Assessing Jesuit Intellectual Apostolate in Modern Shanghai (1847–1949)

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Abstract: The various endeavors led by Jesuits under the auspices to the *Plan Scientifique du Kiang-Nan* (Scientific Plan for the Jiangnan region) constituted a defining moment in the history of their mission in modern China. The Jesuits aimed to found a scientific capital that would also constitute the base of their East Asian mission, a project that led to a far-reaching engagement in education and sciences. The multiple projects they undertook were located within the framework of Western knowledge. The traditional Jesuit strategy adapted itself to a new context by encouraging a constructive and fruitful interaction between religion and science. Jesuit intellectual apostolate included not only research but also the dissemination of technologies and knowledge central to the rise of modernity in China. The entry into this country of well-educated, deeply zealous Jesuit missionaries along with their observations on the social and political changes taking place decisively contributed to the modernization of Shanghai and to the emergence of multi-perspective narratives about the destiny of the city. Assessing the Jiangnan-based Jesuits' continuous efforts as well as the challenges and contradictions they met with help us to integrate the seemingly conflicting ethos of Christian mission and scientific quest into a reframed perspective of global history.

Keywords: intellectual apostolate; French Jesuits; Zi-ka-wei; *Plan Scientifique du Kiang-Nan*

1. Introduction

"Intellectual apostolate," a classic Jesuit-speak, was understood by the Order as referring to both intellectual endeavours and to apostolic activities among the educated (The General Superior of the Jesuits Pedro Arrupe (1907–1991) issued a letter *The Intellectual Apostolate in the Society's Mission* on the relationship of the intellectual apostolate to the mission of the Society of Jesus on Christmas Day, 1976). From the time of their foundation onward, Jesuits involved themselves in research, teaching, publication and arts, cooperating in the process with lay scholars, artists and intellectuals. This apostolic dimension extended to the mission territories where they were active, and, notably, to the Jesuit compound of modern Shanghai known in the Shanghai dialect as Zi-ka-wei and in Mandarin as Xujiahui (徐家匯).

This paper has three objectives. First, it contextualizes the case of Zi-ka-wei through a historical review of the intellectual apostolate of the Jesuits, the first multinational Order to be welcomed in China, in the Late Ming period, and one with a distinct method of adaption and engagement. The Jesuit endeavours promoted conversation about Christianity by bringing Western science and art to China and simultaneously taking Chinese literature and philosophy back to Europe.

Second, we will examine the case study of the highly institutionalized French Jesuit enterprise at Zi-ka-wei compound under the *Plan Scientifique du Kiang-Nan* (Jiangnan; Jiangnan indicates the southern part of the Yangtze Delta, and Kiang-nan is its French Romanization spelling) (江南科學計劃), as this Plan was meant to renew the Jesuit intellectual apostolate in China. During the most dramatic period of upheaval that included a dynastic

change, battles between rival factions, and the impact of European military and cultural imperialism, the French-run site of Zi-ka-wei at the rim of Shanghai was carefully chosen and prepared by the Order and was staffed by well-educated Jesuit scientists with booming enthusiasm in the mission, thus exerting far-reaching influence on China's transition to a modern state.

Third, this paper discusses the strategic importance given to intellectual apostolate by the Jiangnan Jesuits with respect to a number of challenges: the ongoing progress of modern science (modem science, with its emphasis on experiments and mathematical analysis, was beginning and it was natural that the new Jesuit colleges considered mathematics and astronomy as important subjects, as well as other parts of physics, such as optics, mechanics, electricity and magnetism. Teaching of astronomy led soon to the founding of observatories. They had an academic character, but also functioned as true research facilities.); intensive social and political changes in modern China; rivalry with Protestant mission societies; and the decline of French power.

Through this study, we will show how the Jesuit intention to reconstruct their missionary enterprise in Jiangnan was impacted both by their strong French nationalism and by their identity as a transnational corporation. This basic tension played over the way they were dealing with intellectual and scientific transformations as well as with a tormented Chinese social and political landscape.

2. Inspiration: The Intellectual Apostolate in the Historical China Mission

The Jesuits kept a unique role on exploring and understanding the non-European lands and peoples along with the history of discovery, as great travelers, field observers, authors, and educators. Before the Suppression of the Order in 1773, the history of the Jesuits in China from the late sixteenth century to the eighteenth was far from being simply the one of "generations of giants" succeeding one another. ("Generation of Giants" was a term dubbed by G. Dunne for referring to the first generation of Jesuits who worked in China from 1582 to 1775, see (Dunne 1962).) However, this image has left a lasting impression that somehow muddles the understanding of their missionary policy in China till the middle of the 18th century.

Nicolas Standaert breaks down the Jesuits' corporate efforts into several major characteristics. (Several factors had been summarized to evoke the earlier China mission: the general policy to propagate "from the top down"; the actual conversion of some high officials who were referred to in many Chinese and Western books; the presence of Jesuits who worked in the imperial service; and finally a general knowledge of Christianity based on published sources that draw attention to literate groups. See Nicolas Standaert, "Jesuit Corporate Culture as Shaped by the Chinese, " in (O'Malley et al. 1999, pp. 352–63).) The most notable of these traits is indirect propagation, i.e., using European science or techniques to attract the educated Chinese and to convince them of the practicality and advantages of European civilization, thus eventually opening the path to the most powerful person, the emperor of the Middle Kingdom. (Among other gifts, Jesuits offered to the Emperor an European clock and music instruments. Besides, the paintings they introduced surprised the Chinese by their use of the geometric perspective. Jesuits also translated mathematical writings as well as books on calendar, agriculture, and technology. At the outset of the mission, Ricci printed a global map that integrated the results of the latest world explorations and that he had reprinted several times. See Eugenio Menegon, "Amicitia Palatina: The Jesuits and the Politics of Gift-Giving at the Qing Court." In (Abbiati and Greselin 2014, pp. 547–61).) However, the unique interplay between the Jesuits and the emperors largely relied on the latter's interests. (One may argue that if Chinese scholars mission were attracted by the scientific knowledge brought by the Jesuits during the 17th and 18th centuries, it was because, prior to the arrival of the missionaries, the Chinese literati were already interested in practical leaning. The search for so-called "solid learning" or "concrete studies" was a reaction against some intuitionist movements originating from a Neo-Confucian school in the late Ming, which extended to the early

Qing.) The interaction between the two partners was subtle since both ends made use of the other out of their own intentions. Henceforth, the Jesuit missionaries with specific training on science and technology were sent to China in order to respond to the imperial quest for Western learning and technical support.

For the purpose of gathering and attracting the Chinese elites, Jesuits found that the publications of books in various scientific fields was a most effective method. (Historians have frequently assumed that the extent of the scientific work achieved by a number of missionaries in Asia was because the most brilliant minds were selected on purpose. But selection to the mission field did not seem to proceed on a purely intellectual level. Intelligence and engagement, certainly common among the scientists-missionaries, are not akin to scientific excellence.) "Apostolate through books" (*Apostolat der Presse* in German; this expression was first used by Bettray, *Die Akkommodationsmethode*, see (Standaert 2001, pp. 600–31)) was promoted throughout the early modern centuries. As a major approach to evangelization, these numerous writings (in the 17th century only, some around 120 text dealing with the West and its sciences were published in China), which were weaving Christian doctrine and Western sciences, helped to foster the growth of a Christian population, with Chinese scholars as a top priority. The literati having established friendship with Jesuits (Xu Guangqi (徐光, 1562–1633, baptized as Paul in 1603), Li Zhizao (李之藻, baptized as Leo in 1610), Yang Tingyun (楊廷筠, 1562–1627; baptized as Michael probably in 1611), and Wang Zheng (王徵, 1571–1644; baptized as Philip in 1616) were the most well-known) were interested in Renaissance knowledge about cartography, astronomy, and mathematics. All these newly arrived seeds sprouted intellectual renewal and satisfied the curiosity of the gentry class. Chinese scholar-officials supported such intellectual renovation on the basis of their understanding of Confucian tenets. As to the missionaries, they also regarded the fresh knowledge they were trying to spread as a return to original Confucianism; natural law, containing the metaphysical ideas of Christianity, was also trusted as a philosophy of truth. The cooperation set out once there was a confluence of interests.

With the support of literati like Xu Guangqi and Li Zhizao, Matteo Ricci (利瑪竇, 1552–1610) published several mathematical and astronomical writings, based on translations of the works of Christopher Clavius (1538–1612), the chief architect of the Gregorian calendar reform and the mentor of Ricci during his studies at the Roman College. Clavius was best known as a member of the papal commission established by Pope Gregory XIII for the reform of the calendar. Clavius rose to prominence by writing *Novi calendarii*, the first of a series of books explained the mathematics and the science behind the new calendar and set forth the algorithm for calculating the correct date of Easter in the new Gregory calendar. See (Coyne 1983, p. 138). The most important contribution of Clavius to mathematics was his work as a teacher. To support the new Jesuit mathematics curriculum, Clavius wrote a number of mathematical textbooks, all of which were considered to be branches of mathematics at the time. To give further support to mathematical education. Clavius created an academy for advanced mathematical studies at the Roman College. And two of the textbooks for Jesuit schools, his *Euclidis elementorum* (Rome, 1589) and *Geometrica practica* (Rome, 1604) would go on to become the standard texts throughout the Europe, in both Catholic and Protestant countries. These books were translated by Matteo Ricci into Chinese, where they were the first texts to introduce western mathematical techniques to China. See (Smolarski 2002, pp. 447–57). These translations led to a broader awareness of an ongoing calendar reform project led by the Chinese converts. With the help of Chinese specialists, the Jesuits compiled a compendium of 22 works in over 100 volumes of the most recent European astronomical works.

Ricci's strategy laid the foundations for Jesuit activities during the late Ming and early Qing period. Niccoló Longobardo (龍華民, 1565–1655) transformed his individual transmission into a comprehensive project referring to the advanced planning and personnel recruitment. Nicolas Trigault (金尼閣, 1577–1628) was sent back to Europe under the commission of recruiting more enthusiastic missionaries and collecting larger numbers of

classical books. His first stay in China was quite short and he was appointed procurator to explain the needs of the mission. He received papal approval for a Chinese translation of the Bible as well as for Chinese priests to celebrate mass in Chinese. Among other works, he published *De Christiana expeditione apud* Sinas (1615), expanding on accounts and journals penned by Matteo Ricci. Accompanied by new missionaries and carrying a large Renaissance library, he returned to China in 1619. See (Lamalle 1940, pp. 49–120). After many years, Trigault returned to China with a surprising retinue: a group of qualified Jesuit scientists along with a large Renaissance library of around 7000 volumes (西書七千卷) that was to fertilize the transmission of Renaissance culture into China during the early modern period. Ferdinand Verbiest (南懷仁, 1623–1688) was one of those Jesuit scientists, and he was remembered as undertaking the most ambitious task in the fields of sciences. When he arrived in Macau in 1658, Verbiest was called to Beijing to assist Adam Schall in astronomical calculations. He was imprisoned and house-arrested under the accusation of wrong calculations. Verbiest himself was appointed administrator of the calendar in the Astronomical Bureau. He corrected the calendar calculations and became an instructor to the Kangxi emperor. Teaching him mathematics and astronomy. Verbiest undertook many projects, including hydraulic constructions, the compilation of a world map and star charts, the building of new instruments for the Beijing Observatory, and the creation of an automobile. He was most respected for the casting of several series of cannon. See (Golvers 2003; Witek 1994). The collection of 60 volumes entitled *Study of Fathoming Principles* (〈〈窮理學〉〉) was presented to Kangxi emperor and distributed inside the court. Among the work, fields like mechanics, ballistics and medicine were concluded in *Physica*. Verbiest also attempted to adopt Western astronomy and faith to the curriculum for the Chinese state examination. Thus, waves of large-scale translation projects covering various scientific fields along with the ever-widening readership enlightened the Chinese wisdom at the moment of new Sino-Western encounters.

The arrival of French Jesuits continued with another new period regarding the patronage and the fields of science. They brought a new impulse to scientific investigation as well as conflicts with the *Padroado* confreres. The *Padroado* refers to agreements between the Pope and the Portuguese king that provided for precise duties and rights in ecclesiastical affairs like nominating bishops, collecting tithes, and the construction of religious edifices. In return, the Portuguese took responsibility for various needs of the Church. The *Padroado* evolved and assumed diversified forms, and during the early modern and modern periods they exercised great influence on the extra-European missions. See (Aldem 1996). Their imperial patronage from the Sun King Louis XIV (1638–1715) distinguished their scientific work. For instance, from the late decades of the seventeenth century, Jesuits collected astronomical information and produced several Chinese star maps and catalogues, both of which were supported mechanically and intelligently by French astronomers at the Paris Observatory half a globe away. They also prepared manuscript textbooks on mathematics for Kangxi based on *Elémens de Géométrie* by the French Jesuit-scientist Ignace-Gaston Pardies (1636–1673). Ignace-Gaston Pardies was a French Catholic priest and scientist who had entered the Society of Jesus in 1652. He argued that Galileo's theory was not exact and opposed Descartes's views on animals and Isaac Newton's theory of refraction. His *Elémens de Géométrie* (Paris, 1671) was translated into Latin and English. See (Ziggelaar 1971). These Jesuit manuscripts helped to reconstruct understanding of the existing scientific disciplines under the patronage of the House of Bourbon. One of the most remarkable scientific projects conducted by the French Jesuits was the survey of the whole territory of the Qing Empire in 1708–1717. The project was commissioned by the Kangxi Emperor (r. 1661–1722), who was seeing in an accurate geographical representation of China a necessary tool for the integration of the various parts of the Empire into a unified whole. Sufficient numbers of French Jesuits with expertise in cartography and geography were divided into several groups and sent to various regions for detailed survey. All these prerequisites and steps allowed them to produce a complete and scientifically produced atlas within a decade. The

immersive work of the French Jesuits represented the leading trend of similar cartographic projects in Europe.

Another supporting facilities was the well-developed woodblock printing industry present in China during the late Ming and early Qing periods, a technology that the missionaires put to good use. However, the environment for such changes was created at both ends of the industry, by writers and readers, with publishers acting as intermediaries. All these aspects were already in place and would have been taken to full advantage by the Jesuits. Four main paths, acting as both the circulators and the distributors, made the strategy "apostolate through books" possible: official publishers (*guanke wenxian* 官刻文獻) aimed at the great number of scientific works that carried prestigious reputations, which would be learned and widely accepted by the court; commercial publishers (*fangke wenxian* 坊刻文獻) preferred stories, updated news, and all kinds of fresh ideas from the other side of world that was popular with a broader audience; private reproduction (*sike wenxian* 私刻文獻), organized by literati and their families, were driven by personal interests but had a more limited circulation; church publications (*tangke wenxian* 堂刻文獻) were generally concentrated on daily evangelization. (For further research, Maurice Courant's, Henri Cordier's and Giovanni Stary's work would be highly recommended. And as for the Jesuit approach, see (Chan 2002).) What makes the Jesuit approach effective was the diversified scope of its ecclesiastical literature, optimizing the scientific works for higher end, popular stories from Gospels to the masses, and other themes on humanities, philosophy, and techniques for those had strong interest in western civilization. Such diversity, accompanied by the open-minded social atmosphere of the late Ming period, accelerated the apostolate.

The strategy of Jesuit missionaries in China before the pause of the Suppression was relying on the strength of a "Jesuit corporate culture," (Nicolas Standaert, "Jesuit Corporate Culture as Shaped by the Chinese," (O'Malley et al. 1999, pp. 352–63)) based on a body of "Classics" (both secular and religious), which helped them remain distinct from the Franciscans and Dominicans, who were generally less inclined toward accommodation and did not stress either conversion of the elites or evangelization through the spreading of natural sciences. Giving due importance to this page of intellectual history helps us to understand why intellectual apostolate was still being seen by Jesuits as an effective strategy when they restored their Chinese mission in 1842.

3. Evolution: The Emerging Compound of Zi-Ka-Wei

Jesuits were again commissioned to China a couple of decades after the Restoration of the Society in 1814. (The Jesuits needed almost three decades to convince the Holy See to reconstitute their China mission after the rehabilitation of the Order. See (Mungello 2005).) Their presence from the end of the Opium War to the founding of the People's Republic was marred by complex factors, shaped by the interests of the Western powers, those of the Church, and domestic instabilities. Having experienced multiple rounds of setbacks in the negotiations with other Catholic missionary orders (namely the Franciscans, the Dominicans, the Lazarists (or Vincentians) and the members of the Foreign Missions of Paris), with the Propaganda Fidei and also with various interest groups who had taken over their property and authority during the Suppression decades from 1775 to 1813 (In the case of Jiangnan, these conflicts, which were including Chinese priests, local gentries, and virgins, have been mentioned in several publications: (Thomas 1923, pp. 144–45); La Servière 1925, vol. I, pp. 91–92; Hermand 1933; Hanson 1980, pp. 17–20) Eric O. Hanson, "Political aspects of Chinese Catholicism," in (Whitehead et al. 1979, pp. 137–41). As a result of the way, the Jesuits determined to found another mission capital that would not be associated with these previous conflicts. From nine different areas they served in, the Jesuits grouped Chinese Jesuits together with foreign Jesuits of the same country of province (Mateos 2019) and ultimately decided that the Zi-ka-wei compound in southwestern Shanghai would be their major base, much like Goa, the entry point of

Jesuits to India and their mission centre in the whole of Asia in the 16th century, or yet Macau, the base for all the missions in China and Japan during the 17th and 18th centuries.

After multiple requests by Chinese Catholics, three French Jesuits from the Paris Province, led by Claude Gotteland (南格祿, 1803–1856), arrived in China in 1842. They first built their residence in Hengtang, Qingpu County (青浦縣橫塘) on the west of today's larger Shanghai area. Five years later, they moved towards more central quarters, initiating the construction of the Zi-ka-wei compound. Besides the Zi-ka-wei compound, they initiated various parishes in the greater Shanghai area, but this is not part of the narrative discussed here (See Figure 1).The five-year interval allowed them to make full preparations for "regularizing" their religious life thanks to the facilities attached to a stable community center. By settling into Zi-ka-wei, the Jesuits from the Paris Province accpeted centring their apostolic activites in the Jiangnan region (江南地區), geographically distant from the political capital of Peking. Due to this fact, it was not realistic for them to revive the strategy of top-down evangelization. Instead, the remaining Christian communities in Jiangnan inspired them to embrace the masses through daily pastoral work, especially during the disastrous decade when the Lower Yangtze Delta region was hit by major floods and the Taiping Rebellion. The community incorporation of the Jesuits from the historically lay societies of confraternities by Chinese Christians that had been introduced in the Shanghai Songjiang (松江) area in earlier times but that determined to put more emphasis on a mixture of a Chinese type of social organization and European-inspired congregations, actively promoted by Francesco Brancati (潘國光, 1623–71). These communities of Christians were active in urban, suburban and rural areas, while the Jesuits were limited in the court service (see Nicolas Standaert, "Associations for Lay-people," in (Standaert 2001, pp. 456–61). This practical solution led the Jesuits to have no choice but to preach from the bottom up; or, to be more specific, from the most suffering up. The preliminary infrastructures, therefore, were established out of urgency. Around the first building of the Jesuit Residence, finished in 1847, a series of facilities including an orphanage, a cathedral, a bibliotheca, a middle school, an atelier, a printing press, several seminaries, medical dispensaries, and hospices would be gradually opened.

Several factors were decisive in the selection of Zi-ka-wei, formerly made of cultivated plots, as the centre of the Jesuit presence in China, and perhaps even East Asia. First, Jesuits felt that the humidity of the former compound of Qingpu was detrimental to their health. Their aversion to dampness motivated their expansion outward. Second, the new site should have convenient access to the central part of the city and especially to the French Concession. Crossed by rivers and canals, Zi-ka-wei was well adapted to this purpose: the character *hui*匯, which represents the confluence of multiple waterways, is retained by Shanghainese in the name of the place and the compound. Third, there was still a large Catholic population in this area. The Xu clan, a strong local Catholic family, had been living there since the 16th century, keeping the tomb of their famous ancestor Xu Guangqi. As Grand Secretary (*Wenyuange daxueshi*文淵閣大學士) in the late Ming as well as a friend and protector of Matteo Ricci, he enjoyed fame and respect for engagement in intellectual apostolate among the gentry. His leading role was remembered and memorized by the name of the Catholic compound "Xu Jia" (徐家, which literally means the Xu lineage) indicating that the clan descended from the very first group of converts and the pride they were drawing from this fact. See (Mo 2018). The local Catholic communities were well-organized and enterprising: "Given the relative paucity of European personnel, it is important to note that the number of Catholic faithful, in spite of the periodic persecutions, had increased by about 100,000 by the middle of the nineteenth century. At the same time, priestly duties were performed primarily by the Chinese clergy. As a matter of fact, Chinese Catholics had developed their own patterns of church life." See (d'Elia 1927, p. 50).
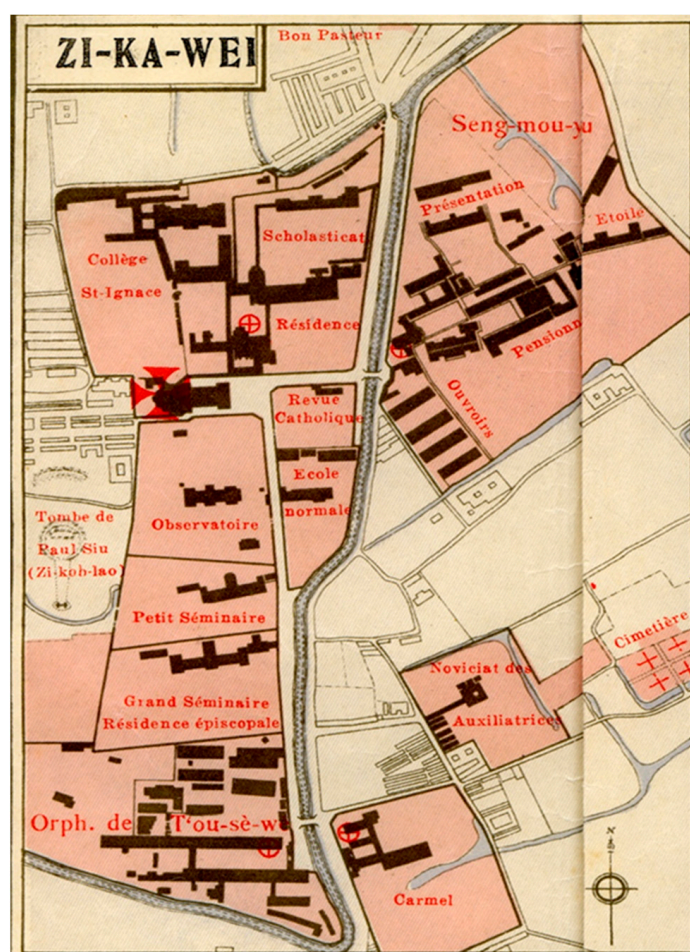
Figure 1. A bird's-eye view of the Jesuit Zi-ka-wei Compound from the *Map of Shanghai Catholique*, 1933, Printed by Impr. de T'ou-sè-wè près Zi-ka-wei.

A fourth reason leading to the choice of this plot of land was linked to the diplomatic situation: the French policy of Religious Protectorate encouraged the Jesuits to look for further expansion. The relatively lower cost of land in this suburb meant that they could later on continue to buy land in the area. More needs to be said as to the role played by French authorities: the Sino-French treaty (Treaty of Huangpu 黃埔條約, 1844) allowed the French to establish churches, hospices, schools, and cemeteries in five designated ports, including Shanghai, like was already the case for British nationals. The French treaty specified that, if a French person "proceeded far into the interior", he should be conducted unharmed to the French consul in the nearest treaty port. This disposition applied to missionaries, see (China Hai Guan Zong Shui Wu Si Shu 1917, pp. 771–813). Foreign activities were legally restricted to these zones. In fact, missionaries were often going outside the designated areas, but the French authorities never attempted to enforce restrictions on them: missionary and commercial enthusiasm were both pressing, see (Gernet 1985, p. 83). In any case, these restrictions were progressively weakened, notably by the French Treaty of Tianjin (天津條約, 1858) and the Sino-French Convention of Beijing (北京條約, 1860). (See *Tableau des Traité, Conventions et arrangements divers, relatifs au Protectorat de La Franc sur les chrétientés en Chine*. 10 May 1900, file box 59. Archives Diplomatiques de Nantes, Paris).

The Catholic Revival was particularly strong in France, where intellectuals were being influenced by the Romantic movement starting in the early 19th century. The support of foreign missions among the common people of France led to the formation of numerous lay organizations with specific aims to sponsor missionary endeavours overseas.

With their rapid spread, they developed into the primary fund-raising institutions of the Catholic mission. As far as the expansion of the overseas apostolate was concerned, zeal for missionary work led to the reorganization of the Propaganda Fide, the Restoration of the Jesuits, and the new confirmation of societies for missionaries for the sake of the disadvantaged (such as women and children). China, a most poupulous country, was a primary focus of the Western missionary movement and a major object of the hopes of Christians around the world. The new surge of French missionary enthusiasm dominated Chinese Catholic mission work in the 19th century, with Zi-ka-wei as the most vivid case.

Presumably, the French Jesuits were eager for a compound that would function as a multi-dimensional role model for their Restoration in East Asia. Such ambition would be realized by the construction of a brand-new scientific centre of the Jiangnan region. This needed careful planning. Jesuits were encouraged in the endeavor by the historical recollections attached to the site proper: Xu Guangqi had conducted agriculture experiments in the compound, the results of which were used in his major agricultural treatise the *Complete Treatise on Agricultural Administration* (*Nongzheng quanshu* 農政全書). Besides, as is well known, Xu Guangqi was versed in mathematics and astronomy, and had translated part of Euclid's *Elements of Geometry* together with Ricci. The figure of Xu and the relationship between the Zi-ka-wei compound and the Xu family provided a most precious reference for the restored Jesuits from France, confirming that Jesuit engagement with science in China and Asia should continue undiminished. The opening up of China, its need for reform, and the attraction of Western science would all offer the Jesuits another opportunity to bring Christianity to the educated Chinese.

Under the most favorable circumstance, the French Jesuit-run Jiangnan mission carried by far the largest financial investment (6,924,303 gold dollars, or about 70 million French francs), over three and a half times more than the other Chinese Jesuit mission, the one the southeast in Chili (直隸東南, present-day Hebei Province) in the late 1860s (Young 2013, p. 87). Zi-ka-wei Compound emerged not only as the capital of the restored mission of the Jesuits but as the leading experimental area of scientific practices with well-trained human resources and costly institutions.

4. Contribution: The Continuing Efforts on Scientific Disciplines

Whatever the size of their investment may have been, the Jesuits' aim of reviving the scientific activities that had contributed to the success of the first Jesuit mission in the earlier centuries proved to be slower and more difficult than foreseen (Latourette 1929, pp. 340–41). Decisive action was not taken until August 1872, when the newly established scientific committee drafted a plan to turn Zi-ka-wei into a center of scientific research in order to catch up with the scientific progress of the Protestants (see Joachim Kurtz, "Messenger of the Sacred Heart", *From Woodblocks to the Internet Chinese Publishing and Print Culture in Transition, circa 1800 to 2008*, (Brokaw and Reed 2010, pp. 81–110). Almost two decades and a half after the first building of the Jesuit Residence, many institutions, which were preliminary settled along the banks of the waterways, appealed urgently for a large-scale network to interweave them under the framework of Western knowledge. (On the more general issue of Jesuits' contribution to modern science, see the entry "Science" from (Worcester 2017, pp. 722–30).) Titular Bishop Adrien Languillat (郎懷仁, 1808–1878), the vicar apostolic of Jiangnan, and Agnello Della Corte (穀振聲, 1819–1896), the superior of the Jesuits in the Apostolic Vicariate of Jiangnan, decided to found a "Comité scientifique du Kiang-nan" based on the existing but relatively separated scientific works of individual Jesuit missionaries ongoing since their first settlement. The committee initially directed the mission to take action in four areas with diversified emphasis and targets (La Servière 1925, vol. 2, pp. 192–98).

The first group and, initially, the most successful was the construction of a meteorological observatory "worthy of the Society [of Jesus]" (Latourette 1929, p. 43). It was tasked with running the observatory and scientific publishing and was headed by Auguste Colombel (高龍鞶, 1833–1905). From 1873 onward, the Observatoire Météorologique

published daily weather reports and forecasts that instantly raised the mission's visibility in the region and provided data for comparative studies in Europe. The activities of the Observatoire were soon expanded to include seismological and astronomical studies, and in the 1890s researchers at the Observatoire developed a maritime warning system that was adopted by the Inspectorate General of Customs all along the coast of the Yangtze River (Bruhnes 1924, pp. 26–38).

The second group was responsible for natural history research, with Pierre Marie Heude (韓伯祿, 1836–1902) overseeing the museum and publishing its research findings (see Figure 2). The Heude Musée, which was called in English the Museum of Natural History and the Museum of Chinese Antiquities, achieved world fame by strengthening the circulation of natural history knowledge to a broad audience in the public realm. As a renowned scientist, Heude assembled collections and its exhibition almost immediately after his arrival in 1868. The Musée attracted considerable curiosity and functioned as the communication center in terms of both educational activities and research work. Six volumes of *Mèmoires L'histoire Naturelle de L'empire Chinois* (中華帝國博物學集刊), which were collected and published from 1880 to 1927, emphasized the academic purpose of the endeavor with accurate descriptions and professional illustrations.
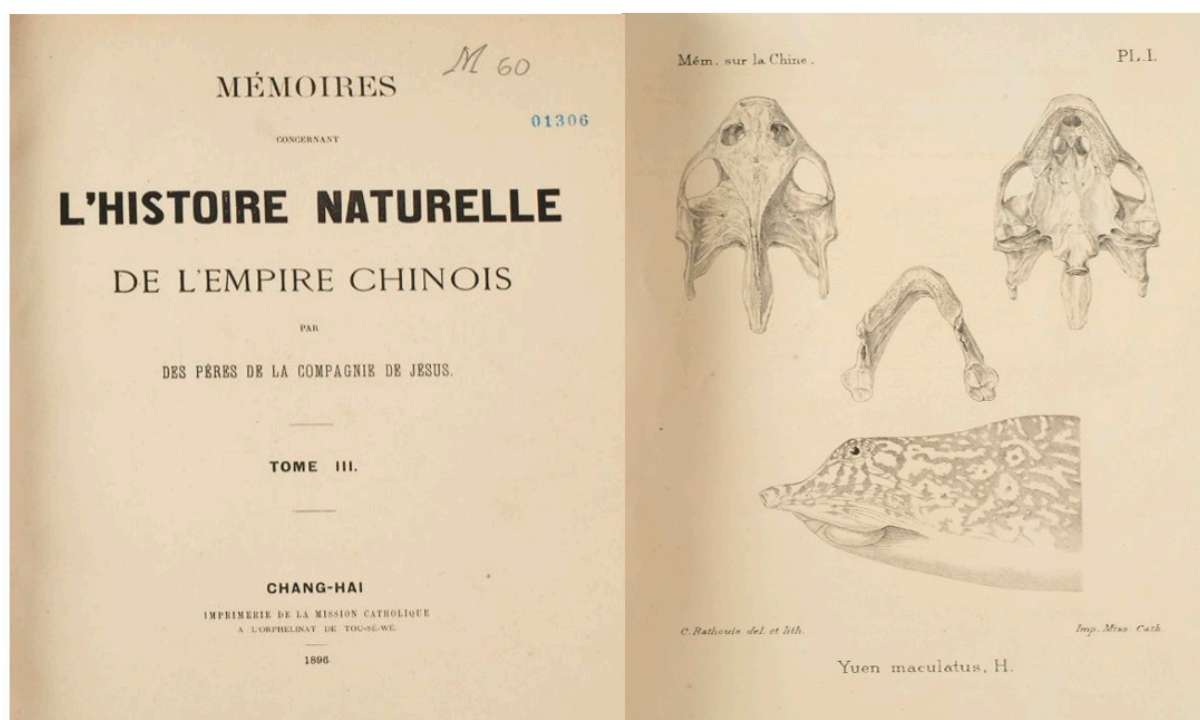
Figure 2. Mémoires Concernant l'Histoire Naturelle de l'Empire Chinois, Vol. III. Printed by Imprimerie de la Mission Catholique, a l'Orphelinat de T'ou-sè-wè, 1896.

The third group, headed by Aloysius Pfister (費賴之, 1833–1891), who was also in charge of the Bibliotheca Zi-ka-wei, spared no efforts on researching China's history and geography under the suggestion from the committee that they edit series of publications in European languages, mostly in French, on the history and geography of both ancient and modern China (see Figure 3). The best-known was the series titled *Variétés Sinologiques* (漢學叢刊), which began in 1892 and continued until 1938 (they were revived by the Ricci Institute in Taipei and Paris in 1982. See (De Matos 2004).

Finally, the fourth group handled the translation into Chinese of documents and materials required for both preaching and scientific projects and was initially headed by two Chinese clerics, the Ma brothers Joseph Ma (馬建常, 1840–1939) (la Servière, *Histoire*, vol. 2, p. 194. Joseph Ma and Matthias Ma left the Jesuit order in 1876 to become prominent bureaucrats. Joseph Ma was the original given name of the famous Jesuit priest Ma Xiangbo(馬相伯); see (Charbonnier 2002, pp. 237–39; Hayhoe and Lu 1996, vol. 4, pp. 37–38) and Matthias Ma (馬建忠, 1845–1900) (see Tai 2013, pp. 329–85). The superiors promoted a significant increase in Chinese-language publications, with special emphasis on science and apologetics. After the departure of the Ma Brothers, the work was divided among the ones who, in the eye of the Committee, were the most brilliant among the Jesuits of Chinese nationality. Among them, quite naturally, was Li Wenyu (李問漁, 1840–1911), who lacked the charisma of the Ma brothers but had distinguished himself throughout his studies. (See Joachim Kurtz, "Messenger of the Sacred Heart," *From Woodblocks to the Internet Chinese Publishing and Print Culture in Transition, circa 1800 to 2008*, (Brokaw and Reed 2010, pp. 81–110).)
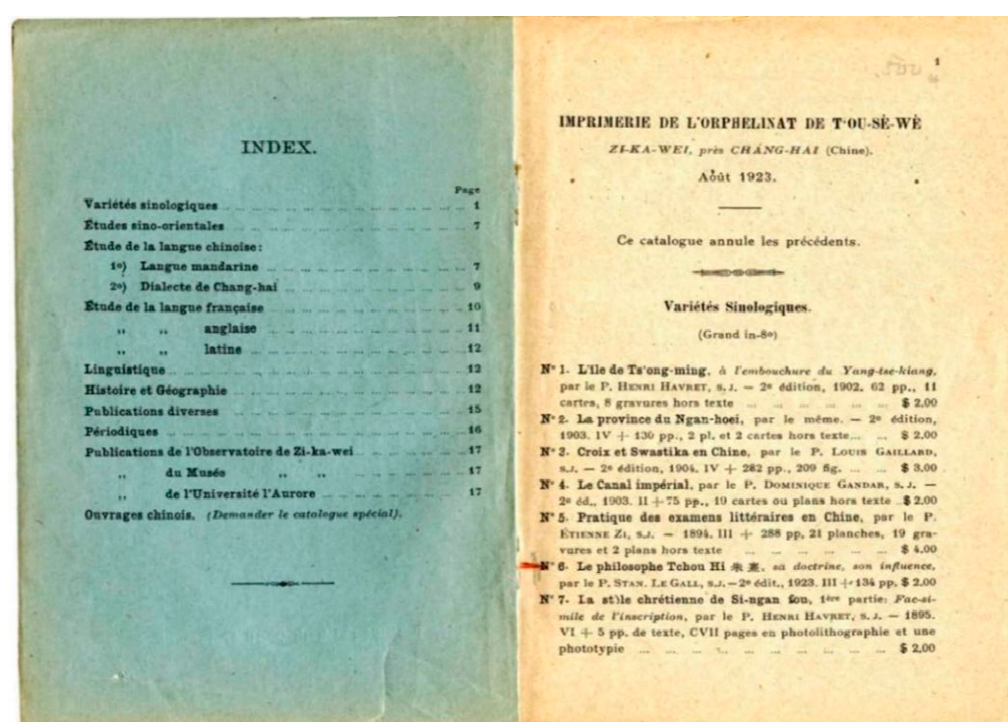
Figure 3. Catalogue of the Publications of the *Plan Scientifique du Kiang-Nan* 1923, Printed by Impr. de T'ou-sè-wè près Zi-ka-wei.

These four groups were set up concurrently but developed their tasks at varying speeds. Since the French Jesuits were the sole sponsor, the initial budget only covered the construction of the observatory, which was completed in 1873. The construction of the museum building—located not far from the observatory, just south of the Jesuit headquarters—was delayed and finally completed in 1883. The Zi-ka-wei Bibliotheca enjoyed worldwide fame due to its large Latin collection of Renaissance books, its reproduction of the classic works of the Jesuit pioneers, and numerous first-hand documents on the modern China mission. These collections encouraged Jesuit historians to approach the ancient Chinese literary and cultural studies in a systematic way. They had published a series of well-known monographs on sinology studies, many of which were the awardees of the *Ouvrage couronné par l' Académie des Inscriptions et Belles-Lettres* (for example, Henri Doré(祿是道, 1859–1931)'s *Recherches sur les superstitions en Chine*, Père Louis Gaillard (方殿華, 1850–1900)'s *Nankin A percu historique et géographique*, and Pierre Hoang(黃伯祿,

1830–1909)'s *Notions techiques sur la propriété en Chine.*). Another important path was the use of a Press named after Xu Guangqi, for Jesuit books and periodicals. The latter included the *Revue Catholique* (聖教雜志), as well as a twice weekly journal, *I-wen-lu* ([Yiwenlû], 益聞錄), which aimed at the "educated public of the East, " and another monthly *Messenger of the Sacred Heart* (聖心報), focused mainly on correspondence and news from the Church and updates on the mission. These institutions, together with those previously established, made the Zi-ka-wei area the cradle of scientific and humanities research in China during the second half of the nineteenth century.

Jesuit specializing in the historiography of the Order kept careful biographic and bibliographic information about these institutions and the Jesuits working in them (The history of the early years of the restored mission of the Jesuits in Shanghai and elsewhere had been well told by Jesuit historians and scholars Nicolas Brouillon (翁毅閣, 1816–1855), Auguste Colombel, and Henri Havret (夏鳴雷, 1848–1901) as well as fully documented by Joseph de la Servière (史式徽, 1866–1937). Today, this information often lies in troves of unpublished manuscripts along with notices on Jesuits' works scattered in bulletins and other inner publications. When it comes to the history of the Zi-ka-wei compound and the works depending on it, see for instance, Broullion, the mission superior, wrote this Memoir on a return visit to France; it is the earliest extensive account of the refounding of the Jiang-nan mission (Broullion 1855). Estève, Brueyre, Broullion and others also wrote several short propagandistic pieces for the *Annales de la Propagation de la Foi* and similar Church journals. And several French visitors to Shanghai in the 1840s and 1850s have left impressions of the mission. Particularly interesting is Charles Lavollée, "Les Jésuites en Chine," *Revue des Deux Mondes*, 2 s. 1 (1856): pp. 505–36. An excellent summary is to be found in (Mungello 2005).

5. Tension: Identity Politics

The early 1870s, when the *Plan Scientifique du Kiang-Nan* of the Jesuits was all being ready, marked a turning point in global history. After the Franco-Prussian War (1870–71), the short-lived Paris Commune seemed for a time to revive the Terror of 1793–1794 and its violent anti-clericalism: it led to the execution of the archbishop of Paris as well as of five Jesuits. In 1880, a governmental decree expelled the Jesuits from France, leading to the training of the youngest French Jesuits outside their country. In 1870, the unification of Italy led to the suppression of the Papal States and endless disputes regarding the "temporal power" of the Pope and the status of Rome as a civil territory (Schapiro 1921, p. 160). The authority of the Church was suffering from its most pressing challenge ever since the Medieval period. Thus, in 1870, the First Vatican Council defined the doctrine of papal infallibility, which, in return, awakened further anticlerical zeal in France and Catholic Europe. Meanwhile, in mission land China, the French power was being challenged. The Tianjin Massacre (or Tianjin Missionary Case, 天津教案) constituted one of the most important anti-Catholic incidents of the late Qing dynasty, leading to armed foreign intervention in Tianjin. Anti-Catholic incidents (*jiao'an* 教案)—or more appropriately, "religious cases"—were used in connection with anti-Christian agitation that occurred over a wide variety as well as combinations of issues. *Jiao'an* often were complex, involving a number of factors and actors. Partly due to the growing resistance by the Chinese people to the pressures exerted by foreign powers, they were also the result of existing tensions within and among local systems (notably (Cohen 1963, p. 108)). Pressures from various sides were imposed on the French and its radical policy on religion and the global mission. Such tension required a solution that avoided both overt hostility and over-emphasis on national or religious identity; the embracing of modern scientific pursuits by the leaders of Zi-ka-wei, supported by a long history of intellectual apostolate, appeared at this sensitive historical juncture.

From their base in Shanghai, which became the financial and administrative center not only for the Jesuit mission but indeed for all foreign missionaries operating in China, the Jesuits struggled against innumerable difficulties in the efforts to win converts. Most of

these problems arose from the ever-increasing cultural opposition to a "foreign religion"; political entanglements with the French, Chinese, and other states; and disagreement with Rome and other mission orders on the direction of the Church in China. However, the Jesuits were also in close contact and competition with Protestant missionaries, who, having had only a minimal presence in the Chinese interior before the First Opium War (1839–1842), arrived in ever greater numbers in the late 19th century. In the complex and divisive situation over Shanghai and its surrounding area, including Zi-ka-wei, during the Treaty Port Era, the absence of a unified administration offered both opportunities and challenges to the religious orders. Intellectuals of that period and modern historians often opine that the Protestants in Shanghai were adopting more innovative and effective techniques in their missions than Catholics. Actually, the facts rather show that Jesuits started scientific institutions sooner than their Protestant counterparts did. Though driven in part by competition with early Protestant missionary efforts in Shanghai, the Jesuits were inspired more by the social and cultural context in which they operated from their revised bottom-up path than the Protestant counterparts. For most Jesuit scientists, engaging in science was part of their apostolate and as such pastoral concern came uppermost in their priorities. Hence, they often focused on the practical aspects of science, particularly how it could benefit the people among whom they lived and worked.

As the political advantages and extensive financial support arrived from France, accompanied by a relatively low level of resentment against foreign clergy among the older Catholic families in Zi-ka-wei (Vermander 2015), the Jesuits quickly established a series of concentric institutions with a steady flow of missionaries. The rates of departures of missionaries, including priests, brothers, and female religious from France steadily increased from 1830s to 1910 the end of Qing's reign (see Joseph Michel, "Géographie de l'élan missionnaire français" [Geography of the French missionary impulse], (Dubosq and Duboscq 1984, p. 387)). The large-scale scientific research was undertaken and promulgated in a specifically French way. Against the background of a century-long process of oscillation between support for and suspicion of the Catholic Church by the French state, patriotic French missionaries promoted the modern notion of the *Mission Civilisatrice*. "The French missionaries . . . saw themselves as propagating a faith that was intimately linked with what they considered the essence of French life. They built Gothic cathedrals that were named after French Saints and adorned with French-style iconography. Depending for their work on French military protection, they often saw their mission as an intimate extension of French economic and political interests (see Madsen, "The Catholic Church in China" (Madsen 1998, pp. 111–12)). Their devotional repertoire could be put into use in China thanks to the "French diplomacy and French arms" by which France had stepped in and established its position as the new protector which was extremely jealous of its worldly over-lordship as well as a key to prominence among the powers in China.

It is interesting to note that the first three Jesuits commissioned to to China were specifically chosen and designated for astronomical work. Gotteland along with other Jesuit companions, who had made practical preparation for a small telescope as well as other scientific instruments, and accepted training in mathematics and science through a crash-course in astronomy during the stay in Paris (Archives françaises de la Compagnie de Jésus [AFCJ], Fichier 2 1 7, letter of Gotteland to T.R.P Général, 22 September 1842. LNM, 1, 425, letter of Gotteland, 3 December 1846) by Charles Louis Largetau of the Bureau of Longitudes (Charles Louis Largetau was the member of l'Académie des sciences, who even composed for him a treatise on practical astronomy, *Astronomie pratique à l'usage des missions de Chine*. (la Servière, *Histoire*, 1:42)). While they were dedicating themselves primarily to pastoral work, they also started to make astronomical and meteorological observations. Evidence of these early astronomical observations is a manuscript found in the Archives of the French Jesuit Province with the title: *Tables astronomique pour la latitude et le meridien de Nankin*, 1844. In the pursuit of the goal of making astronomical measurements, the French Jesuits were relentless. The foundation of observatories after the Restoration was, in their view, continuous with the work that had been done during the First Chinese Mission.

Shanghai, rather than Beijing, became their new center, and their efforts developed along the two lines of scientific research and academic teaching. The results were impressive. Their first published scientific data began to appear in 1855, and by 1873 they had already built a permanent meteorological observatory. This was followed by the opening of an astronomical observatory in 1894 and a magnetical observatory in 1908.

When venturing beyond the five major ports, all the Catholic missionaries (Italian, Belgian, German, Austrian, Spanish, Portuguese, Dutch, and Irish, as well as French) were formally protégés of the French state. The latter called on the missions to establish schools where the French language and French learning would receive place of choice. Missions were also encouraged to staff their schools with lay personnel who would be spreading French science to China. Well into the 20th century, missionary enterprises were strongly informed by a French cultural understanding of French civilization. This convergence of religious zeal and national cultural pride took place by way of intellectual apostolate, an ambitious plan of evangelization through scientific activities that sparked great tension between the political, cultural, and military decline of France and reviving Catholic interests in China among other foreign ends.

6. Accommodation: Nationalism and Catholicism in a Time of Globalization

Jesuits were affected by the strong growth of national identities observed during the whole of the 19th century, which was conflicting with their original outlook of transcending national origins and interests, as they were expected to put their Jesuit global identity ahead of national allegiances.

The rebirth of the Jesuits in the early 19th century coincided with a new wave of imperial expansion of European powers. They had an already long history of frictions with national institutions, which had contributed to their suppression and would lead to measures taken against them in new nation-state apparatus (for instance, the French hostility to Jesuit education like an 1828 royal decree banning Jesuits from teaching and they got exiled from France. See Sabina Pavone, "The History of Anti-Jesuitism", (Banchoff and Casanova 2016, pp. 120–23)). In 1840s, Edgar Quinet, a leading French intellectual, asserted that "Jesuitism [would] abolish the spirit of France" if "France [did not] abolish the spirit of Jesuitism" (Quinet and Michelet 1843, p. 196). However, such polemics were considerably softened in places located far away from the old European nation-states. Therefore, the effort to recast Jesuit intellectual life could extend and find new expressions in other continents.

At a time when Western influence was expanding quickly and aggressively, the support to the colonial enterprise expressed in some Jesuit quarters was also a way to respond to anticlerical sentiments, as the latter were triggered by the seemingly 'internationalism" of the Jesuit Order. The term "nationalism" was used more broadly both in chronology and geography and in what it meant by it. Some historians believe that nationalism is as much ethnic and cultural as it is political, sometimes depending on Christianity or other theistic religions to produce and sustain national cohesion (Bell 2001, pp. 15–18). The Jesuits' participation to the new wave of European colonial expansion was going along their stress on the acquisition and spread of knowledge. Revolutions in transportation and communications also brought an international Catholic style to the most distant corners of the globe, a trend to which the Jesuits participated along with other missionary congregations. They were thus, in more than one way, "agents of globalization" broadly understood as the processes through which the world was becoming a single place with increasing connectivity and shared consciousness (Robertson 1992). "Shanghai's initial globalization deserves to be treated as a tale of East-meets-West. [. . .] The participants in the modern rise of Shanghai were as investors, tourists, literary influences, as invaders and then conquerors, figured prominently in shaping the history of the city throughout the late half of the nineteenth century and the first half of the twentieth" (see (Wasserstrom 2009, p. 128)). As was the case for their participation in earlier stages of the globalization process, their contribution included some specific features, which we are now going to

specify further. The distinction among threefold periodization of globalization—the early modern, modern, and contemporary—is necessarily somewhat arbitrary. The transitions emphasized here—from early modern European, with its global cultural and political diversity; to the modern, marked by the peak of Western influence within the world system; and to our contemporary shift toward a more pluralistic and multipolar world—contradict any simple linear scheme (Robertson and White 2003).

From the time of their reentry into China onward, the Jesuits worked through separate "national" Jesuit missions rather than as an international body. This certainly affected the way they were presenting and spreading "Western knowledge." Another complicating factor was the fact that, though they were stressing the "cultural imperative" attached to the missionary endeavor, the practical and pastoral concerns prevalent in their apostolate strongly affected the style and purpose of their engagement with science. Lewis Pyenson used the term "functionary missionaries" to describe those missionaries for whom science was a mere adjunct in contrast to real researchers, whom he called "seekers" (Lewis Pyenson, "Pure research, Jesuit institutions and metropolitan ambitions: The evolution of French Policies overseas, 1880–1940," (Aubin 1991, pp. 249–71)). This viewpoint highlights the complexity of motivation in scientific work as a French scientist and an ultimate religious end of a Jesuit.

A third factor affecting the way Jesuits in Jiangnan were translating the ethos of their Order as agents of knowledge-spreading and, therefore, globalization, has to do with what has been dubbed "Jesuit ideology" (the term was first used by Ritka Feldhay to express the Jesuit way of viewing knowledge as a path to salvation. For further discussion, see (Feldhay 1987)). The Jesuits were and continue to be more willing to work with non-believers than other sectors of the Church. Working on "frontier fields" was believed by them to be their responsibility, so as to show that profane topic-matters could be a vehicle to find God in all things. After the Restoration of the Society in 1814, science was a field often considered by both Catholic intellectuals and non-believing scientists alien if not hostile to religious faith (Harrison 2015, p. 171). Jesuits had to "bridge the gap," and this could be partly done through learned networks, associating Jesuits working in different continents and lay scientists, which would enrich the narratives on scientific discoveries in far-off countries. In this way, Jesuits' scientific institutions and activities could bring a challenge to narrow "scientism." Converse to the former, Jesuit "science" was connected with the entry into local culture, civic engagement, and a connection established between science on the one hand and philosophy and theology on the other.

This outlook had to do with the way Jesuits were understanding their own past: After the Restoration, the Jesuits were for two generations engaged in reconstructing their own history (See John W. O'Malley, "The Historiography of the Society of Jesus", (O'Malley et al. 1999, p. 11)), which they progressively collected and compiled (Jesuits Congregatio Generalis 1994, p. 442). Observers have noted both similarities and differences in the Jesuits' scientific and educational style before and after the Suppression and subsequent Restoration of the Order (Udías 2014, p. 246). In any case, the motto "To find God in all things" was continuing to provide a link between contemplation and action. Teaching biology in a university, observing the stars in an observatory, or undertaking cartographic work in unknown lands were considered perfectly compatible with other Jesuit activities, and offered each Jesuit a chance to find God in his vocation. Jesuit involvement in science is but one example of this mentality.

7. Conclusions

The story of the Zi-ka-wei complex is to be recaptured within the context of the evolution of modern Catholicism, both from the perspective that is now ours and by taking some distance from it. Especially since the time of the Second Vatican Council, within the worldwide Catholic movement the traditional focus has changed from "the Church" itself, mainly understood as the institution comprising the papacy, episcopacy and clerics, to a broader view that continues to evolve. As is well known the aftermath

of the Council deeply renewed the traditional expressions of the Jesuit charisma ("When the Thirty-First General Congregation (GC 31) chose Pedro Arrupe as its Twenty-Eighth Superior General in 1965, its concern was the renewal of the Jesuit order according to the spirit and orientations of the Second Vatican Council. But the audacity, charisma, and energy of Arrupe far exceeded expectations." (Vermander 2018)). Jesuits have been encouraged to further their self-understanding of their identity and mission, transcending the distinction between "functionaries" and "seekers." Actually, the reproach contained in this distinction holds only if one maintains the distinction between popular and elite cultures. "Vulgarizing science" constitutes another form of the quest for truth, which integrates scientific knowledge into the lived experience of a given community.

Besisdes, the story of Zi-ka-wei allows one to pay attention to the continuity that has marked the "intellectual apostolate' of the Jesuits throughout the ages, and not only ot the ruputres that marked the 19th century and the earlier aprts of the 20th, as if oten the case. As noted by the former Superior General of the Socoiety of Jesus, Fr. Adolfo Nicolás (1936–2020), "the long tradition of the involvement of the Society of Jesus in the intellectual apostolate forms part of [its] religious identity. [. . .] The first companions came to know one other in Paris while they were studying to become Masters of Arts. [. . .] Up to the present, many other Jesuits have played an important role in the dialogue between science and faith, and, in a more general way, in the dialogue between faith and reason" (Nicolás 2014, p. 1).

The academic requirements that characterized the exacting and long training of Jesuit missionaries, the importance they gave to philosophy and theology, and finally their broader commitment to all fields of human knowledge, all these factors nurtured the long journey underwent in their overseas mission. The way they practiced and spread science in Jiangnan as well as in other areas cannot be separated from the self-understanding they nurtured„ a self-understanding shaped both by the contradictions that marked the period under study and by the long-term impetus of the Order. Therefore, to study Jesuit "corporate culture" in its ruptures and continuity constitutes a valuable contribution to the study of the factors having triggered and defined globalization. The Jesuit intellectual apostolate in modern Shanghai provides a fascinating example of the way scientific endeavors, nationalist fervor, and a specific international corporate culture interacted in such a way as to decisively contribute in shaping the ethos of one of the cities that is now at the forefront of globalization—namely, Shanghai.

Funding: Shanghai Planning Office of Philosophy and Social Science: 2020ELS003.

Data Availability Statement: Not applicable.

Conflicts of Interest: The author declares no conflict of interest.

Abbreviations

Terms in Western Languages (Alphabetically Listed)	Chinese Translation
Adrien Languillat	郎懷仁
Agnello Della Corte	穀振聲
Aloysius Pfister	費賴之
Auguste Colombel	高龍鞶
church publications	堂刻文獻
Claude Gotteland	南格祿
commercial publishers	坊刻文獻
Complete Treatise on Agricultural Administration	《農政全書》
Ferdinand Verbiest	南懷仁
Francesco Brancati	潘國光

French Treaty of Tianjin	《天津條約》, 1858
Grand Secretary (*Wenyuange daxueshi*)	文淵閣大學士
Hengtang of Qingpu County	青浦縣橫塘
Henri Doré	祿是遒
Henri Havret	夏鳴雷
I-wen-lu	《益聞錄》
Jiao'an	教案
Jiangnan region	江南地區
Joseph de la Servière	史式徽
Joseph Ma	馬建常
Kiang- nan Scientifique Plan	江南科學計劃
Li Wenyu	李問漁
Li Zhizao	李之藻
Matteo Ricci	利瑪竇
Matthias Ma	馬建忠
Mèmoires L'histoire Naturelle de L'empire Chinois	《中華帝國博物學集刊》
Messenger of the Sacred Heart	《聖心報》
Niccoló Longobardo	龍華民
Nicolas Brouillon	翁毅閣
Nicolas Trigault	金尼閣
official publishers	官刻文獻
Père Louis Gaillard	方殿華
Pierre Hoang	黃伯祿
Pierre Marie Heude	韓伯祿
private reproduction	私刻文獻
Renaissance library of around seven thousand volumes	西書七千卷
Revue Catholique	聖教雜志
Shanghai Songjiang	松江
Sino- French Convention of Beijing	《北京條約》, 1860
Study of Fathoming Principles	《窮理學》
the southeast of Chili	直隸東南
The Tianjin Massacre (or Tianjin Missionary Case)	天津教案
Treaty of Huangpu	《黃埔條約》, 1844
Variétés Sinologiques	《漢學叢刊》
Wang Zheng	王徵
Xu Guangqi	徐光
Xu Jia	徐家
Yang Tingyun	楊廷筠
Zi-ka-wei compound	徐家匯

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