furtado 1628, vol. 3, pp. 7-8)

亚利论形物之变化悉繇天运而来，故穷理者具论天施下域者何如……庶星或出或入，或远或近，或离或合，皆能感召风雨。(Furtado 1628, vol. 3, p. 24)

一说，谓天施俱出固然之理。今有一星，能梗他星，阻其本效。其在此星，虽出偶然，然会通天体，总之皆固然者。(Furtado 1628, vol. 3, p. 36)

In this citation, “笃禄谋[Dulumou]” refers to Claudius Ptolemaeus (ca. 90-168), and “亚利[Yali]” is Aristotle (384-322 BC). In addition to the above quotation, there is another detail that shows that *Zhengshi lüeshuo* should have borrowed from *Huanyou quan*. According to Zhu Zongyuan: “From the earth up to the heaven, the height is two hundred and sixty *li* or so, this is the gas field 自地而上，二百六十里有奇，为气域”. The author examined the Catholic literature in the late Ming Dynasty, including *Qiankun tiyi* 乾坤体义 by Matteo Ricci 利玛竇 (1552-1610), *Taixi shuifa* by Sabatino de Ursis, *Huanyou quan* by Francisco Furtado, *Kongji gezhi* 空际格致 and *Huanyu shimo* 寰宇始末 by Alfonso Vagnoni 高一志 (1566-1640), and found that only *Huanyou quan*, *Kongji gezhi* and *Huanyu shimo* introduced the height of the atmosphere. *Huanyou quan* stated: “According to astronomy, the atmosphere is more than 260 *li* thick 论气行，循天文学，其厚二百六十余里。” (Furtado 1628, vol. 6, p. 30) *Kongji gezhi* said: “The atmosphere is about 250 *li* thick 气之厚……约有二百五十里。” (Vagnoni 1633, vol. 1, pp. 17-8) *Huanyu shimo* stated: “The atmosphere is a total of 250 *li* thick 气……厚共二百五十余里。” (Vagnoni 1637, vol. 1, p.16) Zhu Zongyuan’s statement coincides with *Huanyou quan*, which can prove that *Huanyou quan* should be one of the sources of Zhu Zongyuan’s synthesis of western learning.

In addition, the author believes that Zhu Zongyuan may have also referred to Giulio Aleni’s *Kouduo richao* and *Wushi yanyu* 五十言余. The circumstances in which *Kouduo richao* were written and published are more complicated. According to Xiao Qinghe 肖清和, the first four volumes of the *Kouduo richao* were printed around 1633, and the entire eight-volume work was printed around 1640 or later. Erik Zürcher (1928-2008), on the other hand, suggested that the entire eight-volume edition of the *Kouduo richao* was printed between 1645 and 1646. However, Zürcher also pointed out that the book was probably an “internal publication” of the Catholics. The circumstances of its “internal” circulation and publication could not be known at present. (Xiao 2015, pp. 141-2) In the eighth volume of *Kouduo richao*, there are the entries “Answering no one has ever seen a dragon 答龙之为物目所未见” and “Answering the cause of

lightning 答雷电之义”, which say:

其香问曰：敝邦之云致雨也，必以龙，未知贵邦亦同此否？先生曰：中邦之龙，可得而见乎？抑徒出之载籍传闻也？……曰：然则雨之致也如之何？先生曰：雨之致详载他篇，兹不复赘。但余向航海东来，时方晴朗，忽见阴云一簇，自天而下，至于海面。俄超腾而上，顷则散为雨矣。于时敝友推论，以为旋风吹云而下，因吸水气，始散而为雨。此余目睹甚明且真，并未见所谓龙者，未敢如中邦之神明其说也。

其香曰：请问雷电之说。先生曰：雷之为物也，乃空中四元行所渐结而成。惟受密云包裹，奋不得出，遂殷殷有声。一遇云薄之处，则迸击而下，遇物而震碎矣。电则结而未成，故只闪烁有光，而不能有声，且亦不能下击也。

其香曰：雷之击物也，或出于偶。若人之被震而死，岂出于偶然者乎？先生曰：雷虽无情之物，然非上主所命，亦不能妄击一人。即如水火皆无情之物，然其焚人、溺人也，非有上主允命不可。(Aleni 1631, vol. 8, pp. 13-4)

Apart from analyzing the reasons for the formation of cloud and rain, *Zhengshi lüeshuo* also criticizes the popular concept in China of “dragons create clouds and rain 龙致云雨”, and many of its words and phrases are very close to those in the *Kouduo richao*. In criticizing “dragons create clouds and rain 龙致云雨”, Zhu Zongyuan said: “Nowadays, people misunderstand that dragons are the reason why clouds and rain are created 今人误解云从龙之说，妄疑云雨系彼所致”. In the discussion of “thunder and lightning killing people 雷电击人”, Zhu Zongyuan wrote: “One dies from disease, or dies from killing and wounding, or dies from water flooding or fire burning……How can we say that if one dies from lightning and thunder is more evil than those die from flooding or fire? Every one’s birth and death are out of the Lord of Heaven 或死于疾病，或死于杀伤，则亦有水淹而死者，火焚而死者。……岂必死于雷者，恶于水火哉？若人之死生，不拘何等，俱出天主之命”. The similarities of these words and meanings with *Kouduo richao* could prove that Aleni’s book is one of the references of *Zhengshi lüeshuo*.

The discourse in Zhu Zongyuan’s *Zhengshi lüeshuo* on thunder and lightning striking people is also similar to that in another work by Giulio Aleni, *Wushi yanyu*. (Aleni 1645, p. 11) Both Aleni and Zhu Zongyuan believed that human’s life and death are all controlled by God. However, Aleni also criticizes the concept of “retribution 报应” in traditional Chinese society, which was downplayed by Zhu Zongyuan in his book. Aleni’s book was first published in 1645, around the same time as Zhu Zongyuan’s *Zhengshi lüeshuo*, but it cannot be concluded that the book had not been circulated before publication. The title

page of *Wushi yanyu* reads: “According to the rules of the Church, all books written and translated must be proofread three times before they can be published. This book is written by Giulio Aleni, proofread by Emmanuel Diaz Junior, Francisco Furtado and Gaspard Ferreria, and proved by the Superior Francisco Furtado 遵教规，凡译经典、著书，必三次看详，方允付梓。兹并镌订阅姓氏于后：极西耶稣会士艾儒略撰，阳玛诺、傅汎际、费奇规全订，司会傅汎际准梓”。 It can be seen that the book must have been printed later than the time of completion. Emmanuel Diaz Junior (1574-1659) had a close relationship with Zhu Zongyuan. (M. 2002) In 1640, Emmanuel Diaz’s translation of *Qingshi jinshu* 轻世金书 was first published, and Zhu Zongyuan, “a disciple in Ningbo”, edited it. In 1642, Diaz wrote *Tianzhu shengjiao shijie zhiquan* 天主圣教十诫直译, for which Zhu Zongyuan wrote the preface, and the Jesuits who took part in the proofreading of the book included Gaspard Ferreria (1571-1649), Giulio Aleni and António de Gouvea 何大化 (1592-1677). (Diaz n.d., vol. 1, p. 1; Diaz 1642, preface; Xu 2010, pp. 37, 133; Fang 1988, pp. 94-5) It can be seen that there is a great deal of overlap between the groups that wrote and revised *Wushi yanyu* and *Tianzhu shengjiao shijie zhiquan*. Sachsenmaier has pointed out that it is very likely that Zhu Zongyuan had already read the Christian literature collected by Catholics in his hometown when he was very young, and that after his baptism, he also kept close contact with several European missionaries. (Sachsenmaier 2018, p. 41) Therefore, it is reasonable that Zhu Zongyuan had read Aleni’s *Wushi yanyu* when writing *Zhengshi lüeshuo*. Nevertheless, limited to the historical sources, it is difficult to make an assertive conclusion. The interactions between the Catholic figures and the Christian texts during the Ming and Qing dynasties may have been more complicated than currently discovered.

Conclusion and significance

The above analysis provides us with a concrete case, from which we can see the form and path of the western meteorological knowledge introduced into China since the end of the Ming Dynasty, which was circulated and integrated into Chinese knowledge among the Chinese literati class (including both Catholics and non-Catholics). The writings by foreign Jesuits, such as Sabatino de Ursis’ *Taixi shuifa*, Francisco Furtado’s *Huanyou quan*, and Giulio Aleni’s *Kouduo richao*, were integrated and synthesized into a new text by the Chinese Catholic scholar Zhu Zongyuan. Huang Baijia’s comment in *Songyuan xue’an* neither came directly from the books of western missionaries in the Ming and Qing dynasties, nor was it his own synthesis of western sayings, but derived directly from Zhu Zongyuan’s *Zhengshi lüeshuo*. However, it is worth noting that Huang Baijia said in the comment that “modern westerners discussed

these topics very detailed 近代西人之说甚详” but kept silent about Zhu Zongyuan and his book. This gesture may imply that in Huang Baijia’s view, this knowledge did not belong to the traditional Chinese knowledge system, and what is important is not the direct source of the quotation, but the fact that this knowledge came from “modern westerners”.

Equally noteworthy is the different attitudes of the Catholic and non-Catholic scholars towards western learning and western religion. For the western meteorological knowledge introduced since the end of the Ming Dynasty, Huang Baijia seems to have been inclined to accept it. Commenting on Zhang Zai’s *Zhengmeng*, he said: “The development of calendars is becoming more and more sophisticated... the results can be based on scientific calculations and cannot be described in a generalized way 历法一道，至今愈加精密.....灼然可见可推，非可将虚话臆度也。” (Huang 1986, p. 681) The so-called “The development of calendars is becoming more and more sophisticated 历法一道，至今愈加精密” describes the introduction of the western knowledge of astronomy and mathematics 历算. (Yang 2001) The case discussed in this paper also shows that, in the opinion of Huang Baijia, the intellectual level of the explanation of meteorological changes, “the theories of modern westerners 西人之说” seemed to be more superior to the traditional “yin-yang theory of sensuality 阴阳二气交互感应说”.

The most significant difference between the Huang Baijia’s comment in question and its intellectual source, *Zhengshi lüeshuo*, is that Huang Baijia rejected all interpretations involving Catholic theology altogether to rationalize astronomical and meteorological changes. Huang Baijia deleted two crucial sentences in Zhu Zongyuan’s *Zhengshi lüeshuo*: “The weather changes, God decides it 而其所从，咸因天德” and “These are the truths between heaven and earth. Only the God of Heaven who made the heaven and the earth can change them 兹皆天地固然之理矣。惟制造天地之主，可以易固然之运”. However, Zhu Zongyuan said in his self-narration of *Zhengshi lüeshuo*: “When I read Catholic books, I can’t help but jump for joy and say, The Way is here! The Way is here! 及睹天学诸书，始不禁跃然起曰：道在是！道在是！” (Zhu n.d.a, pp. 2-3) Obviously, Zhu Zongyuan wrote *Zhengshi lüeshuo* as well as *Da Ke Wen* for the purposes of “promote the truth 宏道”. The westerners he met were “pure in virtue” and “erudite in learning”, which enabled him to be convinced of “the truth”. This means that in Zhu Zongyuan’s understanding, “western learning” was subordinate to “western religion”.

Chen Xun’s *Xingxue xingmi* and Zhang Xingyao’s *Tianjiao mingbian* are also similar to *Zhengshi lüeshuo*, and both of them can be referred to work of

apologetics, defending the Catholic religion. All of these works attempted to use “western learning” as a tool for “studying things and investigating truths 格物穷理” to achieve the purpose of “warding off evil spirits 辟邪”, and their so-called targets of criticism were the “God of rain 雨师”, “God of wind 风伯”, “God of thunder 雷公”, “Goddess of lightening 电母” and other beliefs in traditional Chinese society. These purposes are not mentioned at all in Huang Baijia’s text, and he only described the “western learning”, without criticizing the “Chinese customs”. The above discussion also shows that these apologetic works are often related to each other, but the later ones also modified the contents. These documents formed their own genealogy in the process of copying and transmission. However, it is difficult to clearly distinguish the continuity between the various texts and versions, which requires specific comparisons and analyses.

Judging from the findings of this case study, a couple of significances could be further elaborated. Firstly, from the perspective of the relationship between Chinese and western cultures, Huang Baijia’s approach of “taking western learning and abandoning western religion” reflects some profound significance in the process of contact and integration of Chinese and western cultures in the early modern era. Xu Haisong 徐海松 pointed out that Huang Zongxi and Huang Baijia had direct contacts with European Jesuits. Huang Zongxi was friends with Adam Schall 汤若望 (1591-1666) and Jacques Rho 罗雅谷 (1593-1638), and he “acquired block-printed and hand-written books on astronomy and mathematics from the westerners exhaustively 得其各种抄刻本历书极备”. From 1687 to 1691, during the revision of the Ming History 明史 in Beijing, Huang Baijia was in contact with Ferdinand Verbiest 南怀仁 (1623-1688), Thomas Pereira 徐日昇 (1645-1708), Antoine Thomas 安多 (1644-1709), Giandomenico Gabiani 毕嘉 (1623-1694), and Joachim Bouvet 白晋 (1656-1730), and he made field trips to the observatories that housed western astronomical instruments. (Xu 2005) Gong Yingyan, by analyzing the interpersonal relations of the scholar community in eastern Zhejiang province in the late Ming and early Qing dynasties, pointed out that “Huang Zongxi should have been aware of the Catholics in eastern Zhejiang, such as Zhu Zongyuan, but strangely enough, there is no mention of Zhang Nengxin 张能信, much less of the Catholics, such as Zhu Zongyuan, in the writings of Liu Zongzhou 刘宗周 and Huang Zongxi.” Huang Zongxi and his son were from Yuyao 余姚 of Shaoxing 绍兴, and Zhu Zongyuan was from 鄞县 Yinxian of Ningbo 宁波, Yuyao and Yinxian are a hundred *li* apart. Zhu Zongyuan’s Catholic friend, Zhang Nengxin (birth and death date unknown), was a disciple of Liu Zongzhou (1578-1645), along with Huang Zongxi. (Gong 2006) This

article shows that Huang Baijia, in his continuation of his father's unfinished work, quoted and edited Zhu Zongyuan's *Zhengshi lüeshuo* but anonymized the authorship, a phenomenon that at first glance seems very "strange" indeed. Huang Baijia and his father all had contacts with western missionaries, studied the western calendar and acknowledged the advantages of western learning. Therefore, the reason for Huang Baijia to keep Zhu Zongyuan and his book in obscure, should not be in the "western learning" but in the "western religion".

Regarding the relationship between western learning and western religion in the Ming and Qing dynasties, previous scholars have long made profound observations and discourses. Li Tiangang 李天纲 pointed out that Huang Zongxi disliked the western religion, but attached great importance to the rational knowledge in western learning. What is more noteworthy is the way Chinese scholars adopted western learning. Qian Daxin 钱大昕 (1728-1804), a master of *puxue* 朴学 in the Qianlong-Jiaqing period, wrote to Dai Zhen 戴震 (1724-1777), vehemently accusing Jiang Yong 江永 (1681-1762) of not being as good as Mei Wending 梅文鼎 (1633-1721), because Mei Wending was "able to use western learning", while Jiang Yong was "used by westerners". In other words, Jiang Yong was "westernized 西化" while Mei Wending could "master westernizing 化西". (Li 2007, pp. 102-12) Elman points out that before the nineteenth century, Chinese scholars had a "selective" interest in western knowledge such as astronomy, calendar, and observatory, which usually rejecting Christian theology, which was declining even back in Europe. In the eyes of the Chinese scholars, the claims of the Jesuits about the power of God were unacceptable as heresy. (Elman 2005, pp. 107, 111) Xie Guozhen 谢国桢 (1901-1982) commented that the fact that the scholars of the Ming and Qing dynasties "studied the western learnings but did not accept its religion", "shows that our scholars were able to adopt the strengths of all and discard their shortcomings." (Xie 1982, p. 6) This paper explores a specific case of the Sinicization of western learning during the Ming and Qing dynasties, and may perhaps provide a micro evidence of the assertions of the above scholars.

Secondly, from the perspective of global history, taking Zhu Zongyuan as a case study, Sachsenmaier explored the involvement of a seventeenth-century Catholic scholar in the process of globalization, and the title of his book is "Global Entanglements of a Man Who Never Traveled: A Seventeenth-Century Chinese Christian and His Conflicted Worlds". This paper is not going to give a lengthy introduction to the book, but only to point out a few main thesis therein. As Zhu Zongyuan was a pivotal figure between the European missionary community and the local believers in Ningbo, where was a center of book publishing at the time, his writings have the dual attribute of being part

of the global Catholic literature on the one hand, and the Chinese book market during the Ming and Qing dynasties on the other, as Sachsenmaier has repeatedly emphasized. (Sachsenmaier 2018, pp. 44-6) He adopts a global perspective in analyzing Zhu Zongyuan, an upper-middle-class scholar, and his discussion focuses mainly on the “intra-Catholic” sphere. This paper shows that Zhu Zongyuan’s works did circulate in the wider “extra-Catholic” book market, and entered mainstream Chinese scholarship through the editing of important figures like Huang Baijia. It is well known that Huang Zongxi and his son’s *Songyuan xue’an* is an important work in the history of Chinese scholarship. After the death of Huang Zongxi and his son, the book was edited by Quan Zuwang 全祖望 (1705-1755), Wang Zicai 王梓材 (1792-1851), and Feng Yunhao 冯云濠 (1807-1855) and other generations of scholars. It was only then that the book was finally written and finalized, divided into one hundred volumes, and published in 1838. At this time, 83 years have passed since the death of Quan Zuwang, 143 years have passed since the death of Huang Zongxi. (Huang 1986, pp. 1-7) This process can be said to be long and tortuous. However, after all, there were generations of scholars who applied importance to this work and tried to finalize and circulate it. In contrast, traditional scholars have paid little attention to the other six types of “intra-Catholic” literature discussed in this article. The three versions of Zhu Zongyuan’s *Zhengshi lüeshuo* are collected in the French National Library and the Vatican Library; The two versions of Chen Xun’s *Xingxue xingmi* and Zhang Xingyao’s *Tianjiao mingbian* are in the Xujiahui Library. The collection and preservation of these documents are inseparable from the Catholic missionaries, and in a certain sense, they can be called “extra-territorial related Chinese books”.⁴ If there is no intentional collection of Christian literature by the Catholic missionaries, or if the above literature is not properly preserved in libraries at home and abroad, the interpretation of the meteorological texts by scholars on Huang Baijia may stuck at subjective interpretations, and there may be no trace of “this piece of history of the global travel of knowledge”. In other words, due to the unequal power of historical discourse between Huang Baijia and Zhu Zongyuan, it is easy to lead to the absence of key links in the history of knowledge and academia. Without such key links, the understanding and interpretation of history by later generations will also be very different. Whether the introduction of western learning into China during the Ming and Qing dynasties, or the collection of Christian literature in libraries all over the world, they are all concrete manifestations of a globalized history, which are all closely related to the Jesuits, a Catholic religious order with global characteristics.

⁴ Strictly speaking, Xujiahui Library is geographically located in China, and the documents it contains cannot be called “extraterritorial”. The point being made here is that it is doubtful whether these documents would have survived to this day if it were not for the efforts of “extraterritorial figures”.

(Standaert 2012, pp. 47-96) From this point of view, the Jesuits' participation in the establishment of book collection system with global characteristics provided the basis for the "global involvement" of the Catholic scholar Zhu Zongyuan. Its implications went beyond the temporal limitations of the seventeenth century into a longer historical period. On the other hand, the flip side is also true: Zhu Zongyuan's case provides an important example of the depth of Jesuit involvement in the scholarly integration across the globe.

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