Introducing a Western Scientific Work to China: Xu Guangqi and Matteo Ricci’s Translation of The Elements of Geometry

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This paper reviews Xu Guangqi and Matteo Ricci’s translation of The Elements of Geometry and attempts to analyze their translation activity in three aspects: “ideology”, “patronage” and “humanistic environment” in the Ming Dynasty. From the historical point of view, Xu Guangqi, assisted by Matteo Ricci, introduced western geometry concepts and scientific ideas to the Chinese people by translating The Elements of Geometry. In the light of André Lefevere’s rewriting theory, this paper ventures to propose the reasons why Xu Guangqi and Matteo Ricci chose to translate the scientific works but not the works in other fields; why they particularly singled out Elements for translation and finally why they translated only six volumes of the works and left the other nine out.

Introduction

The Translation of The Elements of Geometry

Xu Guangqi (1562-1633), a senior court official and scientist translator in the Ming dynasty, was considered as the first person to systematically introduce modern Western science to China. Throughout his life, he was particularly concerned with the development of science and technology in China and he learned about astronomy, arithmetic, firearms and other scientific disciplines. His enthusiasm towards science led to the collaboration with Matteo Ricci (1552-1610), an Italian missionary, to translate Euclid's The Elements of Geometry (hereinafter Elements), one of the most prominent accomplishments of ancient Greek science. This work is regarded as the earliest and the most influential one to be introduced to China. Liang Qichao (1996) acclaimed it as follows: “Every word of the book is as valuable as gold and jade. It is a book with enduring immortality.” Many Chinese equivalents of the geometry terms were rendered by Xu Guangqi in this translated version, such as “点”(dot), “线”(line), “三角形”(triangular), “四边形”(rectangle), “圆”(round), “几何”(geometry), to name just a few. These terms are still in current use. Unfortunately, the translation of this influential work was not completed at that time in that Xu Guangqi and Matteo Ricci translated the first six volumes of this book and left the remaining nine unfinished.

1.2 The Rewriting Theory of André Lefevere

André Lefevere is one of the forerunners in shaping the cultural turn in translation studies. “[He] first developed his idea of translation as refraction rather than reflection, offering a more complex model than the old idea of translation as a mirror of the original.” (Bassnett 2002:8) His main contribution is his major concern with parameters outside the translation texts themselves, and he leads researchers to focus more on the system (or as he termed it “grillwork”) outside the texts. His theory can be presented in Figure 1 below.

Lefevere’s theoretical framework includes the three parameters of ideology, patronage and poetics. One can see that this theoretical framework is significant in dealing with the

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impact on translation beyond the texts themselves. Emphases are put on the cultural aspects of translation activities, instead of the linguistic ones. This has been considered as the major

![Figure 1. The theoretical framework of Lefevere](image)

contribution to the “cultural turn” in translation studies. As Munday put it, “[Lefevere’s] later work on translation and culture in many ways represents a bridging point to the cultural turn.” (Munday 2001:127) In other words, his theory is “not intended equivalence but admitted manipulation.”(Snell-Hornby 2001:22)

Although his theory was put forward to deal with the issues of literary translation, the author of this paper believes that it can be explored and applied to analyze scientific translation. Hatim (2001:63) summarized Lefevere’s theory into several factors determining the translation choice: “The types of texts considered worthy; the cultural scripts with which the audience identifies or about which it is willing to learn; the translator’s ideology in the sense of loyalty to particular modes of text reproduction”. In the case of Xu Guangqi and Matteo Ricci’s translation of *Elements*, Lefevere’s theoretical framework is revised and specified in the following:

![Figure 2. The theoretical framework of the present paper](image)

**Questions Addressed in this Paper**

Guided by Lefevere’s three parameters, ideology, patronage and poetics, this paper ventures to answer the three following questions: (1) Why did Xu Guangqi and Matteo Ricci choose to translate the scientific works but not the works in other fields? (2) Why did they translate
Elements among so many scientific works? (3) Why did they translate only six volumes and leave the other nine out?

**Ideologies**

“There is an ideological component, which acts as a constraint on the choice and development of both form and subject matter.” (Lefevere 1992b:16) So in this section, the ideologies in Ming Dynasty will be looked into to reveal the historical background, upon which Xu and Ricci based to translate Elements.

**The Dominant Neo-Confucianism in the Early Ming Dynasty**

Since the West Han Dynasty, Confucianism had been playing a dominant role in the cultural and political circles in Chinese feudal dynasties for centuries. Confucianism advocated benevolence and morality, which led to a series of rules governing relationships between the king and his officials, between father and son, and between husband and wife. Structured by this ideology, it is common to find that Chinese people attached too much importance to the relations between people, with which they could advance in the social ladders, rather than the practical skills or techniques they needed to cultivate.

From the very beginning of the Ming dynasty, Neo-Confucianism, founded by Zhu Xi (1130-1200) in the twelfth century, had been adopted as the orthodox Chinese philosophy. This might be described as, in essence, a metaphysical rationalization of ancient Confucian morality. The method it prescribed was “cultivation” (xiu): literally, “the extension of knowledge through the investigation of things”. It was rather authoritarian, and it called for extensive study of the doctrines embedded in the ancient Confucian texts (Hucker 1957:143).

**Wang Yang-ming in Ming Dynasty**

In the Ming Dynasty, Wang Yangming (1472-1529) was opposed to the neo-Confucian ideas and went beyond the orthodoxy of Zhu Xi by equating the “principles” (Li) with the mind and stressing both intuitive knowledge and a vigorous ethical activism within society. He revised Zhu Xi’s understanding of “extension of knowledge through the investigation of things” as “extension of intuitive knowledge”, building on which he advocated the “Unity of knowledge and conduct” and “Knowledge is the beginning of conduct; conduct is the completion of knowledge.” His ideas, therefore, “elicited a wide response from thinking men and provided the inspiration for the most active schools of thought in the later Ming period.” (Theodore de Bary et al. 1960:515)

The prevalence of Wang’s theories brought a new prospect for the scholars in the Ming Dynasty and served as a “bristle of fresh ideological breeze”, thus providing an ideological base for the acceptance of new ideas from the West (Shen Dingping 2001:546,547). Unfortunately the extremists of Wang’s believers incorporated his early thoughts into Buddhism, which marked the chaotic sects of his school and led to the overemphasis on idealism. That’s why Needham remarks (1954:145), “[…] the age was dominated by Wang Yang-ming, who moved away from the scientific humanism of the Neo-Confucianism to a rather anti-scientific idealism.”

**The Choice of Scientific Translation Influenced by Ideologies**

As discussed above, two major schools of ideologies were in conflict in the Ming Dynasty. The neo-Confucianism served as the orthodox ideology before the period of Emperor Wan Li, and several Emperors tried to quell Wang’s disciples by declaring his theory as an
anti-orthodox one. Contrary to their wishes, Wang’s theory was gaining power across China. Such a trend was so irresistible that Emperor Wan Li lifted the restrictions on Wang’s theory after the death of Zhang Juzheng (1525-1582). Wan Li’s act caused the messy state of imperial ideology and “the imperial court lost control of the ideology” (Zu Weizeng 2001: preface: 15)

It is true that Xu Guangqi and Matteo Ricci might have done harm to the hierarchical system of Chinese politics, by introducing the practical viewpoints of Western technologies to China. As Lefevere (1992a:14) points out “Translations can be potentially threatening precisely because they confront the receiving culture with another, different way of looking at life and society, a way that can be seen as potentially subversive, and must therefore be kept out.” In the late period of Ming Dynasty, however, the dominant power of neo-Confucianism was phasing out. History was reshaping itself during this period, in that an increasing number of people were yearning for a break out of the stifling subversion and reversion between Zhu Xi’s disciples and Wang’s extremists, thus resulting in the formation of “Dong-lin Academy” (Dong-lin Dang), which was dedicated to sound scholarship and moral integrity. The three features of this period listed by Prof. Shen Dingping (2001:569, 570, 572) were “first, stressing the importance of morality; second, focusing on the pragmatism (or jing shi zhi yong); third, criticism on mystified Buddhism and absurd notion of incorporating the three schools into one”. Therefore, some enlightened scholars were looking forward to the arrival of mind-broadening skills to save the country. It is at this point that Xu Guangqi met Matteo Ricci, who came to China with his primary mission of disseminating Catholicism and who was knowledgeable in the Western sciences.

Xu Guangqi, marveling at Matteo Ricci’s knowledge, was delighted to cooperate with him in translating the classical scientific work Elements. For one thing, the translation of scientific works was in accordance with the united noble goal of reversing the decline of the Ming Dynasty, despite the fact that this goal was expressed by various different schools of thought. For another, since Matteo Ricci entered into China, he picked up the Chinese language and studied the classic books, which represented the possibility of communication between the East and the West. Finally, “the two sides united and began to cooperate. This led to a new era in China of translating books on astronomy, the calendar, measurement, architecture, geology and so on.” (Fang Mengzhi 1999)

In spite of running the risk of upsetting the age-old Confucius-centered theories, Xu Guangqi and Matteo Ricci chose to translate scientific works in the late Ming Dynasty. The reason is shown in the following logical chain:

Physical and mental upheavals in late Ming Dynasty ➔
The spread of Wang Yangming’s theory that resulted in people’s freed mindset ➔
The chaotic conflicts between the extremists of neo-Confucianism and Wang Yangming’s school ➔
The demand of ideological changes to save the country ➔
A growing desire of scientific knowledge among the enlightened officials ➔
Translating scientific works to offset the side effects of decaying neo-Confucianism and Wang’s extremists

**Patronage**

Patronage is “understood to mean something like the powers (persons, institutions) that can further or hinder the reading, writing, and rewriting of literature. (Lefevere 1992b:15) In Xu Guangqi and Matteo Ricci’s case, a patronage system and a particular patron can be identified, which merit our studies.
Publishing Industry in Ming Dynasty

Lefevere (1992b:24) stated that “Of all literary systems known in history the classical Chinese system has been able to resist change the longest, precisely because undifferentiated patronage limited both the producers and the readers of literature to a relatively small coterie dominated by the court and the mandarins, and it also imposed its ideology and its poetics by making them a (sizable) part of the requirements to be met by those who wanted to belong to that coterie.” Thus, it is very important to take into account the publishing industry in the Ming Dynasty, because the then updated technology in printing and new policies of publication were essential to the patronage of translated works.

The publishing industry in Ming Dynasty was booming and of few restrictions, proven by the exemption of tax on books in 1368 during the reign of Emperor Zhu Yuanzhang (Miu Yonghe 2004). In the late Ming dynasty, the imperial-sponsored publishing industry gave way to the privately sponsored one, and the imperial control was thus waning (Guo Ziyin 2002). So the publishing conditions in Ming Dynasty were sound and encouraging for people to transform their thoughts into printing words. With the help of the prosperous industry, the translation of scientific works and their publication was possible or even probable.

“Patron[age] can encourage the publication of translations they consider acceptable and they can also quite effectively prevent the publication of translations they do not consider so.” (Lefevere 1992a:19) It is noted that, in the late Ming Dynasty, the prediction of the ellipses and the settlement of the lunar calendar were not accurate at all. Urged by the desire of revamping the lunar calendar and knowing more about the practical knowledge, the imperial court agreed to publish more works in the scientific field, especially those works related to mathematics and astronomy. This trend later resulted in the establishment of Almanac Bureau (Li Ju), the first science translation organization in China, where Xu Guangqi and Li Zizao (1565-1630), together with some foreign missionaries, translated and edited some astronomic works. This institution, so to speak, provided systematic and authorized patronage for the translation of scientific works.

In addition to this, Ming publications further reflected an intensified interest in practical knowledge and a wide array of applications of these technologies. As more and more people got the access to the published books, many conscientious intellectuals were greatly keen on the translation of the science works. A strong desire of publication gave rise to a big supply of translated scientific works.

Xu Guangqi as a Patron

Jesuits missionaries, upon arrival China, abandoned the choice of forced conversion but “[…] they worked from the top down, appealing to the upper-class elite.” “Instead of preaching, they held conversations with Chinese scholars, arousing their curiosity […] By 1601 Ricci […] had secured the patronage of high officials and was able to establish his residence at Peking.” (Fairbank & Reischauer 1973:244, 245)

Viewed in this way, Xu Guangqi acted as one of the important patrons of Matteo Ricci. On the one hand, Xu Guangqi was a very influential official in the imperial court, who, at his advanced age, was admitted into the central power of politics, in charge of Hanlin Academy, the top academic institution in imperial China. On the other hand, Ricci may have spread his fame by associating with the high-ranking officials, which was in line with the above-mentioned principle of disseminating Catholic doctrines.

Patrons are very important in that “[they] try to regulate the relationship between the
literary system and the other systems, which, together, make up a society, a culture.” (Lefevere 1992b:15) Xu did help to regulate the relationship between Matteo Ricci and the court, by introducing Matteo Ricci to other scholars and encouraging him to translate and publish more books.

In addition to this, Xu strongly advocated that the court invite some famous missionaries to translate the Western scientific books, covering the range from astronomy to medicine, from agriculture to gynecology and other practical disciplines (Chen Lemin 2004). Given his authority and power, he immensely supported Ricci to become popular among the literati.

Ricci discovered that logical reasoning was absent from Chinese minds, which hindered his dissemination of Catholic thought. He “attempted to translate Elements three times” and yet it was not possible to fulfill his wish until he met Xu. He explained to Xu the importance of the book: “it is a ladder for learning and featured by its tight reasoning” (Ricci in Zhu Weizeng, 2001:298). Xu was well aware of this and attributed the decline of China to negligence of practical learning and also to the confusion between mathematics and numerology. People were no longer aware of the contribution to algebra that ancient Chinese had made (Xu Guangqi in Zhu Weizeng, 2001:303). Therefore, Xu Guangqi’s choice of Elements was strongly purposeful in that he not only regarded geometry as one refined technology, but also hoped that people would acquire a refreshed sense of reasoning and a pragmatic attitude by reading the translation. (Cheng Gang, 2006). He even went all out to state that “we need to cultivate people in a practical point of view” and that “I translated this piece of work as a touching stone at people’s disposal” (Xu Guangqi in Wang Chongmin, 1963:74-8). This is also a vivid illustration of his slogan “To excel the Western countries, we must learn and know things of and about the West; to do so, we must translate works written by Western authors.”

To sum up, the publishing industry in the Ming Dynasty bestowed a sound external condition as a motivation for translating scientific works. This industry, as a whole, functioned as the patronage system to facilitate the publication of scientific translations. As a patron, Xu Guangqi picked up the Elements for the purpose of disseminating the pragmatic attitude through the geometry, which in turn, he hoped, would revitalize China. With the patronage and patron’s conditions combined, it was natural that Matteo Ricci was willing to collaborate with Xu and they began their translation of Elements.

Humanistic environment

As described above in the discussion of the theoretical framework for this paper, poetics was the domain where Lefevere discussed literary translation. In the case of scientific translation, the humanistic environment of literati served the same function as poetics does. “A poetics can be said to consist of two components: one is an inventory of literary devices, genres, motifs, prototypical characters and situations, and symbols; the other a concept of what the role of literature is, or should be, in the social system as a whole.” (Lefevere, 1992a:26). In the light of this, in this section of the paper, the system, i.e. the humanistic environment of Ming literati, will be dealt with to analyze the reason why Xu Guangqi and Matteo Ricci translated only the first six volumes of the Elements.

The Proclamation of Co-Translators

It is a fact that Ricci tried various means to adapt to the way the Chinese educated officials were living, or better put, he was adjusting himself to the humanistic environment. For example, “[he] cultivated a distinguished Chinese-style beard under the chin, wore round silk hats adorned with peacock feathers and the ritual, distinctive jewel, ate Chinese food and
spoke Chinese like mandarins” (Amaury de Riencourt 1959:141). His endeavor was even more obvious when he proclaimed the partnership with Xu Guangqi in translating the Elements. In Ricci’s preface to the translated Elements he revealed the process of translation: he “first translated the books into Chinese orally and Xu wrote down the statements and then polished them to the style of the classical Chinese. Xu even revised the translation three times after that”.4

It is noteworthy that Ricci successfully acquired the Chinese language after he came to China, while Xu was as ignorant of the foreign language as ever. To a certain extent, Xu was only polishing and rewriting Ricci’s translation after Ricci interpreted the Elements to him. One may regard this kind of cooperative translation as the way to adapt to the constraints of the humanistic environment. At that time, Ricci was still new and foreign to the academic system among Chinese literati, a fact preventing him from publishing works (or translations) at will. On the other hand, Xu was a high-ranking official in the system and was capable of persuading the emperor and his colleagues to approve of their translation. As a result, they proclaimed that they joined hands to translate the Elements, in spite of Xu’s inability of reading foreign languages. By acceding part of the honor of translation to Xu, Ricci was successful in making him better known among the educated people in the Chinese humanistic environment. Besides, one may add that the endorsement of an influential official of the system as the co-translator (Xu, in this case) would help to improve the status of the translated works and the other translator (Ricci, in this case).

The Reasons for Translating Only the First Six Books

Many speculations were made as to why Xu and Ricci translated the first 6 books of the Elements only. Two possible theories were popular in China. One was put forward by Yang Zezong (2004). He argued that Xu Guangqi, despite being a converted Catholic, was still infiltrated with age-old Confucianism. His father passed away (on May 23, 1607) when they finished the first 6 volumes of Elements (in late May, 1607), so he had to take a three-year break from all social life to commemorate his father. This action was required by the traditional Chinese rituals and Xu was conforming to it. When he finished his three-year commitment, he headed for Beijing, but, unfortunately, Matteo Ricci had already died (May, 1610) by that time. Thus, it was not possible for them to cooperate in continuing the translation. The other theory was put forward by Ma Zuyi (1998:277). He reasoned that Matteo Ricci was trying to gain more popularity by prolonging the translation of mathematics so that he could spend more time in the court popularizing his religious doctrines.5

The author of this paper believes that there is no one single reason determining the historical fact. The reasons, in this case, should be open. That’s why the author would like to propose a third one for reference. The author argues that the translation of the first six books was a result of the subtle constraint imposed by the humanistic environment. “Within [the humanistic environment] proper, and striking at the heart of cultural conflicts, is the translator’s attempt to ensure that a work acquires prestige through the use of a respected genre, a popular motif, a favored set of literary devices or a set of symbols serving particular themes fashionable in a given culture.” (Lefevere in Hatim, 2001:63) It is, therefore, safe to state that all translated texts are subject to the social status and academic recognition in the target language.

In the Ming Dynasty, however, the “civil service examination” (ke ju zhi du) was immensely enhanced. The examination limited its subject matter to the Four Books and Five Classics. In addition to this, a set form for writing examination papers was adopted, which was known as “eight-legged essay” style (ba gu wen). The form of the thesis outweighed the content and “[was] later denounced as imposing a tyranny of literary structure over thought”
(Fairbank 1973:190). This civil examination system forced many students and scholars to confine their scope of learning to the Confucian and neo-Confucian studies. Consequently, the dominant atmosphere in the humanistic environment was in great contrast with the scientific approach and the pragmatic application of technology, advocated by Xu Guangqi. In this regard, Ricci seemed worried about whether the translation would be accepted by the system. It is partly justified that Xu’s request to continue with the translation of the remaining nine books was denied by Ricci, who claimed in the preface of the translation: “Let’s make a pause and ask your colleagues to review the translated parts. If it proved to be useful and popular, we shall continue our translation”6 (Matteo Ricci in Zhu Weizeng, 2004)

To end this section, it is grounded to say that Matteo Ricci was strongly restricted by the humanistic environment in the Ming Dynasty, which attached much importance to the form. His worries were compounded by the court officials, many of whom were still on-lookers of the scientific translation, being doubtful of the feasibility of Western geometry and logical reasoning. He, therefore, endorsed Xu as a co-translator and stopped at finishing the first six books of the Elements as an attempt to gain acceptance from the humanistic environment.

**Conclusion**

From the discussion above, one may come to the conclusion that the choice of the scientific works, Elements and the translation of the first six volumes were all spurred and confined by the ideology, patron(age), and the humanistic environment. As a matter of fact, there are several pairs of conflicting forces in this translation process (See Figure 3 on the next page), which is echoed by the statement that “Poetics usually belongs to the literary system and thus tries to control it from within. Ideology, on the other hand, lies outside the system but nevertheless sets the parameters which determine how the influence of poetics is to be channeled.” (Hatim, 2001:64)

To this end, the three questions addressed in this paper can be answered as follows: (1) Scientific works were translated in line with the emergence of enlightened thoughts and ideas to reverse the decaying Li theory and Wang Yang-ming’s extremism. (2) The translation of the Elements was patronized by the publication system of the Ming Dynasty and was also a choice favored by Xu, who placed much hope on these translated works to revitalize the literati and China as a whole. (3) The translation of the first six books of Elements resulted from the dominant humanistic environment, which imposed pressure on Ricci, who was not sure about the acceptability of the translated works, so he wanted to translate the first six books as a tentative endeavor.

In conclusion, the author of this paper would like to quote from Joseph Needham (1969:183) “In all the civilizations there were tendencies both scientific and non-scientific. Which of them dominate at particular times and places seems to me now to depend far more upon any supposed racial penchants for one world-outlook or another.” Ricci and Xu’s translation of Elements, tough under great constraints from the prevalent ideologies and humanistic environment, ushered in a new era in Chinese history, which was to be enriched with scientific ideas.
Figure 3. The relationship among ideology, patronage and humanistic environment in the case of Xu Guangqi and Matteo Ricci’s translation of the Elements

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Notes

1“字字精金美玉，是千古不朽的著作”。 The English translations of Chinese citations in this paper are done by the author, if not otherwise stated.

2“方今造就人才，务求实用”；“金针度去从君用”。

3“欲求超胜，必先会通；会通之前，先必翻译”translation is cited from Fang Mengzhi, 1999

4“命余口传，自从笔受焉。反复辗转，求合本书之意，以中夏之文重复修订正，凡三易稿。”

5“现只好用数学来笼络中国人的心”

6“...太史意方锐，欲竟之，余曰：止，请先传此，使同志者习之。果以为用，而后徐计其余。”