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Justifying Collaboration between Chinese Literati and 'Subjects from Afar': The Paratexts of the *Taixi shuifa* 泰西水法 (Hydromethods of the Great West; 1612)

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Abstract. *Prefaces and other paratexts can serve as platforms not only for advertising the work to which they are attached, but also for self-promotion and the articulation of ulterior aspirations of their authors. The Chinese language treatises on Western sciences and technology written during the Jesuit China mission from the late 16th century onwards were no exception in this regard. This essay takes the altogether five prefaces to the* Taixi shuifa 泰西水法 *(Hydromethods of the Great West; 1612) (hereafter TXSF), composed by the Italian Jesuit Sabatino de Ursis with the support of the Chinese official Xu Guangqi* 徐光啟*, as an example for typical rhetorical strategies implemented in such endeavours at that time. On the Chinese side, these strategies aimed at the introduction of the transmitted knowledge to a learned and in large part sinocentric audience in the Middle Kingdom, and at a justification of the collaboration with these foreign "vassals". The comparison with de Ursis' preface shows that the Jesuit's intentions, however, went in a completely different direction.*

Riassunto. *Le prefazioni e altri paratesti possono servire come piattaforme non solo per pubblicizzare l'opera a cui fanno riferimento, ma anche per l'autopromozione e l'articolazione di ulteriori aspirazioni da parte dei loro autori. I trattati in lingua cinese sulle scienze e la tecnologia occidentali, scritti durante la missione dei gesuiti in Cina dalla fine del XVI secolo in poi, non fecero eccezione a questo riguardo. Il presente saggio prende in considerazione tutte e cinque le prefazioni del* Taixi shuifa *(Hydromethods of the Great West; 1612) (di seguito TXSF), composto dal gesuita italiano Sabatino de Ursis con l'apporto del funzionario cinese Xu Guangqi, come esempio delle tipiche strategie retoriche messe in atto in questi tentativi. Da parte cinese, queste strategie erano finalizzate all'introduzione della conoscenza trasmessa ad un pubblico erudito e in larga parte sinocentrico nel Regno di Mezzo, e fornivano nel contempo una giustificazione della collaborazione con i "vassalli" stranieri. Il confronto con la prefazione di de Ursis mostra che le intenzioni del gesuita, invece, andavano in tutt'altra direzione.*

1. *Introduction*

In China, the writing of pre- or postfaces has a long tradition. There function originally had been to inform the reader about the motivations of the compiler to reconstruct longer, coherent texts out of shorter written fragments circulating separately on wood, bamboo strips or silk[1]. The underlying approach to change their layout by

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This essay is only a first inroad into the topic of the distinct functions of these paratexts, which will be treated in more detail in the author's PhD thesis written within the research project "Translating

arranging smaller units into a meaningful literary work is reflected in the designation of these appended explanations by the character *xu* 序. This term had initially been standing for the editor's "proper arrangement of things"[2], and only later became the common expression for a type of writing that gradually turned into a place for the author's self-expression or his instructions about how and why one should read the book under consideration[3].

But prefaces were not only written by the author himself. Over time, the practice of transferring this task to other persons – usually of a higher reputation than the author himself – became increasingly common. Of course, these "allographic" prefaces by prominent personalities or respected authorities in the field implicitly meant a strong recommendation of the related text in the first run[4]. However, more often than not the request for their contribution was also taken by these persons as an opportunity to use the exposed position of this communication with the readers as an arena for a digression to other topics. That way, in China prefaces usually were closely related to subjects of the public discourse of their time, imbedding the work under consideration into, and legitimising it within, a framework of political, societal, and cultural issues and an all-encompassing sage-narrative[5].

Western Science, Technology and Medicine to Late Ming China: Convergences and Divergences in the Light of the *Kunyu gezhi* 坤輿格致 (Investigations of the Earth's Interior; 1640) and the *Taixi shuifa* 泰西水法 (Hydromethods of the Great West; 1612)". This project was granted by the German Research Foundation (DFG) for the years 2018 to 2021 and is carried out at the Department of Chinese Studies at Eberhard Karls University of Tübingen under the direction of Prof. Dr. Hans Ulrich Vogel. I thank Prof. Vogel as my supervisor for his dedicated support and my project colleague Dr. Cao Jin 曹晋 for her encouragement and great cooperation.

[1] See Zhang Hanmo (2018), p. 12.

[2] In Karlgren, Bernhard (1957), *Grammata serica recensa*, Stockholm: Museum of Far Eastern Antiquities, 序 (GSR83h) appears as loanword for "order" (*Zuozhuan* 左傳; Spring and Autumn Period), and as "to arrange in order" (*Shiji* 史記; Western Han). As these texts due to their very nature were written only *after* the compilation had taken place, they actually were *post*faces in a narrower sense.

[3] Thus far, there is no systematic study of the history of preface writing in China. For example, Luo Yuming 骆玉明 (2011) refers to quite a number of such texts, but does not give overall systematic explanations on them. For a comprehensive survey of the genre of paratexts in general and of the functions of "original" and "other" prefaces in particular see Genette (2001). Even though Genette focuses on the developments in Europe alone, his basic statements and his typology of these texts can be applied to a certain degree to the Chinese side as well. In any case, similar to China prefaces can already be found in Western literary works of high antiquity, like e.g. the writings by historians such as Herodot or Thucydides. For an overview of the history of the preface in different parts of Europe cf. also Tötösy de Zepetnek (1993), who on p. 11 identifies the "establishing of a personal relationship [of the author] with the reader while advocating a particular point of view" as the most important dimension of Western prefaces.

[4] See Genette (2001), p. 263-275. According to Genette, in France, and in Italy perhaps a few decades earlier, the outsourcing of preface writing became habitual mainly in the wake of publishing the translations of the texts of classical antiquity from the 16th century.

[5] Whereas in Europe a text was seen as the genuine creation and the intellectual property of its writer early on, in China literary works were rather considered as the continued transmission of the lore and the insights of the sages of the Golden Ages of the past. In this understanding, author and writer were not automatically identical. See Zhang Hanmo (2018), pp. 24-26.

At first, the Chinese works of the Jesuits, whether of religious or secular contents, were no exception from this approach. Beginning with Matteo Ricci's (1552-1610) *Jiaoyou lun* 交友論 (On Friendship; 1595), the native collaborators of the missionaries as well as other influential scholars composed prefaces to these treatises and thereby helped to introduce them to a wider learned audience in the Middle Kingdom. Quite a few of the works written during the early phase of the Jesuit China mission received this kind of literati support, with the number of prefaces appearing as directly correlated with the later popularity of the related texts[6]. This active promotion by the Chinese side was interrupted for some time by the Nanjing persecution (1616-1617), and despite a revival during the 1620s and 1630s never regained its former intensity thereafter[7].

One of the early Jesuit works attracting this particular scholarly attention was the *Taixi shuifa* 泰西水法 (Hydromethods of the Great West; 1612). This treatise, jointly written by the Italian Jesuit Sabatino de Ursis (1575-1620) and the notable official and Christian convert Xu Guangqi 徐光啟 (1562-1633)[8], beyond the introduction to China of Western hydraulic pumps usable in agriculture also deals with methods for storing water, testing its quality and using it for medical purposes. In addition, the "principles of water" (*shuili* 水理) responsible for a variety of natural phenomena are extensively discussed in the context of the Aristotelian theory of the Four Elements (*sixing lun* 四行論)[9]. With altogether five prefaces this comprehensive and subject-specific

[6] For the importance of these paratexts in Matteo Ricci's eyes see von Collani (2012), especially p. 49.

[7] For the Nanjing persecution see below. Dudink (2001b), p. 480, says that about half of all prefaces to Jesuit works were written by Chinese scholars during the early years (i.e. before 1616) of the Jesuit China mission. According to my own cursory examination, only nine out of 147 different works checked (equivalent to about 6%) have five or more prefaces. For the 15 works by Matteo Ricci (and his co-authors) I have counted 45 prefaces – a ratio not met by any other Jesuit author. Favoured objects of Chinese scholarly support seem to have been writings on ethics or moral-theology and geography, whereas astronomy interestingly was not so much in the focus here. This estimation is based on the data available in the CCT-Database by Dudink and Standaert (2004).

[8] For de Ursis' biography see most recently Frisullo and Vincenti (2020b). Other sources are Bertuccioli (1991, pp. 298-500); Dehergne (1973, p. 75); and Pfister (1971, vol. 1, pp. 103-106). Literature about his co-author Xu Guangqi is substantial. More recent examples are Blue (2014), Bray and Métailié (2001), Giunipero (2016; 2020), and Chen Min-sun (2003).

[9] In Greater China, the TXSF has been examined by Xu Guangtai 徐光台 (2008), mainly with regard to the introduction and reception of the Aristotelian Four Elements Theory during the Ming Qing transition. Zhang Baichun 张柏春 and Tian Miao 田淼 (2010), in their analysis of the transmission of Archimedean mechanical knowledge to China, also refer to the TXSF, whereas Zhang Baichun (1995) closely examines the mechanical features of its three water-lifting devices. This topic is further investigated in an article by Su Yunmeng 苏云梦 and Shi Yunli 石云里 (2017), who focus on the Archimedean screw in particular. Moreover, Sun Chengsheng 孙承晟 (2018) discusses chapter 5 of the TXSF in addition to other Jesuit works. Zou Zhenhuan 邹振环 (2017) highlights the outcome of later efforts to implement the TXSF's technologies in the Jiangnan area. Finally, Liu Geng 刘耿 (2018) gives insights into the crucial role of the Beijing Zhalan Cemetery for this work. In the West, to date, substantial contributions have been limited to specific questions. To name only the most

compendium promises to have been among the Jesuit works which enjoyed some degree of publicity among Chinese literati, and indeed, already during the 17th century it was extensively discussed in learned circles, reprinted several times in its entirety or in parts and, moreover, made its way e.g. to Japan[10].

Thus, in the following survey the TXSF will serve as an example for the distinct functions of prefaces to Jesuit treatises introducing to China Western scholastic and Renaissance learning during the Ming Qing transition period. Since the days of Matteo Ricci, who stayed in the Middle Kingdom from 1583, this knowledge transfer had been an integral part of the strategy of an "indirect mission", which through the "apostolate of the book" aimed at arousing the interest of high-ranking Chinese converts-to-be[11]. To this end, together with their Chinese supporters the Jesuits even launched a systematic translation project from the 1620s onwards, which lasted well into the reign of the Kangxi 康熙 emperor (r. 1661-1722)[12]. Against this background, the TXSF is an interesting object of investigation also insofar as it was composed at a preliminary stage of this endeavour, i.e. as one of the relatively independent first efforts still unburdened by the turmoil of the anti-Christian incident initiated by Shen Que 沈潅 (1565-1624), at that time Vice Minister in the Ministry of Rites in Nanjing[13]. But what is more, it is in large part a downright technical text and as such required an extra effort to make it palatable to wider scholarly circles, which were still focused first and

important ones, Vogel (2010) with reference to the TXSF compares the traditional Western and Chinese explanations for the origin of salt and brine, while Kurtz (2012) focuses on the rhetorical strategies used in its prefaces and Cigola (2015) on the origin of its technical illustrations. Only recently, Koenig (2020) has published an article about the introduction of Western water lifting devices to China and the role of the TXSF in the case of the Archimedean screw pump.

[10] This survey is based on the facsimile edition of the TXSF containing all five prefaces together with the 6 *juan* 卷 of the original version in *Tianxue chuhan* 天學初函 (First Collectanea of Heavenly Studies; 1626) (hereafter TXCH), compiled by Li Zhizao 李之藻 (1565-1630), reprint in *Zhongguo shixue congshu* 中國史學叢書, compiled by Wu Xiangxiang 吳相湘 (1965), first series, Taibei: Taiwan xuesheng shuju, vol. 23.3, pp. 1505-1710. The TXCH is a collection of the most important works on the Learning from Heaven up to that time. For its significance see e.g. Peterson (2010), An Dayu 安大玉 (2007), and Chen Min-sun (1995).

[11] See von Collani (2019), p. 894. In addition to the use of books as a door opener to influential circles at and around the Chinese court, this top-down accommodation method was marked by an accentuated openness towards the Chinese system of values, and the interpretation of classical Confucianism as a monotheistic religion.

[12] For the distinct phases of this translation project see Standaert (2003). Standaert distinguishes between the period of "spontaneous diffusion" from 1582 to 1610, a peak of systematic and coherent translations during the 1620s and 1630s, and the phase of "failed attempt" (1678-1683), which ended with the rejection by the Kangxi emperor of Ferdinand Verbiest's ambitious *Qiongli xue* 窮理學 (Study of Fathoming Principles).

[13] The influence on the Jesuit missionary work of this early anti-Christian persecution has been extensively examined by Kelly (1972) and Dudink (2001a). With his focus on Xu Guangqi's role in the first encounter of China and the West, Hart (2013) proceeds from the Chinese perspective of the related events.

foremost at the contents of the Chinese classics and therefore in line with the standards of the civil service examination system that guided their own career.

To begin with, for a better understanding of the composition and the argumentative thrust of the prefaces to the TXSF, some remarks are necessary about the socio-economic and political situation in late Ming (1368-1644) China, and thus the culturally determined mindset of both the writers and their addressees. It will be shown that the early missionary efforts to gain a foothold in the Middle Kingdom through the transfer of Western knowledge came at a strategically opportune moment in Chinese history and that both the literati and the Jesuits could expect to profit from their collaboration in the case of the TXSF. After this contextualisation we will directly turn to the actors and their immediate messages. Starting with the Western side, each of the paratext authors will be briefly introduced by some significant biographical data, which in part can be retrieved from the prefaces themselves. Next, we will see that for the Chinese writers in particular their support for the TXSF project meant no obstacle to their careers. Moreover, together with information from other sources general remarks made in the prefaces allow to reconstruct some of the concrete circumstances of the creation of the TXSF. For example, evidence is provided in the paratexts for the interaction and the mutual perception of those involved in the whole process of this book project, from first initiatives to the final publication of the *Hydromethods*.

But what is more, beyond this level of factual information the prefaces were actively used by their authors as a platform for a variety of different rhetorical strategies informed by the specific aims of their respective composers, as Kurtz has demonstrated for some Jesuit Chinese works on technology, among them the TXSF[14]. His results about three of the TXSF's paratexts will be critically reviewed and substantially expanded, not only through a closer look at the approach to the classical sources invoked by these authors in their erudite utterances, but also by the additional analysis of the Chinese preface not included by Kurtz. Thereafter, the findings for the literati paratexts are directly confronted with the approach taken by de Ursis as the only representative of the Western, i.e. the Jesuit, side. Against its Chinese counterparts, the composition and contents of his introductory 'Basic Discourse on Hydromethods' (*Shuifa benlun* 水法本論) are on the one hand of a totally different nature, while at the same time they share a few distinct features with them. Finally, further developments will be taken into account, namely the influence of the Nanjing persecution on the joint Jesuit Chinese translation project as a whole and the consequences for the corresponding preface writing in particular.

2. *The socio-economic and cultural setting in late Ming China*

Without doubt, in Ming China the civil service was the "supreme instrument with which the emperors administered the empire"[15]. Though notoriously

[14] See Kurtz (2012).
[15] Hucker (1998), p. 29.

understaffed, it was dominating public life in state and society. From the 1440s onwards, recruitment to the higher echelons of this institution took place exclusively through the civil service examinations. The curriculum of the government schools and universities, where students were prepared for these exams, was almost entirely based on the canonical Five Classics (*Wujing* 五經), to which the Song period scholar Zhu Xi 朱熹 (1130-1200) had added as further authoritative texts the Four Books (*Sishu* 四書)[16]. In their orthodox Neo-Confucian interpretation, these works were predominantly understood as a means of moral refinement and self-cultivation, so that learning from them strengthened one's ethical and generalist abilities rather than stimulating specialist or technical qualities. As this canonisation of the Neo-Confucian doctrine was at the core of the civil exams, it channelled the academic orientation of high rank officials from the very beginning of their formation[17]. Starting from the county level, successful candidates over the years had stepped up the ladder to the triennial metropolitan exams, with a follow-up session in the imperial palace deciding over the final rank order of these "palace graduates" (*jinshi* 進士) at the top of the hierarchy. Only the best among them were then appointed to the prestigious Hanlin Academy (*hanlinyuan* 翰林院). At the time of the early Jesuits in China, selected members of this academy together with the palace eunuchs and the officials of the Grand Secretariat were the most influential political advisers to the Wanli 萬曆 emperor (r. 1573-1620).

This rigidly predetermined scholarly framework, even called an "intellectual strait-jacket"[18] by some, increasingly stifled the activities of the representatives of the government bureaucracy and the intellectual elite of the country exactly at a time of growing internal and external challenges towards the end of the 16th century. While the Manchus under their chieftain Nurhaci had started to launch attacks on the northern frontier regions of the empire, the Japanese, who had invaded Korea in the 1590s, had to be driven back by means of costly military expeditions. These were also necessary for the suppression of concurrent unrest in Sichuan, thus aggravating the fiscal crisis caused by an increasing population pressure, the inefficient handling of resources, and the waste of funds for personal

[16] The Five Classics are the *Shijing* 詩經 (Book of Poetry), the *Shangshu* 尚書 (Book of Documents), the *Liji* 禮記 (Book of Rites), the *Yijing* 易經 (Book of Changes), and the *Chunqiu* 春秋 (Spring and Autumn Annals). As a general introduction to Confucian thought, Zhu Xi 朱熹 (1130-1200) added to them the Four Books, i.e. the *Daxue* 大學 (Great Learning), the *Zhongyong* 中庸 (Doctrine of the Mean), the *Lunyu* 論語 (Analects), and the book *Mengzi* 孟子. Especially the *Daxue* was rearranged and therefore extensively commented by Zhu Xi. See Brook (1998), p. 679.

[17] See Hucker (1998), pp. 30-41. For a vivid and nevertheless substantial description of the civil service exams in Imperial China cf. Miyazaki Ichisada (1981). Moreover, cf. Elman (2000) and (2013), the latter with a useful flow chart of the different stages of the exams and the related degrees during the Ming and Qing on p. 102.

[18] Hucker (1998), p. 41.

purposes by the Wanli emperor himself[19]. In agriculture, the sector still decisive for the public revenue, the situation was additionally burdened by recurrent natural disaster in the form of alternate floods and droughts destroying the harvests time and again[20]. At the same time, the abolishment of corvée labour, the intensification of interregional trade and rising exports lead to an increasing commercialisation and monetarisation of the economy. The accompanying substantial changes in the hitherto sacrosanct traditional social hierarchy intensified the overall atmosphere of insecurity.

In view of all these problems, a creative, practically oriented approach to everyday tasks on part of a solution-oriented ruling class would have been the order of the day. Instead, corruption and partisan conflicts in bureaucracy and government circles as well as tolerance of continued malpractices under the pretext of preserving social harmony dominated the scene. The response to these structural and politically induced grievances was a rather vivid public discourse among the educated, visible in the growing popularity of private academies (*shuyuan* 書院), which were established not only in support of the preparation for the civil exams, but also as a place for scholarly debate on philosophical aspects of social and other issues. In its efforts towards political reform the most influential one among these private institutions – the Donglin 東林 Academy – without doubt was conservatively oriented[21]. Though encouraging an open discourse about the right ways of learning (*jiangxue* 講學)[22], its critique of the misconduct of those in power first and foremost came along with an accentuated call for moral regeneration and a strengthening of the correct ideological attitude of these officials through a study of the classics within the existing framework of Zhu Xi's orthodox Neo-Confucian interpretation. This strong ethical claim was directed against an alleged undermining of the established codes of conduct both by overly liberal Neo-Confucian and by Buddhist influences, and dominated the academy's reformist efforts at supporting the flagging dynasty by increasing the effectiveness of governmental structures[23].

[19] See Mote (1999), pp. 735 and 769.

[20] See Li Bozhong 李伯重 (1998), p. 36, were he says that in between periods of extended drought excessive rainfall lead to harmful flooding with a frequency of one in 3,7 years on average in Jiangnan during the Ming. For the climate in China during the years 1570-1620 in particular see Heijdra (1998), p. 427.

[21] See De Bary and Bloom (1999), pp. 916ff. First established during the Northern Song dynasty, after a longer period of disuse the Donglin Academy was restored with financial backing from the local gentry by Gu Xiancheng 顧憲成 (1550-1612) at Wuxi in southern Jiangsu in 1604.

[22] *Jiangxue* 講學 literally means "to explain [one's] teaching". In Gu Xiancheng's understanding, this term in a broader sense stood for the philosophical debate and the inquiries of knowledge that should be conducted at the local gentry level by all scholars. Thus, instead of a mere top-down "ordering of the world" by the state and those in power, Gu favoured a kind of grassroot approach to this important task. See Miller (2009), p. 96.

[23] The Donglin Academy openly criticized the profligacy of the imperial household and the excessive influence on political matters exerted by parts of the gentry as well as the eunuchs at court. At the same time, it interfered in political matters itself by trying to modify the standards of the *jinshi*

In any case, when Sabatino de Ursis and Xu Guangqi started to jointly compose the TXSF in the year 1611, the ongoing debate about ways out of the predicament had not yet lead to tangible results, neither with regard to the political capacity and even less so in the form of concrete solutions for the fiscal deficit. Instead, it was stuck in the dead end of a mainly moralistic and – in view of the circumstances – ultimately destructive discussion about the further orientation of the Neo-Confucian doctrine. Against this background of a crisis of Confucianism as such, the main actors of the opposing parties appeared as being interested first and foremost in ideological goals and the reputation of their own group, while putting second place the benefit of state and society as a whole[24].

In parallel, however, the idea of "substantial learning" (*shixue* 實學), actually going back to Song times, had regained popularity in literati circles. This term, which originally stood for studies focussing on "solid" Confucian classics rather than on vague and "empty" Buddhist or Daoist teachings, had been extended by converts like Xu Guangqi to qualify the newly introduced Christian creed. In a wider sense, however, it had become a synonym for more practical approaches to worldly matters of statecraft or "ordering the world" (*jingshi* 經世)[25], namely good governance with the aim of enhancing the material welfare of society[26]. In this perspective, *shixue* included the search for innovative measures in various fields, among them agriculture and water conservancy, and in the 17th century was even used as a designation for science and technology in general. This reflects the idea that – beyond the subject of one's studies as such – "solidness" also referred to the methods applied in these disciplines.

Accordingly, one of the crucial questions of substantial learning was, whether the texts of the Confucian classics should be merely seen as an abstract literal foundation of self-refinement (*xiushen* 修身) and moral order as postulated by most Donglin literati, or if they additionally could serve as a guide to practical policies of use for this world (*yongshi* 用世) when read in a more figurative, emblematic way. Still, reform-minded scholar-officials by no means understood this approach as a questioning of the established moral doctrine. Quite the contrary, the agenda of *shixue* was

exams according to its own requirements and to place its members in high official positions. See Mote (1999), p. 736. In the 1620s the academy became a victim of its own harsh critiques when it was closed down by the powerful eunuch Wei Zhongxian 魏忠賢.

[24] For a detailed survey of the conflicts between official and private academies with special emphasis on the Ming and Qing dynasties see Elman (1989). For the origins of late Ming factionalism cf. also Zhao Jie (2002).

[25] This translation of the term *jingshi* goes back to the monograph by Hymes, Robert P. and Conrad Schirokauer (eds.) (1993), *Ordering the World: Approaches to State and Society in Sung Dynasty China*, Berkeley: University of California Press. It should be noted that there is no general definition for terms like *jingshi* or *shixue*, as their varying connotations depend to a large extent on the particular circumstances of their application.

[26] See Engelfriet (1996), pp. 98-100. For a comprehensive study of the role of *shixue* in connection with both the teachings of Zhu Xi and Wang Yangming cf. Cheng Chung-ying (1979).

perceived by its proponents as fitting well into essential Confucian standpoints even though it was in large part irrelevant for the success in the civil exams[27].

But what is more, among its adherents the emphasis on the usefulness of substantial learning entailed a remarkable openness towards non-Chinese teachings and syncretistic ways of proceeding as well. Thus, the atmosphere of crisis that had spurred this more pragmatical approach to solution finding was intrinsically favourable for the Jesuit efforts to attract through the introduction of Western learning the scholarly attention for their missionary undertaking[28]. Despite initial reservations from the Chinese side and a limited collaboration with Xu Guangqi, Li Zhizao 李之藻 (1571-1630) and a handful of other literati during the time of Matteo Ricci's sojourn in the Middle Kingdom from 1583 until 1610, the demand for translations of Western texts had notably increased. After the publication of Ricci's famous world map and of a number of catechisms, prayer books and spiritual writings, it was decisively triggered by the Chinese rendering of the first six books of Euclid's *Elements* (*Jihe yuanben* 幾何原本; 1607).

Subsequently, the growing scientific reputation of the Jesuits earned them the imperial permission to preach the gospel throughout the empire[29]. After in 1611 the first official request had been launched that with Chinese support Diego de Pantoja (Pang Diwo 龐迪我; 1571-1618) and Sabatino de Ursis should translate the Western astronomical works they had brought with them, both were additionally chosen to take part in the pending revision of the calendar executed by the Astronomical Bureau (*qintianjian* 欽天監). When due to the resistance by conservative officials the official endorsement of this project was delayed for some time[30], Xu Guangqi took the opportunity and – by resurrecting an idea of Matteo Ricci – asked de Ursis to jointly compose the TXSF in the meanwhile. Not least in view of the fiscal crisis, an increase of agricultural production through improved irrigation methods was ranking high on his list of statecraft measures. Even though in traditional perspective a subject matter at best serving supplementary functions to classical learning, and despite the fact that this knowledge was imported by Christian missionaries from afar, a work on Western hydraulics promised to remedy some of the growing shortcomings in this field.

In the next section we will take a closer look at the Western and Chinese protagonists in the evolving project, and at their personal motivations to participate in it. The brief

[27] According to Übelhör (1968), p. 216, a similar tendency within Confucianism towards more utilitarian concerns (*gonglixue* 功利學) in response to external threat was discernible already in the Song.

[28] See Standaert (2003), p. 372. The attraction was a mutual one, as the Jesuits with their humanistic background were eager themselves to learn from the Chinese side, resulting in a fruitful collaboration during this early phase of their encounter.

[29] See Blue (2001), p. 36f.

[30] See D'Elia (1942-1949), vol. 3, p.17, fn. 5. According to a related report of de Ursis to his Jesuit superior Francesco Pasio written in August 1612, the emperor had entrusted the Ministry of Rites with the handling of this affair, but still hesitated to take a final decision. See D'Elia (1960), p. 86f.

introduction of each of the protagonists will be supplemented with telling statements taken directly from the prefaces. For the Chinese actors in particular, an additional look at their careers in the official bureaucracy will help to better assess the political clout and possible later consequences of their collaboration with the missionaries – not least for themselves.

3. *The actors, their roles and motivations, and their joint undertaking*

On the Western side, only two persons are directly relevant for this study, de Ursis as author of the TXSF and one of its paratexts, and Matteo Ricci (1552-1610)[31] as the "intellectual father" of the TXSF project. Xu Guangqi tells us in his preface that in 1607 the latest during a stroll with him Li Madou 利瑪竇, as Ricci was called in China, had brought up the issue of introducing to China Western hydromethods. He was convinced that the transfer of this kind of useful knowledge would benefit both the state and its people, and that he could thereby reciprocate "the courteous reception and eminent favours from the Emperor" (*zhushang liyu long'en* 主上禮遇隆恩) he had received since he had arrived in the Middle Kingdom[32]. In the end, it was de Ursis who accomplished these aspirations, but in their prefaces all Chinese literati refer to Ricci by name, when they rave about his refined virtue, moral integrity, and calm and settled conduct[33].

In the Chinese prefaces, Sabatino de Ursis[34] is mainly attributed the role of finalizing Ricci's will by composing the TXSF together with Xu Guangqi. Xiong Sanba 熊三拔, as he was called in China, was born in the small hamlet of Ruffano, almost 50 kilometres south of Lecce, and had joined the Society of Jesus in Naples in 1597. After continuing his studies in Rome and Coimbra, he embarked for East Asia in Lisbon in 1602. Originally bound for the mission in Japan, after years of further preparation in Macao he was redirected to China upon request by Matteo Ricci, who

[31] For Ricci's life and work see e.g. Fontana (2011), Hsia (2010; 2016), Liu Yu (2015), Mignini (2019), and Song Liming 宋黎明 (2011). The relationship between Xu Guangqi and Matteo Ricci is examined by Sun Shangyang 孙尚扬 (2014) and by Yu Sanle 余三乐 (2010).

[32] See TXCH (1965), vol. 23.3, preface Xu, fol. 2b, p. 1508. In Xu's preface, this episode and his own immediate fascination with Ricci's proposal is described in some detail. Xu was noticeably impressed by the willingness of the Jesuits to share their useful knowledge (*youyong zhi xue* 有用之學) with him.

[33] The only exception in this regard is Cao Yubian, who mentions Ricci and de Ursis just briefly, and for the rest is focused on the Chinese scholar-officials and their misconduct. In the prefaces of Zheng Yiwei and Peng Weicheng, moreover, we read that Ricci had green pupils (*lütong* 緑瞳) and a curly beard (*qiuxu* 虬鬚), and that – just like Chinese scholars – the missionaries wore squared caps (*fangjin* 方巾) and blue-collared gowns (*qingpao* 青袍).

[34] Until recently, literature in Western languages about de Ursis had been limited to short biographical studies like those by Pfister (1971), Bertuccioli (1991), or Truffa (2014). This gap has now been filled through several publications by Frisullo and Vincenti (2020a-c), who have started to reconstruct life and work of the Italian missionary from the roots. Thus far, the only more detailed contribution in Chinese language is Xiong Lili 熊丽丽 (2015).

expected that de Ursis' mathematical skills would help to attract the attention of high-ranking Chinese scholar-officials and win them over to the Christian creed[35]. The paratexts to the TXSF tell us that, after initial reservations, de Ursis finally yielded to Xu's persistent inquiry and started to dedicate himself to their joint book project[36], over which he then "brooded with great sincerity", while in his house carpenters were busy "with cutters, lacquer, and cords, thus making ready water implements"[37]. In Chinese scholarly depiction de Ursis, moreover, appears as a man who "wholeheartedly does not spare any effort or sacrifice" (*ququ zhongding* 區區踵頂) in order to benefit the Middle Kingdom through the introduction of Western hydromethods[38]. In his own preface to the TXSF, the missionary confirms this as being part of his personal intentions, which, however, on the whole went in a totally different direction as we will see below.

The Chinese protagonists in the TXSF undertaking can be labelled not only as representatives of the late Ming scholarly elite, but also as more or less high ranking officials, whose collaboration with the Jesuit "vassals" thus had the potential to influence their own professional careers. It is therefore revealing to include in their description their assignments around the time the TXSF was written and their overall further development[39]. Among the altogether four Chinese literati who were writing prefaces to the TXSF, Xu Guangqi 徐光啟 (1562-1633)[40] was the most eminent person, and, as co-author of de Ursis, to this day he is certainly also the one most directly associated with this work. He had met Matteo Ricci for the first time in Nanjing in 1600, and was baptised there by the Jesuit Jean de Rocha (Luo Ruwang 羅如望; 1566-1623) under the name Paul three years later. After failing several times

[35] See Baldini (2008), p. 41. In the course of the Nanjing persecution (1616-1617), de Ursis was expelled to Macao, where he died in 1625.

[36] The first entry about the implementation of these activities is dated November 10, 1611 in the 'Historia Domus' for the Jesuits' Beijing residence. This "diary" of Sabatino de Ursis contains quite some relevant information from the Jesuit perspective about the TXSF related events of the years 1611 and 1612. It is stored in Biblioteca da Ajuda, Jesuítas na Ásia, Série da Província da China, Cód. Ms. 49-V-5. This study refers to the 'Noticias do Anno de 1611' and 'Noticias do Anno de 1612.' For the Ajuda collection cf. Brockey (2007), p. 423. For Xu's interpretation of the reasons for de Ursis' reluctance see below.

[37] See TXCH (1965), vol. 23.3, preface Zheng, fol. 4a, p. 1543.

[38] See TXCH (1965), vol. 23.3, preface Zheng, fol. 4b, p. 1544.

[39] In the following, the remarks on the professional background of the preface authors as found in the paratexts is supplemented with information from official biographical sources, e.g., the section on 'Official Biographies' (*liezhuan* 列傳) in the *Mingshi* 明史 (History of the Ming) and the *Mingren zhuanji ziliao suoyin* 明人傳記資料索引 (Index of Biographical Data of [Important] Ming Persons). See the Academia Sinica "Database of Names and Biographies" at http://archive.ihp.sinica.edu.tw/ttsweb/html_name/ (last accessed January 14, 2021). There, entries exist for all Chinese preface writers of the TXSF except Peng Weicheng. The subsequent presentation of the different authors follows the sequence of their prefaces in the TXCH edition of the TXSF.

[40] Courtesy name Zixian 子先, style Xuanhu 玄扈, posthumous honorific title Wending 文定, native of Wusong 吳淞 (Shanghai).

in the provincial exams, he finally became a *jinshi* in 1604, and because of his outstanding results was selected for advanced studies as a Bachelor in the Hanlin Academy in Beijing. In 1607 he became a regular member of this academy, but soon after had to return to his hometown because of filial mourning. In his preface he tells us that when he parted Matteo Ricci came with his friend "Teacher Xiong" [i.e. Sabatino de Ursis] and introduced him as a future source of information about Western hydromethods[41]. After his return to Beijing, Xu came back to this proposal and finally started to compose the TXSF together with de Ursis in 1611. In the following years, Xu was steadily promoted to ever higher positions, resumed responsibility for the new Calendrical Bureau (*liju* 曆局), and eventually became Minister of Rites (*libu shangshu* 禮部尚書; rank 2a) in 1630[42]. Thus, neither Xu's conversion to the Christian faith nor his intense involvement with the Jesuits or his efforts to promote Western learning in the Middle Kingdom did affect his further advancement negatively.

The same holds true for Cao Yubian 曹于汴 (1558-1634)[43], who together with Xu had most actively pushed ahead the project of creating a Western work on hydraulics in Chinese language, as we know from de Ursis' record of the events[44]. After several years as a commissioner in Huai'an 淮安 (Jiangsu), due to his impressive performance and outspoken critic of malpractice among officials he was appointed Supervising Secretary in the Office of Scrutiny for Personnel (*like jishizhong* 吏科給事中)[45] in 1602. At that time, he made close friends with Matteo Ricci, whom he frequently invited to his house in Beijing, where they discussed in an

[41] See TXCH (1965), vol. 23.3, preface Xu, fol. 3b, p. 1510. After the three year mourning period, Xu returned to the court in 1610, i.e. after Ricci had passed away on May 11, 1610.

[42] Moreover, in 1632 Xu was appointed Grand Secretary of the East Hall (*Dongge daxueshi* 東閣大學士) – a post he held concurrently with Zheng Yiwei 鄭以偉 – and of the Hall of Literary Profundity (*wenyuange* 文淵閣) shortly before he passed away in 1633. Posthumously, he received the honorary title of Grand Guardian of the Heir Apparent (*taizi taibao* 太子太保).

[43] *Jinshi* of 1592. Courtesy name Ziliang 自梁, style Zhenyu 珍予, native of Anyi District 安邑縣, Hedong 河東 Prefecture in Shanxi Province.

[44] After having seen pictures of "alguns instrumentos d'agua pintados" in the book "Vitruvio" at the Jesuit residence in 1611, Cao and Xu were so fascinated that they decided to have the implements reconstructed by carpenters. In November of that year, Cao Yubian proposed that Xu should write "hum tratado" about the manufacturing of the pumps and to present them to the emperor in order to enhance their spreading throughout the country. Later on, Cao also consulted with Niccolò Longobardo about how to proceed in this regard, and he was among those officials who donated money for the printing of the first edition of the TXSF. See Biblioteca da Ajuda, Jesuítas na Ásia, Série da Província da China, Cód. Ms. 49-V-5, 'Noticias do Anno de 1611.'

[45] The *jishizhong* controlled the flow of documents to and from the throne, supervised the implementation of imperial orders, and could even criticize or propose imperial policies. Despite the low official rank (7b; for the Chief Supervising Secretary 7a) they were relatively high in prestige and influence. The six "Offices of Scrutiny" were independent institutions in parallel to the Six Ministries (*liubu* 六部). See Hucker (1985), no. 587, p. 133.

open atmosphere over dinner for hours[46]. In the following years, Cao first remained more or less on the same level of the official hierarchy. Later on in 1612, however, he was appointed Vice Minister of the Court of Imperial Sacrifices (*taichangsi shaoqing* 太常寺少卿)[47], which meant a promotion by at least two ranks[48].

In comparison to the other preface writers, information about Peng Weicheng 彭惟成 (1577-?)[49] is scarce in the official sources. From an entry into *Lulingxian zhi* 廬陵縣志 (Gazetteer of Luling District; 1920) we know that his first official assignment was as Secretariat Drafter (*zhongshu sheren* 中書舍人)[50]. In February 1612 – three months before he wrote his preface to the TXSF – he became Right Supervising Secretary in the Office of Scrutiny for Revenue (*huke you jishizhong* 戶科右給事中)[51]. As this appointment was only an assignment on the same, rather low level as before, it does not come as a surprise that – according to de Ursis' diary – Peng, who was by far the youngest among our Chinese protagonists, obviously was in search of an opportunity to further boost his career by contributing to the promising book on Western hydromethods that fitted so well the *shixue* agenda of his time. Thus, he offered to write a preface for the TXSF, for whose printing he, moreover, donated "dez taeis" [ten tael] of silver, not without insisting that his own name should then appear in the book[52]. Nevertheless, it would take quite a few years

[46] See Tang Kaijian 汤开建 (2017), p. 142. The dialogues between Cao and Ricci found entrance into Ricci's works *Tianzhu shiyi* 天主實義 (The True Meaning of the Lord of Heaven; 1603) and *Jiren shipian* 畸人十篇 (Ten Discourses of a Man of Paradox; 1608).

[47] The Court of Imperial Sacrifices was responsible for major state sacrificial ceremonies and indirectly subordinated to the Ministry of Rites. Its Chief Minister was ranked 3a, the Vice Ministers 4 or 5.

[48] Cao, who was said to have the deportment of the grand officials of olden times, posthumously was bestowed with the title Grand Guardian of the Heir Apparent (*taizi taibao*) – an honour he shared with Xu Guangqi.

[49] *Jinshi* of 1601. Courtesy name Yuanxing 元性, style Qinsheng 芹生, native of the town of Youtian 油田 in Luling District 廬陵縣, Jiangxi Province.

[50] The short entry about Peng is found in chap. 17, fol. 37b, of the Luling Gazetteer.

[51] See Dudink (2001a), p. 214, fn 74, where he refers to *Shenzong shilu* 神宗實錄 (Veritable Records of Emperor Shenzong; decreed in 1624), *juan* 491, fol. 9b. This information is confirmed by Peng's own preface remark that over the last twelve years since he first met Ricci he had "received the honour to serve at Phoenix Pond (Feng[huang] *chi* 鳳[凰]池) [i.e. in the Grand Secretariat] and then entered the Suota Gate 瑣闥 [i.e. the office of Supervising Secretary]" (*gongfeng fengchi, xuanru suota* 供奉鳳池，旋入瑣闥). See TXCH (1965), vol. 23.3, preface Peng, fol. 1b, p. 1526. Translations of Peng's preface as well as that by Xu Guangqi, including extensive footnotes with contextual information, were accomplished by Dr. Cao Jin, to whom I express my sincerest thanks for leaving these data at my disposal. Revisions were made by Prof. Hans Ulrich Vogel and – to a lesser extent – by me.

[52] The 'Historia Domus' reports that on May 3, 1612 a certain "hu coli" (i.e. *huke li* 戶科吏) called "pêm" – obviously Peng Weicheng – had come together with three others to see the water implements fabricated according to de Ursis' instructions. He was so impressed that he not only sent a carpenter to study the mechanisms of these implements and had them transferred to "Kiam-si", i.e. his native province Jiangxi, but also expressed his wish to write a preface to the TXSF ("afazer hu

until his initiative eventually might have payed off, but in the Chongzhen 崇禎 reign-period (1628-1644) Peng was finally promoted to the prestigious post of Chief Minister of the Court of Imperial Sacrifices (*taichangsi qing* 太常寺卿)[53].

Together with Peng, Zheng Yiwei 鄭以偉 (1570?-1633)[54] was a *jinshi* of 1601[55]. Similar to Xu Guangqi, immediately after his successful exam he became a member of the prestigious Hanlin Academy, but in 1605 had to return to his native place in Jiangxi Province for an indefinite period of recovery. Only in 1612 Zheng was delegated to Zhejiang 浙江 in order to assist in the provincial exams, which were usually held in the eighth month, i.e. sometime between late August and late September. Soon after he went to Beijing and took up his former occupation in the Academy[56]. This explains, why his preface, which other than its counterparts does not carry a date of completion, was added to the TXSF only after its first 80 exemplars had been printed and successfully published in September of the same year[57]. Like in the case of Peng Weicheng, it was Zheng himself who took the initiative to write this preface. From December 1613 onwards, he was repeatedly promoted and finally became Junior Supervisor of the Household of the Heir Apparent (*shaozhanshi* 少詹事)[58] in 1620, and, later in the same year, Right Vice Minister in the Board of Rites (*libu you shilang* 禮部右侍郎)[59].

This short outline has shown that irrespective of the temporary political turmoil around the missionaries and despite recurrent resistance in scholarly circles against the introduction of Western science in general and the Jesuit participation in the correction of the calendar in particular, all Chinese preface writers managed to climb higher up the hierarchical ladder sooner or later and ended up in most prestigious

poemio ao livro de Xui fa") on May 10, 1612. See Biblioteca da Ajuda, Jesuítas na Ásia, Série da Província da China, Cód. Ms. 49-V-5, 'Noticias do Anno de 1612.'

[53] See *Lulingxian zhi* 廬陵縣志 (Gazetteer of Luling District; 1920), chap. 17, fol. 37b.

[54] Courtesy name Ziqi 子器, style Fangshui 方水, native of Shangrao District 上饒縣, Guangxin Prefecture 廣信府 in Jiangxi.

[55] The candidates who had successfully passed the exams in the same year usually established strong ties among themselves. In addition to Peng and Zheng, also Xiong Mingyu 熊明遇, Peng Duanwu 彭端吾, and Cui Chang 崔涐 belonged to the *tongnian* 同年 network of 1601 that was decidedly oriented towards Western Learning. These literati all wrote prefaces to either the TXSF or Pantoja's *Qike* 七克 (The Seven Overcomings; 1610s). See Chen Tuo 陈拓 (2020), p. 14.

[56] See Chen Tuo 陈拓 (2020), p. 13.

[57] De Ursis talks of this first printing in his entry in the 'Historia Domus' for September 3, 1612. In early November, he then reports that it was decided that "hum Mandarim han lin yuen natural de Kiam si" (a Hanlin Academy mandarin stemming from Jiangxi) called "Chim" should write a further preface to the TXSF. See Biblioteca da Ajuda, Jesuítas na Ásia, Série da Província da China, Cód. Ms. 49-V-5, 'Noticias do Anno de 1612.'

[58] This was an institution of the central government administering the public and private affairs of the Heir Apparent. See Hucker (1985), no. 79+80, p. 107.

[59] Like Xu Guangqi, Zheng was appointed Grand Secretary of the East Hall (*Dongge daxueshi* 東閣大學士) in 1632, and posthumously received the title Grand Guardian of the Heir Apparent (*taizi taibao*) in 1633.

positions. Thus, it is safe to say that in a time of fiscal crisis and societal uncertainty their efforts at finding ways out of the statal predicament by the collaboration with the knowledgeable but still outlandish Jesuits, and through the support for the TXSF did not affect unfavourably their own careers. As holders of the prestigious *jinshi* degree, they all were in the limelight of both the public and the emperor and his closest circle, which added weight to their words and actions. Thus, the acceptance of their preface writing might be a hint at the official toleration of an inclusion of Western Learning into contemporary *shixue* activities.

Nevertheless, their prominent position carried with it some risk of being reprimanded or even degraded if they tangibly violated accepted conventions and rules of conduct in their undertakings, all the more as they were collaborating with Westerners, which initially had caused a general "sighing and feeling strange about them" (*renren gong tanyi zhi* 人人共歎異之)[60]. Against this background, while the prefaces provided them with an opportunity to depict themselves as officials who spared no effort in advancing the matters of the state and its people, they at the same time had to carefully incorporate there activities into traditional ideas of Confucian comportment and existing schemes of good governance in order to make them palatable to a wider audience.

In the following, the altogether four Chinese paratexts will be examined more closely, less with the aim to detail their single statements and reconstruct the comprehensive lines of argument as such, but mainly with regard to discernible patterns of persuasion and justification for the joint TXSF undertaking. We will start with a short summary of the key messages of the single prefaces, and then directly turn to the linguistic and rhetorical strategies applied by their Chinese authors. In a subsequent step, the results of this survey will be confronted with the perspective and self-positioning of de Ursis as representative of the Jesuit side.

4. *Analysis of the Chinese paratexts: strategies of justification and means of persuasion*

Among all paratexts of the TXSF the preface by Xu Guangqi has received the greatest scholarly attention thus far[61]. Xu explains in this text how he was attracted not only by the virtue and the impressive personality of Matteo Ricci, but also by the Jesuits' scientific expertise. As he had realised the significance of the Western hydromethods for an improvement of the agricultural conditions in the Middle Kingdom, he describes extensively his efforts to convince de Ursis of a joint book project and thereby depicts himself as Ricci's Chinese counterpart in initiating this important and statecraft-relevant undertaking. Other than Xu, Cao Yuban is less focused on the Jesuits than on the negligence and passivity of his Chinese scholar-

[60] TXCH (1965), vol. 23.3, preface Xu, fol. 1a, p. 1505.

[61] While parts of this preface were translated into English by Kurtz (2012), Giunipero (2020) contains a complete Italian rendering of this text conducted by Gabriele Tola (pp. 125-131).

official colleagues in matters of water management[62]. He argues that admiration for the accomplishments of the prosperous age of remote antiquity alone cannot replace adequate measures in present times. What is needed instead is practical action, e.g. by going out to the fields and advising the farmers on site. The implementation of the TXSF's hydraulic techniques is a promising approach in this regard. Among all paratexts under scrutiny, that by Peng Weicheng is the longest. Its title 'Preface for [Extolling the] Holy Virtue that Came from Afar' (*Shengde laiyuan xu* 聖德來遠序) indeed reflects the spirit of this text, which in large parts comes along as a praise of the skills and the humbleness of the Jesuits. But at the same time Peng does not hesitate to emphasize that the Eastern and the Western sides are intellectually on a par, and that the benefit of their collaboration is a mutual one. Finally, Zheng Yiwei is the only one who gives a short but systematic description of the contents of the TXSF and makes it clear, how the Western water lifting devices can expediently supplement traditional and more recent native technologies. In the same vein, the TXSF as a written treatise is depicted by him as a meaningful complement to the classical Confucian works.

Now, how to accommodate a highbrow scholarly audience deeply rooted in traditional perceptions of knowledge and win them over for Western ideas and technologies related to water? A first eye-catching hint at the efforts of the Chinese authors to find in their prefaces a viable balance between praising the missionaries as "outstanding scholars from the Western Ocean" (*xiyang ruyan* 西洋儒彦)[63] and the need to take into consideration possible sinocentric attitudes of their readership that forbade any overly impression of a possible superiority of non-Chinese scholars, is the designation of the Jesuits as "gentlemen (*junzi* 君子) from the Great West, who have coveted to come to China as guests for their [own] advantage (*li bin yu guo* 利賓于國)"[64], whereby they are clearly assigned an inferior, suppliant position from the start. Peng Weicheng makes it even more explicit when he talks of "Teacher Li [Madou] from Europe (Ouluoba 歐羅巴)", who came together with other outstanding scholars from his country "to bring tribute goods (*xiu gong* 修貢)" to China[65]. Such statements, of course, contain a fair amount of rhetoric, but in the given context the issue of a proper positioning and thus demarcation between both sides obviously was of specific importance.

[62] Like the preface by Xu, those by Cao Yubian and Zheng Yiwei have in part been translated by Kurtz (2012). Our translations differ from his.

[63] TXCH (1965), vol. 23.3, preface Peng, fol. 4a, p. 1531.

[64] TXCH (1965), vol. 23.3, preface Xu, fol. 1a, p. 1505. A very similar statement is found in Peng's preface.

[65] TXCH (1965), vol. 23.3, preface Peng, fol. 1a, p. 1525. Moreover, further down in his preface (fol. 3a, p. 1529) Peng reports that the Jesuits had refused to accept the official appointments (*guan* 官) bestowed upon them by the court, but that, nevertheless, they receive "salaries like high officials" (*daguan zhi feng* 大官之奉) to cover their daily needs. In his *Bianxue zhangshu* 辯學章疏 (Memorial on Distinguishing Learning) Xu calls the Jesuits also "vassals" (*peichen* 陪臣).

At the same time, within this pre-defined setting Western learning had to appear as compatible with native approaches by packing it into Chinese tradition and depicting it in terms familiar to the learned readership. In his ground-breaking study about the rhetorical strategies used in paratexts to Jesuit technological treatises in 17th century China, Joachim Kurtz in addition to the issue of compatibility has identified three other distinct "means of persuasion" applied in this endeavour, namely the use of historical precedent, justifications for the need of new knowledge, and efforts to highlight the value of Western tools and technologies[66]. The larger the intended audience, the more did this kind of paratextual persuasion matter in order to bring the message of the whole treatise home and to appropriate it for the authors' own statecraft and *shixue* ambitions. Thus, an examination of the rhetorical devices applied in these texts sheds light not only on the intentions of their authors, but also on the anticipated preferences and aversions of the potential readers. In any case, such devices were extensively used in paratexts to Jesuit works, and consequently they all are found in the TXSF as well.

In the following, the relevant results of Kurtz' study will be critically analysed and extended by further findings, also with regard to the text of Peng Weicheng, which was not included by Kurtz[67]. I will make a start with the reconciling efforts of the Chinese preface writers, who imbedded Western knowledge into a conventional linguistic environment and depicted its transmitters as well as the collaboration with them as trustworthy and promising[68]. Such attempts are easily recognisable throughout our texts, where they form the matrix for the other rhetorical devices applied[69]. For example, a well-known passage from the canonical *Zhongyong* 中庸 (Doctrine of the Mean) is discernible in all Chinese prefaces to the TXSF. Its message is that giving priority to sincerity is in harmony with the

[66] See Kurtz (2012), p. 211. Somewhat misguidingly, Kurtz speaks in quite general terms of "Jesuit paratexts" and rhetorical devices applied by Jesuit authors, while seven out of nine of the prefaces examined by him were written by Chinese scholars.

[67] Kurtz argues that this text "is of no interest in our context since it contains only general remarks on Christianity" (p. 210, footnote 4). This assessment is refuted in this study, as Peng's text contains a lot of details about the collaboration with the Jesuits and the proceeding of the TXSF project. Besides, with "*Shengde* ***wei****yuan xu* 聖德**未**遠序 [Sacred virtue is never far away]" Kurtz gives an incorrect title for Peng's preface. The correct wording is *Shengde* ***lai****yuan xu* 聖德**來**遠序 (Preface for [Extolling the] Holy Virtue that Came from Afar).

[68] For this method of persuasion see Kurtz (2012), pp. 220-225. In this paragraph, Kurtz mainly dwells on Xu Guangqi's positive depiction of the collaboration with Ricci and to this end presents a translation of about one third of Xu's preface. Even though this translation contains some flaws, Kurtz' line of argument as such is convincing.

[69] While at the time when the TXSF was composed, i.e. during the early phase of the Jesuit China mission, it was mainly the basic compatibility of Eastern and Western learning and rather unspecific resentments against foreign "intruders" that had to be countered in the paratexts, the issue of the Jesuits' trustworthiness became much more important after the Nanjing incident. But what is more, questions about the commensurability of both sides turned into the conviction that Western learning stemmed from Chinese origins anyway (*Xixue Zhongyuan* 西學中源) later on towards high Qing times. See also below.

heavenly endowed human nature. It is this sincerity – not just intelligence and an overly bookish approach – that is decisive for the human ability to exhaustively explore the nature of all creatures and things, and thereby support the nourishing powers of Heaven and Earth[70]. This noble attitude is attributed to the Jesuits throughout the Chinese prefaces. A first hint crops up in Xu's text, when he refers to the Jesuit maxim of sincere dedication to carry out their heavenly endowed obligation for the benefit of mankind[71]. Moreover, Peng praises the missionaries' willingness to answer all questions and to "instruct people with perfect sincerity" (*kaixin shou ren* 開心授人)[72]. Cao Yubian instead is focusing almost exclusively on the Chinese side, where he detects a misinterpretation of this principle. Thus, in his complaint about present day officials, who are so busy with all their official documents and registers (*bushu* 簿書) that they totally forget their hands-on obligations in agricultural matters, he carries on with this topos by saying that such Chinese "scholars are [only] *talking* about forming a ternion [with Heaven and Earth] and assisting [in the processes of nature] (*tanji canzan* 談及參贊)"[73], instead of dedicating themselves to their practical tasks. Against this, the Jesuits appear as paragons of Confucian morality and scholarship. Moreover, it is underlined time and again that they have come to the Middle Kingdom with good intentions and that with regard to their collaboration with the Chinese side they do not have any selfish motives. This holds true for de Ursis in particular, who is a man who "wholeheartedly does not spare any effort or sacrifice for making it possible that [this] benefit [for the people; i.e. the pumps and the TXSF] is accomplished" (*ququ zhongding li suo keji* 區區踵頂利所可及)[74].

Nevertheless, in addition to these appraisals the Chinese paratexts to the TXSF contain several, though somewhat veiled indications of the Jesuits' religious aspirations and thus of possible ulterior motives for their collaboration[75]. For example, right at the beginning of his preface Xu rather ambiguously talks of "respect and obedience to the Lord on High" (*jinruo shangdi wei zong* 欽若上帝為宗) as one of the missionaries' maxims[76]. Peng Weicheng uses a more subtle hint

[70] In the *Liji* 《禮記·中庸》 the whole passage reads: 自誠明，謂之性；自明誠，謂之教。誠則明矣，明則誠矣。唯天下至誠，為能盡其性；能盡其性，則能盡人之性；能盡人之性，則能盡物之性；能盡物之性，則可以贊天地之化育；可以贊天地之化育，則可以與天地參矣。

[71] See TXCH (1965), vol. 23.3, preface Xu, fol. 1a, p. 1505.

[72] TXCH (1965), vol. 23.3, preface Peng, fol. 3b, p. 1530.

[73] TXCH (1965), vol. 23.3, preface Cao, fol. 3a, p. 1521. Emphasis added.

[74] TXCH (1965), vol. 23.3, preface Zheng, fol. 4b, p. 1544.

[75] Kurtz does not discuss this issue, as he is of the opinion that the Chinese authors were dedicated to avoiding any doubt in this regard, and that e.g. Zheng Yiwei wanted "to dispel any suggestion of ulterior motives on the part of the foreigners". See Kurtz (2012), p. 223.

[76] See TXCH (1965), vol. 23.3, preface Xu, fol. 1a-b, p. 1505f. In such works, *shangdi* 上帝 often denotes the Christian God. Here, however, the position of this term is exalted by a line break which usually indicates reference to the emperor, for whom this expression was also used. The

when he says that de Ursis and his companions "had their one reed [bundle] drift as it wished" (*zong yi wei zhi suo ru* 縱一葦之所如)[77], which in the eyes of learned readers was nothing but a metaphor for someone coming to China to preach his religious convictions[78]. Finally, Xu Guangqi gives quite some thought to de Ursis' obvious inner struggle of how to reconcile his genuine missionary task with the time-consuming activities of introducing Western hydromethods to the Middle Kingdom[79]:

> Upon occasion I therefore asked Teacher Xiong [about the hydromethods], but he just murmured "alright, alright" for quite some time. When scrutinizing his heart-mind, his face showed no unwillingness (*linse* 吝色) at all, but disconcertedness (*zuose* 怍色) instead. I then came to the following conclusion: That his face showed no unwillingness is because that what is aspired by these gentlemen when explaining their teachings and talking about the Way is nothing else than to bless the State and to protect the people. […] That his face showed disconcertedness was because he very much feared that if these methods are widely spread, the realm as well as later generations would regard [the Jesuits merely] as [carpenters like] Gongshu 公輸 or [utilitarists and craftsmen like] Mo Di 墨翟, since this does not accord with their purpose of having come to the East over a distance of several ten thousands of *li* for teaching the world to be good to all (*you shi jian shan* 牖世兼善), regardless of [all] personal sacrifices and even death and in spite of [all] dangers and difficulties[80].

resulting ambiguity may have been intentional. For the dispute within the China mission about the appropriate way of translating the name of God see Kim Sangkeun (2004).

[77] See TXCH (1965), vol. 23.3, preface Peng, fol. 5b, p. 1534.

[78] The phrase cited by Peng can be found in the Song dynasty in Su Shi's 蘇軾 (1037-1101) *Qian Chibi fu* 前赤壁賦 (Former Red Cliff Rhapsody): 縱一葦之所如，凌萬頃之茫然 (We let our reed bundle drift as it wished, and it floated over a great expanse). This saying is a hint at a popular legend about Bodhidharma's 菩提達摩 (483-540) crossing the Yangtze River, when he once came to China for preaching Buddhism. In our context, it might be reasonable to assume that Peng Weicheng compared the Jesuits with Bodhidharma as they came to China for mission purposes as well. I thank Dr. Cao Jin and Dr. Edward Yong Liang for pointing out this valuable information to me.

[79] For the change in the strategy of the China mission from Ricci to Longobardo and the resulting "disconcertedness" of de Ursis when faced with the invitation to write a book on hydromethods see Hsia (2019).

[80] TXCH (1965), vol. 23.3, preface Xu, fol. 3b-4a, p. 1510f.: 間以請於熊先生，唯唯者久之。察其心神，殆無吝色也，而顧有怍色。余因私揣焉：無吝色者，諸君子講學論道所求者，亡非福國庇民 … 有怍色者，深恐此法盛傳，天下後世見視以公輸、墨翟，即非其數萬里東來，捐頂踵、冒危難、牖世兼善之意耳。In large part, Gabriele Tola's Italian translation of this passage in Giunipero (2020), p. 129f., corresponds in meaning to our English rendering, even though the last sentence contains some inconsistencies and doesn't fully convey the religious aspirations that Xu assigns to de Ursis. This part reads: "...vale a dire che non fosse venuto in Oriente da così lontano per le sue conoscenze matematiche [數萬里東來] e offrire tutto il proprio aiuto, affrontando pericoli per illuminare il mondo e con l'intento di far sì che gli altri ne traessero vantaggio [牖世兼善]".

But these hidden allusions to the sensitive matter of the Jesuits' religious ambitions notwithstanding, the prefaces on the whole imply the impression of a harmonious and successful collaboration between both sides – which certainly would not have been possible, if their respective bodies of knowledge had proven incommensurable. Still, this principal compatibility alone was not sufficient to attract the attention of a broader learned audience, and even less so in the case of technological treatises like the TXSF, which in these circles traditionally were held in comparatively low esteem. Here it was fundamental to find further justifications in the actual need of innovative and specialised knowledge, and to stress the value of Western tools and technologies in particular. To evoke in the readership a feeling of inevitability was a proven remedy in this regard: The more the available repertoire in a distinct field was perceived as insufficient by the readers, the more convincing was the propagation of the need for new approaches. Thus, the demonstration of native shortcomings in water management and supply technologies features prominently in two of our paratexts, namely the prefaces by Cao and Zheng.

The way in which both authors eloquently applied this rhetorical device in their texts has been extensively examined by Kurtz and – except for some additional observations and differing perceptions – needs not be detailed here again[81]. In this context it was particularly challenging to find the right balance between painting a sufficiently gloomy picture and at the same time not dismissing the Chinese approaches altogether[82]. However, Cao Yubian's complaints about the obvious deficits in water supply and the negligence of those responsible for this important agricultural issue appear as quite outspoken. In his urgent appeal for relief of the destitute and desperate farming families, Cao, who was the only one among our four Chinese preface authors not stemming from the South, makes a case for the people of the Northwest in particular, because "there the earth is high and fountains are few, and although there are wells either shallow or deep, [and with water] either fresh or brackish, for the most part one does not obtain [there] the use[fullness] of water"[83]. In his critique of official misconduct he even goes so far as to accuse "those who stay in honourable positions above the people" (*you zunchu minshang* 有尊處民上) to "forbearingly cause them to starve to death" (*renling qi ji yi si* 忍令其饑以死)[84]. Thus, in my view Cao's criticism is even more pronounced than depicted by Kurtz, who reads "a note of cautious optimism that past failures were about to be overcome thanks to officials of good will" into his preface[85]. Cao's serious, but

[81] Kurtz deals with the need for new knowledge and the value of tools and technologies in two separate subsections. This division is not fully convincing, at least not in the case of the TXSF, which in Kurtz (2012) only crops up in the tools section.

[82] See Kurtz (2012), p. 217f.

[83] TXCH (1965), vol. 23.3, preface Cao, fol. 1b, p. 1518.

[84] See TXCH (1965), vol. 23.3, preface Cao, fol. 3b, p. 1522.

[85] Kurtz (2012), p. 228. Kurtz' perception is based on the following passage about the daily activities of those entrusted with the sacrosanct task of "encouraging farming" (*quan nong* 勸農)

from a Confucian point of view more than justified admonition is directly followed by a hierarchised recommendation to the responsible authorities to propagate the *Hydromethods* throughout the empire.

While Cao in his justifications for a need to collaborate with the Jesuits thus mainly aims at native administrative deficits in current water management, Zheng Yiwei's rhetorical strategy includes a focus on the technological side as well. This, moreover, gave him the opportunity to represent himself – in a clearly image-cultivating fashion – as an expert in the field. With some pride, he reports about the construction of a waterwheel with buckets in his home region in the South, and of water supply by means of long bamboo conduits in the mountains. Both Chinese methods, however, have their limitations, and therefore need to be supplemented by the methods from the West "in accordance with the conveniences of [local] customs", in order to "mend the shortcomings of [the native] water lifting implements and [that way] further [their] utility for the people"[86]. Thus, the Western devices are in no way meant to replace proven and sophisticated native techniques, but are solely presented as useful amendments.

In addition, Zheng puts the introduction of the new hydromethods in line with much earlier Chinese developments in the field. To this end, he establishes a downright disciplinary genealogy of the "cultivation of the use of water" (*xiu shuiyong* 修水用) from remote antiquity, over the establishment of the well-field system, and down to the introduction of first mechanical devices like the well sweep. Through the connection with these developments, the TXSF appears even more as kind of a consequent and significant advancement, with the pleasant side effect that, as collaborators in the TXSF project, Zheng and his colleagues automatically become part of the prestigious traditional lineage of promoters of water control. This reference to historical precedent is also discernible in the preface of Cao Yubian, who directly contrasts his complaints about the miserable state of water management at present with the successes of Yu the Great (Da Yu 大禹) in "dredging and administering the gullies and irrigation

through the supervision of agricultural activities on site: 今也牧民之宰，簿書不遑，過隴畝問桑麻，亦未多睹. See TXCH (1965), vol. 23.3, preface Cao, fol. 2b, p. 1520. Kurtz' rendering reads: "Nor are those governing the people today idle in producing official documents. When they pass rural communities they always ask about the mulberry and hemp [i.e., the details of life on the farms]. This was rarely seen in the past […]". Our translation, however, draws a quite different picture: "Nowadays however, magistrates shepherding the people are extremely busy because of all the official documents and registers, and [therefore] that they would pass through the dikes and fields asking [people] about mulberry trees and hemp for sure is not often observed".

[86] See TXCH (1965), vol. 23.3, preface Zheng, fol. 3a-b, p. 1541f.: 随俗之便，或用中土法，或用此法，可以佐水車之不及，而前民用。Kurtz' translation of this passage does not fully get to the heart of the message: "When we trace the changes in conventional [hydraulic machinery] we see that some use methods developed on Chinese soil and others use the methods described in this [book]. Both can be used by people everywhere to assist in works that cannot be achieved by water wheels". See Kurtz (2012), p. 230.

ditches" (*shuzhi gouxu* 疏治溝洫)[87] in China's Golden Age, making thus an attempt to improve the current dire straits through the Western *Hydromethods* all the more attractive.

Thus, all rhetorical devices and means of persuasion identified by Kurtz are found in one form or the other in the Chinese prefaces to the TXSF as well. In the following, I will extend these findings by showing how Zheng Yiwei appropriated the TXSF for the Chinese body of knowledge by relating this treatise directly to respected sources of the Confucian canon and incorporating it into a framework of native ideas about the origin and the generation of knowledge. As we have seen, despite their call for innovative and more practical measures, the paratexts to the TXSF in an explicitly scholarly manner draw strongly on traditional figures of speech taken from the Confucian classics. Zheng, as an outspoken supporter of "substantial learning" and the adoption of Western knowledge to supplement Chinese methods and technologies if necessary, is no exception in this regard. Thus, in a sophisticated intermingling of a preference for usefulness over mere refinement and with notions of sincerity and ingenuity, he assigns the TXSF a function similar to that of the well-established *Kaogong ji* 考工記 (Records on the Examination of Craftsmanship). This treatise was a later addition to the authoritative and venerable *Zhouli* 周禮 (Rites of Zhou), originally a comprehensive account of regulations and instructions for all kinds of public works, but handed down incompletely[88]. In the eyes of *shixue* scholars like Xu Guangqi or Zheng Yiwei, the *Zhouli* in a way shared its destiny with the other classics, whose meanings had been lost at least in part in the great burning of books under Qin Shihuangdi 秦始皇帝 in 213 BCE[89]. Against this background, Zheng Yiwei carefully classifies the *Hydromethods* as follows:

> Though people say that the *Kaogong ji* 考工記 (Records on the Examination of Craftsmanship) can fill the vacancy [left by] the "Dongguan" 冬官 ["Winter Office", i.e. the Ministry of Works chapter of the *Zhouli* 周禮], I straightforwardly assert that the "Dongguan" [chapter] was not lost, but that it just became mixed up with other [chapters on] offices, such as the [description of the] storing and draining [of water] in [the subchapter] "Daoren" 稻人 (Officers of the Seeds in the Flooded Terrains)[90].

[87] TXCH (1965), vol. 23.3, preface Cao, fol. 1b, p. 1518

[88] The *Zhouli* purports to describe the governmental organisation of the Western Zhou period (11th c.-770 BCE). It was compiled during the Warring States period (5th c.-221 BCE). Its sixth or "Dongguan" 冬官 chapter had reported about the offices and the work of the employees under the Overseer of Public Works (*sikong* 司空), who among other things was responsible for irrigation and water conservancy projects. This original chapter was lost probably during the Former Han period (206 BCE-25 CE), and thereafter replaced by the *Kaogong ji* 考工記.

[89] See Hart (2013), p. 259. Hart refers here to Xu Guangqi in particular.

[90] *Daoren* 稻人 is the title of one of the officials in the Terrestrial Office (*diguan* 地官, i.e. the Ministry of Education) in the *Zhouli.* The *daoren* were responsible for the proper management of the irrigation systems feeding the paddy fields.

> Certainly the writing [i.e. the TXSF] by the Hanlin Academician Xu [Guangqi] strikingly resembles the *Kaogong ji*, but even if the methods [described in the TXSF] do not venture to fill the vacancy [left by] the "Dongguan" [chapter], they can perhaps complete the [information] collected in the "Daoren" [subchapter], though for sure they [should not be] compared with the [useless] flying kite (*feiyuan* 蜚鳶) [commented on] by Mozi 墨子[91].

Thus, like the *Kaogong ji* as its famous counterpart, the production of the TXSF is seen by Zheng as an attempt to re-establish ancient Chinese wisdom, that over time had disappeared somewhere between the lines of the old books. In other words, the hydraulic methods presented in this treatise are not a new invention or recent discovery of Western scholars, but the underlying knowledge basically had already been contained in the native *Zhouli*, which was considered as the quintessence of the ultimate sagehood of the past. As a consequence, unlike the construction of a skilful but superfluous "flying kite" the *Hydromethods* reflect true ingenuity and are therefore of tangible and lasting use for mankind. Thus, the TXSF appears here implicitly as an early example of the idea of the "Chinese origins of Western learning" (*Xixue Zhongyuan* 西學中源), which would have its heyday later on towards high Qing times[92].

5. *The provocative Jesuit counterpart to the Chinese paratexts: de Ursis' 'Shuifa benlun'*

A quite different understanding of the coming about of knowledge in general and that contained in the TXSF in particular is found in Sabatino de Ursis' 'Shuifa benlun' as the only paratext to the TXSF authored by the Western side. In addition to its advertising function, this short text can be seen as a basic introduction about how to read the TXSF and understand its conceptualisation that at the same time provides the structure of this treatise. In any case, at least its final paragraph carries some of the features of its Chinese counterparts, in that it builds a bridge to the Chinese setting by depicting the TXSF as the product of the collaboration with

[91] The metaphor of the "flying kite" goes back to Mozi 墨子, book 13, 'Lu's Question' (Lu wen 魯問): 公輸子削竹木以為鵲，成而飛之，三日不下，公輸子自以為至巧。子墨子謂公輸子曰：「子之為鵲也，不如匠之為車轄。須臾劉三寸之木，而任五十石之重。故所為功，利於人謂之巧，不利於人謂之拙。」Translation by W. P. Mei: "Gong Shuzi [i.e. Lu Ban 魯班] constructed a bird from bamboo and wood and when it was completed he flew it. It stayed up (in the air) for three days. Gong Shuzi was proud of his supreme skill. Mozi said to him: 'Your accomplishment in constructing a bird does not compare with that of the carpenter in making a linch-pin. In a short while he could cut out the piece of wood of three inches. Yet it would carry a load of fifty shi. For, any achievement that is beneficial to man is said to be beautiful, and anything not beneficial is said to be clumsy'". (https://ctext.org/mozi/lus-question#n875) Thus, a "flying kite" stands for something very skilful, but not of benefit for mankind like a simple wooden linchpin. Only inventions of the latter kind – like for example the hydraulic pumps of the TXSF – can be called ingenious.

[92] For this topic, see e.g. Elman (1990; 2005) or Wang Yangzong 王揚宗 (1997).

some sympathetic literati, who had urged de Ursis to materialise his expertise in the field not only by having manufactured the described implements, but also as a written book. Despite some reservations about this occupation with "the art of the Hundred Crafts" (*baigong yishi* 百工藝事)[93], de Ursis says that he feels so much indebted to his Chinese hosts that through the collaboration with them he intends to repay at least a small part of the favours he has received thus far. He concludes his reconciling efforts by expressing his wish that when the TXSF is bestowed by "today's men of great virtue and wisdom who embody the will of Heaven, establish the Heaven-ordained fate of human beings, order the worldly affairs, and are worried about the troublesome times" to the firewood gatherers [i.e. the commoners] (*raocai* 蕘采), then "the people will be enriched and the state's [needs] satisfied"[94]. In the same mode of currying favour with the Chinese side he designates himself here as a "subject from afar" (*yuanchen* 遠臣), just like his interlocutors had addressed the missionaries in order to underline their otherness and consequential inferiority. But in almost the same breath, de Ursis signs his text as "respectfully composed by Xiong Sanba 熊三拔, Jesuit scholar from the Great West (*Taixi yesuhuishi* 泰西耶蘇會士)", which in the end makes him appear as an intermediary trying to reconcile two different worlds and cultures.

In any case, this accommodative finale can be seen as an attempt to cushion somewhat the preceding provocative statements of de Ursis' text that starts out by comparing God's Creation with the work of a metaphorical "master craftsman" (*dajiang* 大匠), who uses tools and materials like earth, wood, metal, and stone (*tu mu jin shi* 土木金石)[95] to build palaces and dwellings. But where did these materials come from at the very beginning of creation? It is only the almighty Lord of the Creation of Things (*zaowuzhu* 造物主) who "is able to make something from nothing" (*yi wu wei you* 以無為有), and so he first brought into existence the four Primordial Elements (*yuanxing* 元行), which he then made into [physical] bodies to fabricate the Myriad Things[96]. The outline of the essential function and the omnipresence of these most fundamental components that unfolds from here, shows some parallels to the subchapter about the Four Elements (*Si yuanxing lun*

[93] See TXCH (1965), vol. 23.3, Shuifa benlun, fol. 2b, p. 1552.

[94] See TXCH (1965), vol. 23.3, Shuifa benlun, fol. 2b, p. 1552: 倘當世名賢，體天心，立人命，經世務，憂時黯者，賜之蕘采，因而裕民足國.

[95] In his *Huangji jingshi* 皇極經世 (August Ultimate Governing the World), Shao Yong 邵雍 (1011-1077) had described water, fire, earth, and stone as the four earthly forms or substances (*si ti* 四體), which in his conceptualisation replaced the Five Phases (*wu xing* 五行), i.e. wood, fire, earth, metal, and water, of Han Confucian thought. Matteo Ricci adopted this idea and transferred it to the theory of the Aristotelian Four Elements (*si yuanxing* 四元行), which for him constituted the [real] substances (*ti* 體) of the Five Phases, which were only the [secondary] functions (*yong* 用) of the Four Elements. See Xu Guangtai 徐光台 (2007), pp. 52-55.

[96] See TXCH (1965), vol. 23.3, Shuifa benlun, fol. 1a, p. 1549.

四元行論) of Matteo Ricci's *Qiankun tiyi* 乾坤體義 (On the Structure of Heaven and Earth; c. 1608)[97].

De Ursis then makes it clear that the Western theory of the Four Elements is so complex that it actually would necessitate the compilation of a comprehensive and "specialised book with detailed explications" (*zhuanshu beilun* 專書備論). However, at the moment he can "only approach the Element Water and provide a first clue" (*dujiu shuixing lüeyan qi xu* 獨就水行略言其緒) of this theory[98]. Consequently, he then narrows the perspective to this one element and its natural places on earth, thereby anticipating the structural logic of the TXSF. Even though due to divine providence this resource – also in the form of rain, dew, snow etc. – is available everywhere, sometimes human strength alone does not suffice to adduce it adequately to the places where it is needed. At this point, another favour of the heavenly "Supreme Powerholder" (*zhuzai* 主宰)[99] comes into play. God has not only provided mankind with abundant amounts of water, but he also "endowed humans with intelligence for controlling and using [such resources] in compliance with the Heavenly Way" (*bi ren ling cheng tian zhiyong* 裨人靈承天制用)[100]. Hence, since the days of antiquity man has followed the path of wisdom and built implements to obtain water from rivers and wells or to collect it in the form of rain and snow, always with the aim to better cope with natural disaster and to benefit and nourish the people.

Here, the crucial difference to the above mentioned literati understanding of the generation of knowledge becomes visible. Other than the Chinese perception of a mere re-establishing of ancient wisdom – of which scholars simply have lost track – the Christian idea is that "by accumulation over a long time [knowledge] became more refined, and through change and transformation constant renewal [took place]" (*jijiu mijing, bianhua rixin yan* 積久彌精，變化日新焉)[101]. Thus, despite the shared motivation to "exhaust nature" and to use its resources efficiently in accordance with a heavenly plan, the persistent but conservative Chinese efforts at knowledge recovery are replaced by an accumulative process of developing

[97] For the text of Ricci's 'Si yuanxing lun' that is explicitly quoted twice in the Aristotelian fifth chapter of the TXSF, cf. Zhu Weizheng 朱維錚 (2001), pp. 611-622.

[98] See TXCH (1965), vol. 23.3, Shuifa benlun, fol. 1b-2a, p. 1550f.

[99] The expression *zhuzai* 主宰 is extensively used by Zhu Xi 朱熹 in his discussions of Heaven (*tian* 天) and principle (*li* 理). In de Ursis' 'Shuifa benlun' the term 主宰 clearly stands for the Lord on High. It would be instructive to further analyse the ambiguities resulting from the use in the TXSF's paratexts of different characters to denote the Christian God. For example, Peng Weicheng talks of the "Heavenly Lord" (*tianzhu* 天主) twice, while Xu and Cao use the expression *shangdi* 上帝. According to Hart (2013), pp. 245-253, in Chinese understanding the expression *tianzhu* referred exclusively to the emperor. After his expulsion to Macao in the wake of the Nanjing incident, Sabatino de Ursis was substantially involved in the heated debate within the Jesuit mission about the correct Chinese terminology for Christian concepts. For this important topic cf. Frisullo and Vincenti (2020c).

[100] TXCH (1965), vol. 23.3, Shuifa benlun, fol. 2a, p. 1551.

[101] TXCH (1965), vol. 23.3, Shuifa benlun, fol. 2a, p. 1551.

something new and better. This divergent perception on the Western side reflects the gradually accelerating shift away from a Renaissance worldview – in which the Arab World had played a similar role for Europe, as in Chinese view now the West did for China – towards more scientific approaches to nature and its phenomena. This paradigm shift had already set in in Europe and is indeed discernible throughout the TXSF. The ever widening gap between both conceptualisations in the wake of the ensuing Qing dynasty can be seen as one of the decisive factors in the ongoing discussion about the reasons for China's falling behind the West[102].

By contrasting the backward oriented genealogy of water management featuring prominently in the texts of our literati authors with this developmental trajectory, de Ursis hits the mark of the Jesuit strategy of an "apostolate of the book" with its intention to convince the Chinese side not only of the superiority of Western science, but first and foremost also of the underlying Christian creed. This latter part of the missionary strategy, which is one of the main concerns of the rhetorical justification efforts in the Chinese prefaces, is in no way curtailed or veiled in de Ursis' introductory notes. Instead, the Jesuit time and again stresses the circumspect and all-encompassing arrangements and the thoughtful higher plans and schemes discernible in all phenomena in the world, and makes them into a downright proof of the existence of God. In other words, the ultimate authority in this realm is neither Aristotle nor any other scholar, but God on High alone. Thus, at bottom, the 'Shuifa benlun' can be called a blunt praise of the Christian Lord, suited to thwart all above described efforts of the Chinese paratext writers to convince their readers of the sincerity and the good intentions of the missionaries, and thereby to somewhat attenuate their undeniable religious aspirations.

6. *Further developments and outlook*

This kind of blatant provocation was only possible, because during the early phase of their China mission – during which the TXSF was written and first published – the Jesuits were well integrated into a group of "sympathising literati and officials"[103]. This "very Chinese network of publishing, friendship, and patronage"[104], which kept the missionaries virtually unaffected of central government policy in these days, was in good part the personal achievement of Matteo Ricci, who had established lasting ties with our Chinese paratext authors and other scholar-officials as we have seen above. Thus, the great number of these and similar prefaces written in the period between 1590 and the 1620s is both a sign of trust in the sincerity of the missionaries on part of important representatives of the state, and a direct expression of the "moment of

[102] For a multi-dimensional analysis – including the notions of knowledge and meaning as distinct means of "worldmaking" – of the reasons for the so-called Great Divergence see Árnason (2006), but also (2003).

[103] See Dudink (2001b), which as a subchapter of the *Handbook of Christianity in China* is dealing with this topic in particular.

[104] Wills (1998), p. 364f.

greatest opportunity" for the Jesuit mission, an opportunity that in the case of the TXSF was well exploited for the ambitions on both sides[105].

The Nanjing persecution, provoked by Shen Que 沈潅 in 1616, brought the first major setback in this regard[106]. In his accusations, the Nanjing Vice Minister in the Board of Rites had referred not only to the Jesuits' religious but also to their scientific writings as heterodox and harmful to Chinese state and society[107]. As a consequence, from the 1620s onwards – and probably following the advice by Xu Guangqi – the missionaries much more clearly separated the transmission of scientific ideas from their written efforts to introduce Christianity to the Middle Kingdom. At the same time, they began to seek for imperial rather than for literati support, as the latter had proved unstable and susceptible to an entanglement in factional struggles. Still, there was much reason for missionary optimism in the 1630s, even though the Jesuits as expert advisers to the emperor now had less opportunity for immediate engagements with wider learned circles and converts-to-be. Moreover, in their preface writing Chinese officials began to prefer the missionaries' religious over their scientific works[108]. Nevertheless, a downright abandonment of former practices, accompanied by an increasing perception of Jesuit books on Western science as "heterodox", is discernible only in the course of the Qing[109]. Even though this did not mean that contacts of literati with Jesuits would no longer have taken place, these encounters now were rather motivated by curiousness for Western exotica than by a profound interest in different approaches and bodies of knowledge.

Altogether, since their first publication in 1612 the *Hydromethods of the Great West* met with a noticeable, though mainly academic resonance in China, visible not least in some reprints already during the 17th century[110], and the discussion and citation of parts of its knowledge in treatises of contemporary scholars, as for example those by members of the group around Fang Yizhi 方以智 (1611-1671)[111]. Still, to which degree this learned response indeed was enhanced by the fact that influential officials had written prefaces to this work, is difficult to gauge, even though it definitely must have played a certain role. But as a matter of fact, quite a few of the scholars, who

[105] See Dudink (2001b), p. 483.

[106] For this anti-Christian movement see e.g. Kelly (1972) and Dudink (2001a). Kelly sees mainly political and ideological reasons behind the persecution, but excludes a distinct Neo-Confucian thrust.

[107] Here and in the following see Dudink (2001b), p. 480f. Dudink's remarks mainly refer to the situation in Beijing and Nanjing, whereas the arrival of Giulio Aleni in Fujian in 1625 still resulted in a similar approach as during the days of Matteo Ricci, including literati patronage and preface writing – now, however, for religious works in the first run.

[108] See Dudink (2001b), p. 483.

[109] See Dudink (2001b), p. 486f.

[110] For these reprints see the CCT-Database by Dudink and Standaert (2004).

[111] This "Fang School" (Fangshi *xuepai* 方氏學派) was mainly focused on the TXSF's theoretical Aristotelian explanations about water-related natural phenomena. For this topic, see e.g. Lim Jongtae (2008), Xu Guangtai 徐光台 (2006), Zhang Qiong (2015), as well as Kink (2020). For the reception of technical matters, i.e. of pumping technologies, cf. Zou Zhenhuan 邹振环 (2017).

initially had been enthusiastic about contributing to Jesuit works through paratext writing, later on lost interest in such collaborations by and by. One example is Cao Yubian, who, after his participation in the TXSF project and similar support for Diego de Pantoja's *Qike* 七克 (The Seven Overcomings; 1610s), appears to have changed his attitude and did not write prefaces any more during the next 20 years[112].

This finally brings us to the question of the subsequent fate of the prefaces examined in this study. It is revealing that beyond the 1626 TXCH edition of the TXSF none of the later official reprints, in whole or in part, contains any of these paratexts. Such reprints are found in larger compilations like Xu Guangqi's *Nongzheng quanshu* 農政全書 (Complete Book on the Administration of Agriculture; 1639), or in Qing time encyclopaedic works like the *Gujin tushu jicheng* 古今圖書集成 (Complete Collection of Pictures and Books of Old and Modern Times; 1726), the *Shoushi tongkao* 授時通考 (Comprehensive Treatises to Instruct [the People] during All Seasons; 1742), and the prestigious *Siku quanshu* 四庫全書 (Complete Books of the Four Treasuries; 1782f.). This clearly reflects the increasing efforts on the Chinese side to draw a distinct line between the religious and the scientific contents of Jesuit works on Western knowledge, at least through the obliteration of possibly detrimental paratexts[113]. But in parallel, already during the Nanjing persecution a first compilation of apologetic texts was published by Yang Tingyun 楊廷筠 (1557-1627)[114], quasi as a counter-reaction to Shen Que's accusations. His *Juejiao tongwenji* 絕徼同文紀 (Collected Essays Related to the Anti-Prayer [Movement]; 1616, enlarged edition 1629)[115] includes all paratexts to the TXSF, though in a different order than in the later TXCH edition[116]. This illustrates that – beyond their function to advertise or justify as mere attachments other, larger works – such paratexts constituted a genre of their own and thus could survive in quite different settings. With their hints at the religious activities of the missionaries the literati prefaces to the TXSF were obviously understood as written not least in justification and defence of this aspect.

[112] See Dudink (2001b), p. 479. The same applies to Peng Weicheng (preface only for TXSF) and Zheng Yiwei (prefaces both for TXSF and *Qike*). Xu Guangqi, who during the early years of the Jesuit China mission had been most active in this regard, wrote only one more preface later on, namely that to Schall's *Chidao nanbei liang zongxing tu (shuo)* 赤道南北兩總星圖（說）(On the Double Stellar Hemisphere; 1634).

[113] The reiterated, more or less open allusions to the Christian Creed which are detectable within the main text of the TXSF itself are another story, because of course they were not so easily effaceable.

[114] Together with Li Zhizao and Xu Guangqi, Yang Tingyun became known as one of the "Three Pillars of Christianity in China".

[115] The *Juejiao tongwenji* 絕徼同文紀 is a collection of 56 prefaces (written by 26 persons including four missionaries) to 18 different books of the joint literati-Jesuit translation project. In addition to the prefaces in *juan* 1 it contains a second part with memorials, edicts, and inscriptions. Cf. also Dudink (2001a), pp. 215ff.

[116] Later modern reprints are those by Tang Kaijian 汤开建 (2017), which includes the prefaces by Xu, Cao, Peng, and Zheng, while Xu Zongze 徐宗澤 (1989) leaves Peng out.

In sum, this study has shown that the paratexts examined here were more than just "veritable 'hotbeds of rhetoric' in the service of the missionary cause"[117]. Though in the case of the TXSF this no doubt was one of their main functions, they also appear as highbrow literary constructs by respected scholar-officials aiming at justifying the collaboration with the Jesuits and to persuade others to accept the Western knowledge transferred to the Middle Kingdom in the form of the TXSF on the one hand, and – in the case of de Ursis – as a platform for a blunt glorification of God's Creation on the other. A further finding is that the divergent ideas about the origins and the generation of knowledge that become discernible in these texts shed some light on incipient developments leading to China's gradual falling behind the West in the field of science and technology, and that as such they bear testimony of the early roots of related path-dependent processes.

But what is more, our paratexts turned out as treasure troves of valuable information about the persons involved, about networks between literati and the Jesuits, the mutual perception of both sides, and distinct circumstances of the production of the TXSF itself. This means that the genre of pre- and postfaces can help to reconstruct events and relations that are *not* part of the official historiography – whether by undeliberate omission or by subsequent intentional eradication. It is well-known that in the wake of repeated accusations of heterodoxy, the temporary proscription of Christianity in 1724, and the large-scale "burning of books" in the course of the *Siku quanshu* project of the Qianlong emperor 乾隆 (r. 1736-1796), a substantial number of Chinese books related to Christianity in general and to the Jesuits in particular have been destroyed. This makes the information on ongoing events of that time as provided in these texts – and consequently their in-depth analysis – all the more valuable. To this end, a comprehensive inventory of all preserved prefaces to Chinese language Jesuit treatises from the very beginning of their mission in the Middle Kingdom would be extremely helpful for future research.

LITERATURE

ACADEMIA SINICA CENTER FOR DIGITAL CULTURES (ASCDC), "Database of Personal Names and Biographical Information on Eminent Persons" (*Renmin quanwei renwu zhuanji ziliaoku* 人名權威人物傳記資料庫), 2007-2019, http://archive.ihp.sinica.edu.tw/ttsweb/html_name/ (accessed January 16, 2021).

AN DAYU [AHN DAEOK] 安大玉, *Minmatsu Seiyō kagaku tōden shi: 'Tengaku shokan' kihen no kenkyū* 明末西洋科学東伝史:『天学初函』器編の研究 (History of the Transmission of Western Science to the East in Late Ming Dynasty: Research on the Editions of 'Tianxue chuhan'), Tokyo, Chisen, 2007.

[117] Kurtz (2012), p. 209. The expression 'hotbeds of rhetoric' stems from p. 29 of Loveland, Jeff (2001), *Rhetoric and Natural History: Buffon in Polemical and Literary Context,* Oxford: Voltaire Foundation.

ÁRNASON JÓHANN PÁLL, *Civilizations in Dispute: Historical Questions and Theoretical Traditions*, Leiden and Boston, Brill (International Comparative Social Studies; 8), 2003.

ÁRNASON JÓHANN PÁLL, *Contested Divergence: Rethinking the 'Rise of the West'*, in *Europe and Asia Beyond East and West*, a cura di Gerard Delanty, London, Routledge, 2006, pp. 77-91.

BALDINI UGO, *The Jesuit College in Macao as a Meeting Point of the European, Chinese and Japanese Mathematical Traditions: Some Remarks on the Present State of Research, Mainly Concerning Sources (16th-17th Centuries)*, in *The Jesuits, the Padroado and East Asian Science (1552-1773)*, a cura di Luís Saraiva e Catherine Jami, Singapore, World Scientific, 2008, pp. 33-79.

DE BARY WILLIAM THEODORE, BLOOM IRENE, a cura di, *Sources of Chinese Tradition,* vol. 1*, From Earliest Times to 1600*, New York, Columbia University Press, 1999.

BERTUCCIOLI GIULIANO, *Sabatino de Ursis*, in *Dizionario Biografico degli Italiani*, a cura di Alberto M. Ghisalberti*,* Roma, Istituto della Enciclopedia Italiana, 1991, vol. 39, pp. 498-500.

BLUE GREGORY, *Xu Guangqi in the West: Early Jesuit Sources and the Construction of an Identity*, in *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)*, a cura di Catherine Jami et al., Leiden, Brill, 2001, pp. 19-71.

BLUE GREGORY, *The Multifaceted Xu Guangqi: A Composite Sketch Based on the Current Western Literature*, in *Europe Meets China – China Meets Europe: The Beginnings of European-Chinese Scientific Exchange in the 17th Century*, a cura di Shu-Jyuan Deiwiks, Bernhard Führer e Therese Geulen, Sankt Augustin, Institut Monumenta Serica, 2014, pp. 43-70.

BRAY FRANCESCA, *Chinese Literati and the Transmission of Technological Knowledge: The Case of Agriculture*, in *Cultures of Knowledge: Technology in Chinese History*, a cura di Dagmar Schäfer, Leiden, Brill, 2012, pp. 299-326.

BRAY FRANCESCA, MÉTAILIÉ GEORGES, *Who was the Author of the Nongzhen quanshu?*, in *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)*, a cura di Catherine Jami et al., Leiden, Brill, 2001, pp. 322-359.

BROCKEY LIAM MATTHEW, *Journey to the East: The Jesuit Mission to China, 1579-1724*, Cambridge [Mass.] and London, Belknap Press of Harvard University Press, 2007.

BROOK TIMOTHY, *Communications and Commerce*, in *The Cambridge History of China, vol. 8, The Ming Dynasty, 1368-1644, part 2*, a cura di Denis Twitchett e Frederick W. Mote, Cambridge, Cambridge University Press, 1998, pp. 579-707.

CHEN MIN-SUN [CHEN MINGSHENG 陳明生], *Li Chih-tsao and the 'T'ien-hsüeh ch'u-han'*, in *Echanges culturels et religieux entre la Chine et l'Occident; actes du VIIe Colloque International de Sinologie de Chantilly, 8-10 septembre* 1992, a cura di Edward J. Malatesta, San Francisco, University of San Francisco, 1995, pp. 35-44.

CHEN MIN-SUN [CHEN MINGSHENG 陳明生], *Hsü Kuang-Ch'i (1562-1633) and His Image of the West*, in *Mythistory in Sino-Western Contacts: Jesuit Missionaries and the*

Pillars of Chinese Catholic Religion, a cura di Chen Min-sun, Thunber Bay: Lakehead University Library, 2003, pp. 15-30.

CHEN TUO 陈拓, *Wan Ming neige gechen Zheng Yiwei yu xixue* 晚明内阁阁臣郑以伟与西学 (The Late Ming Grand Secretary Zheng Yiwei and Western Learning), «Anhui shixue 安徽史学 (Anhui Historiography)», 6, 2020, pp. 13-20.

CHENG CHUNG-YING, *Practical Learning in Yen Yuan, Chu Hsi, and Wang Yang-Ming*, in *Principle and Practicality: Essays in Neo-Confucianism and Practical Learning*, a cura di William Theodore De Bary e Irene Bloom, New York, Columbia University Press, 1979, pp. 37-68.

CIGOLA MICHELA, *Preliminary Study of the Work of Xu Guangqi in the Technical Knowledge in 17th Century: From the Perspective of Drawing and Representation*, in *Proceedings of 2015 IFToMM Workshop on History of Mechanism and Machine Science, May 26-28, 2015, St-Petersburg, Russia*, 2015, https://www.academia.edu/12604535/Preliminary_study_of_the_work_of_Xu_Guangqi_in_the_technical_knowledge_in_17th_century_from_the_perspective_of_drawing_and_representation (accessed February 01, 2021).

DEHERGNE JOSEPH, *Répertoire des jésuites de Chine de 1552 à 1800*, Roma, Institutum historicum S.I.; Paris, Letouzey & Ané, 1973.

D'ELIA PASQUALE, a cura di, *Fonti Ricciane: documenti originali concernenti Matteo Ricci e la storia delle prime relazioni tra l'Europa e la Cina (1579-1615),* 3 vols., I: *Storia dell'introduzione del Cristianesimo in Cina: da Macao a Nanciam (1582-1597),* II: *Storia dell'introduzione del Cristianesimo in Cina: da Nanciam a Pechino (1597-1611),* III: *Appendici e indici*, Roma, Libreria dello Stato, 1942-1949.

D'ELIA PASQUALE, *Galileo in China: Relations through the Roman College between Galileo and the Jesuit Scientist-Missionaries (1610-1640),* translation of the 1947 Italian edition by R. Suter and M. Sciascia, foreword by D. H. Menzel, Cambridge [Mass.], Harvard University Press, 1960.

DUDINK ADRIAN, *Opposition to the Introduction of Western Science and the Nanjing Persecution (1616-1617)*, in *Statecraft and Intellectual Renewal in Late Ming China*, a cura di Catherine Jami et al., Leiden, Brill, 2001a, pp. 191-224.

DUDINK ADRIAN, *Sympathising Literati and Officials*, in *Handbook of Christianity in China, vol. 1, 635-1800*, a cura di Nicolas Standaert, Leiden, Brill, 2001b, pp. 475-491.

DUDINK ADRIAN, STANDAERT NICOLAS, "Chinese Christian Texts Database (CCT-Database)", 2004, http://www.arts.kuleuven.be/sinology/cct (accessed February 01, 2021).

ELMAN BENJAMIN A., Imperial Politics and Confucian Societies in Late Imperial China: The Hanlin and Donglin Academies, «Modern China», 15.4, 1989, pp. 379-418.

ELMAN BENJAMIN A., *Classicism, Politics, and Kinship: The Ch'ang-chou School of New Text Confucianism in Late Imperial China*, Berkeley, University of California Press, 1990.

ELMAN BENJAMIN A., *A Cultural History of Civil Examinations in Late Imperial China*, Berkeley, University of California Press, 2000.

ELMAN BENJAMIN A., *On Their Own Terms: Science in China, 1550-1900*, Cambridge [Mass.], Harvard University Press, 2005.

ELMAN BENJAMIN A., *Civil Examinations and Meritocracy in Late Imperial China*, Cambridge [Mass.], Harvard University Press, 2013.

ENGELFRIET PETER M., *Euclid in China: A Survey of the Historical Background of the First Chinese Translation of Euclid's* '*Elements'* (*Jihe yuanben; Beijing, 1607), an Analysis of the Translation, and a Study of Its Influence up to 1723*, Ph.D. diss., Rijksuniversität, Leiden, 1996.

FONTANA MICHELA, *Matteo Ricci: un gesuita alla corte dei Ming*, Milano: Mondadori, 2011.

FRISULLO FRANCESCO, VINCENTI PAOLO, *Echi leonardeschi nella Cina dei Ming: l'idraulica occidentale del missionario salentino Sabatino de Ursis [Leonardo's Influence in Ming China: The Western Hydraulics [Taixi Shuifa] of the Salento's Missionary Sabatino de Ursis]*, «L'Idomeneo», 28, 2020a, pp. 191-208.

FRISULLO FRANCESCO, VINCENTI PAOLO, *L'apostolato scientifico dei Gesuiti nella Cina dei migliori: il missionario salentino Sabatino de Ursis*, Castiglione, Giorgiani Editore (Cultura e storia), 2020b.

FRISULLO FRANCESCO, VINCENTI PAOLO, *'Andiamo errati, andiamo errati'. Sabatino de Ursis e la questione dei riti cinesi nel nome di Dio (1610-1639)*, in *Pagine d'oro e d'argento: Studi in ricordo di Sergio Torsello*, a cura di Manuel de Carli e Paolo Vincenti, Calimera, Kurumuny Edizioni, 2020c, pp. 180-198.

FU DAIWIE, *When Shen Gua Encountered the 'Natural World': A Preliminary Discussion on the Mengxi bitan and the Concept of Nature*, in *Concepts of Nature: A Chinese-European Cross-Cultural Perspective*, a cura di Hans Ulrich Vogel e Günter Dux, Leiden, Brill (Conceptual History and Chinese Linguistics; 1), 2010, pp. 285-309.

GENETTE GÉRARD, *Paratexts: Thresholds of Interpretation,* originally published in French as *Seuils* by Editions du Seuil, 1987; English translation by Jane E. Lewin, 1987, Cambridge, Cambridge University Press (Literature, culture, theory; 20), 2001.

GIUNIPERO ELISA, *Xu Guangqi's Rediscovery in the Contemporary Period*, «Bulletin of Portuguese Japanese Studies», second series (since 2015), 2, 2016, pp. 41-51.

GIUNIPERO ELISA, a cura di, *Xu Guangqi e gli studi celesti: dialogo di un letterato cristiano dell'epoca Ming con la scienza occidentale*, Milano, Guerini e associati (La via della seta; 6), 2020.

HART ROGER, *Imagined Civilizations: China, the West, and Their First Encounter*, Baltimore, Johns Hopkins University Press, 2013.

HASHIMOTO KEIZÔ, JAMI CATHERINE, *From the 'Elements' to Calendar Reform: Xu Guangqi's Shaping of Scientific Knowledge*, in *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)*, a cura di Catherine Jami, Peter M. Engelfriet e Gregory Blue, Leiden: Brill, 2001, pp. 263-278.

HEIJDRA MARTIN, *The Socio-Economic Development of Rural China during the Ming*, in *The Cambridge History of China, vol. 8, The Ming Dynasty, 1368-1644, part 2*, a cura di Denis Twitchett e Frederick W. Mote, Cambridge and New York, Cambridge University Press, 1998, pp. 417-578.

HSIA R. PO-CHIA, *A Jesuit in the Forbidden City: Matteo Ricci, 1552-1610*, Oxford, Oxford University Press, 2010.

HSIA R. PO-CHIA, *Matteo Ricci and the Catholic Mission to China, 1583-1610: A Short History with Documents*, Indianapolis, Hackett Publishing, 2016.

HSIA R. PO-CHIA, *Becoming Li Madou: Ruggieri, Ricci, Longobardo and the Making of the Jesuit China Mission*, in *New Perspectives in the Studies on Matteo Ricci; proceedings of a conference in Macerata, 21-23 October 2015*, a cura di Filippo Mignini, Macerata, Quodlibet, 2019, pp. 31-48.

HUCKER CHARLES O., *A Dictionary of Official Titles in Imperial China*, Stanford, Stanford University Press, 1985.

HUCKER CHARLES O., *Ming Government*, in *The Cambridge History of China, vol. 8, The Ming Dynasty, 1368-1644, part 2*, a cura di Denis Twitchett e Frederick W. Mote, Cambridge, Cambridge University Press, 1998, pp. 9-105.

KELLY EDWARD THOMAS, *The Anti-Christian Persecution of 1616-1617 in Nanking*, Ph.D. diss., Columbia University, 1972.

KIM SANGKEUN, *Strange Names of God: The Missionary Translation of the Divine Name and the Chinese Responses to Matteo Ricci's "Shangti" in Late Ming China, 1583-1644*, New York, Peter Lang (Studies in Biblical Literature; 70), 2004.

KINK SABINE, *Shared Ideas, Divergent Approaches: The Hydromethods of the Great West* (*Taixi shuifa* 泰西水法) *and the Question on Tides*, «Chinese Annals of History of Science and Technology», 4.1, 2020, pp. 63-101.

KOENIG ALBERT, *Introduction of the Archimedean Screw Pump to East Asia during the Seventeenth and Eighteenth Centuries*, «Chinese Annals of History of Science and Technology», 4.1, 2020, pp. 102-138.

KURTZ JOACHIM, *Framing European Technology in Seventeenth-Century China: Rhetorical Strategies in Jesuit Paratexts*, in *Cultures of Knowledge: Technology in Chinese History*, a cura di Dagmar Schäfer, Leiden, Brill, 2012, pp. 209-232.

LI BOZHONG 李伯重, *Agricultural Development in Jiangnan: 1620-1850*, Basingstoke, Macmillan (Studies on the Chinese Economy), 1998.

LIM JONGTAE, *Restoring the Unity of the World: Fang Yizhi and Jie Xuan's Responses to Aristotelian Natural Philosophy*, in *The Jesuits, the Padroado and East Asian Science (1552-1773)*, a cura di Luís Saraiva e Catherine Jami, Singapore, World Scientific, 2008, pp. 139-160.

LIU GENG 刘耿, *Li Madou muyuan de qian qi nian (1610-1616)* 利玛窦墓园的前七年 (1610-1616) (The Cemetery of Matteo Ricci [and Other Foreign Missionaries] in Its First Seven Years (1610-1616)), «Beijing xingzheng xueyuan xuebao 北京行政学院学报 (Journal of Beijing Administrative College)», 1, 2018, pp. 111-120.

LIU YU, *Harmonious Disagreement: Matteo Ricci and His Closest Chinese Friends*, New York, Peter Lang Publishing (Asian Thought and Culture; 73), 2015.

LUO YUMING 骆玉明, *A Concise History of Chinese Literature,* translation of the 1976 Chinese original *Jianming Zhongguo wenxueshi* 简明中国文学史 by Ye Yang, 2 vols., Leiden and Boston, Brill (Brill's Humanities in China Library; 4), 2011.

MIGNINI FILIPPO, a cura di, *New Perspectives in the Studies on Matteo Ricci; proceedings of a conference in Macerata, 21-23 October 2015*, Macerata, Quodlibet, 2019.

MILLER HARRY, *State versus Gentry in Late Ming Dynasty China, 1572-1644*, New York, Palgrave Macmillan, 2009.

MIYAZAKI ICHISADA, *China's Examination Hell: The Civil Service Examinations of Imperial China,* translation of the Japanese original writing (first published in 1963) by Conrad Schirokauer, New Haven and London, Yale University Press, 1981.

MOTE FREDERICK W., *Imperial China, 900-1800*, Cambridge [Mass.], Harvard University Press, 1999.

PETERSON WILLARD J., *Changing Literati Attitudes toward New Learning in Astronomy and Mathematics in Early Qing*, «Monumenta Serica», 50, 2002, pp. 375-390.

PETERSON WILLARD J., *Learning from Heaven: The Introduction of Christianity and Other Western Ideas into Late Ming China*, in *China and Maritime Europe, 1500-1800: Trade, Settlement, Diplomacy, and Missions*, a cura di John E. Wills, Cambridge, Cambridge University Press, 2010, pp. 78-134.

PFISTER LOUIS, *Notices biographiques et bibliographiques sur les Jésuites de l'ancienne mission de Chine: 1552-1773, vol. 1, XVIe & XVIIe siècles,* reprint of the edition Chang-Hai 1932 (Imprimerie de la Mission catholique), Nendeln, Kraus (Variétés sinologiques; 59), 1971.

SONG LIMING 宋黎明, *Shenfu de xinzhuang: Li Madou zai Zhongguo, 1582-1610* 神父的新装: 利玛窦在中国, 1582-1610 (The Father's New Clothes: Matteo Ricci in China, 1582-1610), Nanjing, Nanjing daxue chubanshe, 2011.

STANDAERT NICOLAS, *The Classification of Sciences and the Jesuit Mission in Late Ming China*, in *Linked Faiths: Essays on Chinese Religions and Traditional Culture in Honor of Kristofer Schipper*, a cura di Jan de Meyer e Peter M. Engelfriet, Leiden, Brill, 2000, pp. 287-317.

STANDAERT NICOLAS, *The Transmission of Renaissance Culture in Seventeenth-Century China*, «Renaissance Studies», 17.3, 2003, pp. 367-391.

SU YUNMENG 苏云梦, SHI YUNLI 石云里, *Longweiche ti shui xiaoneng yanjiu — jianlun Ming Qing shiqi Ouzhou longweiche yuanhe weineng qudai Zhongguo longguche* 龙尾车提水效能研究 — 兼论明清时期欧洲龙尾车缘何未能取代中国龙骨车 (A Research on the Water-lifting Efficiency of the Archimedean Screw: Why It Failed to Take the Place of the Traditional Chinese Water-lifting Device in the Ming-Qing Era), «Zhongguo nongshi 中国农史 (Agricultural History of China)», 2, 2017, pp. 125-134.

SUN CHENGSHENG 孙承晟, *Guannian de jiaozhi: Ming Qing zhi ji xifang ziran zhexue zai Zhongguo de chuanbo* 观念的交织: 明清之际西方自然哲学在中国的传播 (The Intercultural Weaving of Ideas: The Transmission and Transformation of Western Natural Philosophy in Late Ming and Early Qing China), Guangzhou, Guangdong renmin chubanshe, 2018.

SUN SHANGYANG 孙尚扬, *Li Madou yu Xu Guangqi* 利玛窦与徐光启 (Matteo Ricci and Xu Guangqi), Beijing, Zhongguo shuji chubanshe, 2014.

TANG KAIJIAN 汤开建, *Li Madou Ming Qing Zhongwen wenxian ziliao huishi* 利瑪竇明清中文文獻資料匯釋 (Collected Elucidations on Ming and Qing Textual Material in Chinese Language Related to Matteo Ricci), Shanghai, Shanghai guji chubanshe, 2017.

TÖTÖSY DE ZEPETNEK STEVEN, *The Social Dimensions of Fiction: On the Rhetoric and Function of Prefacing Novels in the Nineteenth-Century Canadas*, Braunschweig and Wiesbaden, Vieweg (Konzeption empirische Literaturwissenschaft / The Systematic and Empirical Approach to Literature; 15), 1993.

TRUFFA GIANCARLO, *de Ursis, Sabatino*, in *Biographical Encyclopedia of Astronomers*, a cura di Thomas A. Hockey et al., New York: Springer, 2014, pp. 570-571.

ÜBELHÖR MONIKA, *Hsü Kuang-ch'i (1592-1633) und seine Einstellung zum Christentum: ein Beitrag zur Geistesgeschichte der späten Ming-Zeit – Teil 1*, «Oriens extremus», 15.2, 1968, pp. 191-257.

VOGEL HANS ULRICH, *'That which Soaks and Descends becomes Salty': The Concept of Nature in Traditional Chinese Salt Production*, in *Concepts of Nature: A Chinese-European Cross-Cultural Perspective*, a cura di Hans Ulrich Vogel e Günter Dux, Leiden and Boston, Brill, 2010, pp. 469-515 (Conceptual History and Chinese Linguistics;1).

VON COLLANI CLAUDIA, *Von Jesuiten, Kaisern und Kanonen: Europa und China – eine wechselvolle Geschichte*, Darmstadt, Wissenschaftliche Buchgesellschaft, 2012.

VON COLLANI CLAUDIA, *The Jesuit Rites Controversy*, in *The Oxford Handbook of the Jesuits*, a cura di Ines G. Zupanov, New York, Oxford University Press, 2019, pp. 891-917.

WANG FRÉDÉRIC, *The tongnian* [同年] *Network in Matteo Ricci's Intellectual Network*, in *New Perspectives in the Studies on Matteo Ricci; proceedings of a conference in Macerata, 21-23 October 2015*, a cura di Filippo Mignini, Macerata, Quodlibet, 2019, pp. 59–76.

WANG YANGZONG 王揚宗, *Mingmo Qingchu 'Xixue zhongyuan' shuo xinkao* 明末清初'西學中源'說新考 (New Analysis of the Late Ming and Early Qing View That Western Learning Originated in China), in *Keshi xinchuan: Qingzhu Du Shiran xiansheng congshi kexueshi yanjiu 40 zhounian xueshu lunwenji* 科史薪传: 庆祝杜石然先生从事科学史研究40周年学术论文集 (Passing the Torch in History of Science: A Festschrift for Mr. Du Shiran in Honor of His Forty-Year Devotion to the History of Science), a cura di Liu Dun 刘钝 et al., Shenyang, Liaoning jiaoyu chubanshe, 1997, pp. 71-83.

WILLS JOHN E., *Relations with Maritime Europeans, 1514-1662*, in *The Cambridge History of China, vol. 8, The Ming Dynasty, 1368-1644, part 2*, a cura di Denis Twitchett e Frederick W. Mote, Cambridge, Cambridge University Press, 1998, pp. 333-375.

XIONG LILI 熊丽丽, *Yesuhuishi Xiong Sanba ji qi Zhongwen zhushu yanjiu* 耶穌會士熊三拔及其中文著述研究 *(*A Study of the Jesuit Sabbatino de Ursis and His Writings in Chinese), Master thesis, Ji'nan daxue 暨南大学 (Ji'nan University), 2015.

XU GUANGTAI [HSU KUANG-TAI] 徐光台, *Mingmo Qingchu xixue dui Zhongguo chuantong zhanxing qi de chongji yu fanying: yi Xiong Mingyu 'Ze cao', 'Gezhi cao' wei li* 明末清初西學對中國傳統占星氣的衝擊與反應: 以熊明遇《則草》《格致草》為例 (The Encounter of Western Learning with Chinese Traditional Astrological *qi* in Late Ming and Early Qing: The Example of Xiong Mingyu's *Ze cao* and *Gezhi cao*), «Ji'nan shixue 暨南史學 (Ji'nan Historical Studies)», 4, 2006, pp. 284-303.

XU GUANGTAI [HSU KUANG-TAI] 徐光台, *Four Elements as 'Ti' and Five Phases as 'Yong': The Historical Development from Shao Yong's 'Huangji jingshi' to Matteo Ricci's 'Qiankun tiyi'*, «East Asian Science, Technology, and Medicine», 27, 2007, pp. 13-62.

XU GUANGTAI [HSU KUANG-TAI] 徐光台, *Xu Guangqi yanshuo 'Taixi shuifa: shuifa huowen' (1612) de lishi yiyi yu yingxiang* 徐光啟演說《泰西水法·水法或問》(1612) 的歷史意義與影響 (Xu Guangqi's 'Extensive Explanations' of the *Shuifa Huowen*: Its

Historical Significance and Impact), «Qinghua xuebao 清華學報 (Qinghua Journal)», 38.3, 2008, pp. 421-449.

XU ZONGZE 徐宗澤, *Ming Qing jian Yesuhuishi yizhu tiyao* 明清間耶穌會士譯著提要 (Summaries of the Translated Works of Jesuits during the Ming-Qing Transition), reprint of the 1949 edition, Shanghai, Shanghai shudian (Minguo congshu 民國叢書, zhexue 哲學, zongjiaolei 宗教類; vol. 11.1), 1989.

YU SANLE 余三乐, *Xu Guangqi yu Li Madou* 徐光启与利玛窦 (Xu Guangqi and Matteo Ricci), Beijing, Zhonghua shuju, 2010.

ZHANG BAICHUN 张柏春, *Mingmo 'Taixi shuifa' suo jieshao de sanzhong xifang tishui jixie* 明末《泰西水法》所介绍的三种西方提水机械 (Three Kinds of Western Water-Lifting Devices Introduced in the *Taixi shuifa* at the End of Ming Dynasty), «Nongye kaogu 农业考古 (Agricultural Archeology)», 3, 1995, pp. 146-153.

ZHANG BAICHUN 张柏春, TIAN MIAO 田淼, *Archimedean Mechanical Knowledge in 17th Century China*, in *The Genius of Archimedes – 23 Centuries of Influence on Mathematics, Science and Engineering; proceedings of an International Conference held at Syracuse, Italy, June 8-10, 2010*, a cura di S. A. Paipetis e Marco Ceccarelli, Dordrecht, Springer, 2010, pp. 189-205.

ZHANG HANMO, *Authorship and Text-Making in Early China*, Berlin, De Gruyter Mouton (Library of Sinology; 2), 2018.

ZHANG QIONG, *Making the New World Their Own: Chinese Encounters with Jesuit Science in the Age of Discovery*, Leiden, Brill (Scientific and Learned Cultures and their Institutions; 15), 2015.

ZHAO JIE, *A Decade of Considerable Significance: Late-Ming Factionalism in the Making, 1583-1593*, «T'oung Pao», second series, 88.1/3, 2002, pp. 112-150.

ZHU WEIZHENG 朱維錚, a cura di, *Li Madou Zhongwen zhuyi ji* 利瑪竇中文著译集 (The Chinese Works and Translations of Matteo Ricci), Hong Kong, City University of Hong Kong Press, and Shanghai, Fudan Daxue chubanshe, 2001.

ZOU ZHENHUAN 邹振环, *Zhong Xi shuiwenhua hudong zhong de 'bian' yu 'chang': Yi 'Taixi shuifa' zai Ming Qing Jiangnan diqu de chuanbo wei li* 中西水文化互動中的'變'與'常': 以《泰西水法》在明清江南地區的傳播爲例 (On the 'Changing' and 'Laggard' Elements in the Interaction of Water Culture between China and the West: A Case Study of the Transmission of *Taixi shuifa* in the Jiangnan Area of the Ming and Qing Dynasties), «Nanguo xueshu 南國學術 (South China Quarterly)», 7.3, 2017, pp. 395-413.