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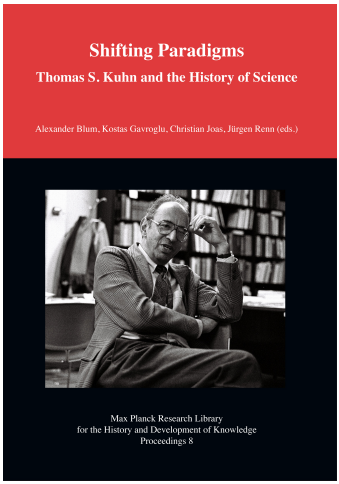

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Chapter 24
The Professionalization of Research on the History of Science in China and the Influence of Eurocentrism on Chinese Historians of Science

Baichun Zhang

Kuhn's publication of *The Structure of Scientific Revolutions* exerted a significant influence upon the historiography of science. However, prior to the 1980s, its impact on Chinese studies on the history of science was limited, despite the fact that research on the history of science began at the end of 1910s in China. This article focuses on the process of the professionalization of history of science, as well as the influence of Eurocentrism on historical research in main land China.

Early Motives for Chinese Scholars' Research on the History of Science

Historiography was a well-developed subject in pre-modern China, and included certain contents related to astronomy, geography etc. As a result, Yuan Ruan (1764–1849) compiled *Biographies of Astronomers and Mathematicians* in 1799. By the late nineteenth century, Western missionaries in China, such as Alexander Wylie (1815–1887), Joseph Edkins (1823–1905) and William Alexander Parsons Martin (1827–1916), as well as Sinologists, like Stanislas Julien (1797–1873) and Wilhelm Schott (1802–1889) had started to study Chinese scientific traditions.[1] They paid attention to the development of science in China, as well as the relationship between science and politics, economy and society. Their works exerted an influence upon Chinese scholars.

It wasn't until the twentieth century, under the influence of modern learning, that the significant transition of historiography occurred in China. The history of science began to capture the attention of Chinese scholars, and gradually become a "specialized subject." Some Chinese scholars, especially those who were not only proficient in science but also fond of history, became especially interested in

[1] See, for example, Iwo Amelung. *Sinology and the History of Science—Some examples from Frankfurt University*. Presented at the Institute for the History of Natural Sciences, CAS, on September 18, 2012: (http://english.ihns.cas.cn/ns/am/201209/t20120917_91084.html), accessed 16 September 2015.

studying the history of science. As a teenager, Yan Li (1892–1963) read *Biographies of Astronomers and Mathematicians*, but was not satisfied with its content and organization. Later, when he noticed that some foreigners mentioned Chinese mathematics in their writings, he sighed that "traditional Chinese knowledge will be over" (Li 1917). Therefore, in his twenties, he tried to write *A History of Chinese Mathematics*. Baocong Qian (1892–1974) also read ancient Chinese books on mathematics in his twenties, so took to studying the history of Chinese mathematics in depth, writing scholarly works on the subject (Qian 1935).

At the same time, foreign historians of science had a clear impact on diverting the attention of Chinese scholars towards science in history. Co-ching Chu (1890–1974) went on to study at Harvard University in 1910, where he was influenced by George Sarton (1884–1956). He began to publish his papers on the history of science in English in 1918 (Guo 2008). After returning to China, he continued writing articles on the history of science, such as *The Reason Why Experimental Science Was Not Developed in Ancient China* (1935). Some of Sarton's works also came to be translated into Chinese, and were accepted by Chinese historians and scientists. In 1941, Zishui Mao (1893–1988) published an article introducing Sarton's *The History of Science and the New Humanism*. He strongly advocated setting up departments of history of science in universities. Having read Sarton's *The History of Science and the New Humanism*, Baocong Qian published a book review on it in 1947.

In the 1950s, the Communist Party's ideology in the context of the Cold War had am impact on almost all Chinese scholars on the mainland, including scientists and historians of science. Patriotism caused people to pay more attention to the study of scientific discoveries and inventions in China's past. In the early phase of the Korean War, *The People's Daily* published a series of articles on scientific achievements in ancient China, which met the social needs of "advocating patriotic education and criticizing blind faith in foreign things." Co-ching Chu, a former vice president of the Chinese Academy of Sciences, became the most important advocate of the history of science and technology. He wrote articles that emphasized the great contribution of pre-modern Chinese astronomy and meteorology to the world. In August 1954, as one of the leading scientists in China, he published an article entitled "Why Study the History of China's Ancient Science," in which he said:

> Thirty years ago, a bourgeois idealist philosopher Alfred North Whitehead (1861–1947) made the following statement in terms of the contribution that ancient Chinese art, literature, philosophy and natural sciences had made to the history of world human culture: "There is no reason to doubt the intrinsic capacity of individual Chinamen for the pursuit of science. And yet Chinese science is

> practically negligible."[2] Whitehead's subjective and biased conclusion is obviously untrue. This question can only be answered after studying the specific facts in history […] As we know our ancient history has left rich heritage in natural sciences, therefore, they should be categorized, comprehensively analyzed and summarized […]
>
> Scientific materials in history can not only boost economic construction, but also facilitate basic theoretical research on the basic disciplines […]
>
> The important issue is not which happened first, but the influence of those invented or transmitted during cultural exchange on the people. […]
>
> History of natural sciences is a part of the cultural history. Works of world history published in capitalist countries were imbued with the fascist ideology of "western nations are the best nations," while Chinese culture was seldom mentioned. Ancient history of Chinese natural sciences resembles a barren countryside but filled with treasures. It is the responsibility of historians and natural scientists to discover the treasures, whether for patriotism sake or the sake of internationalism. (Chu 1954, 3)

Generally, the first generation of Chinese historians of science, most of whom followed a career path from being a scientist to becoming a historian, wanted in the first instance to discover the science that existed in pre-modern China. At least some of them argued for Chinese contributions to science and invention in order to overcome or refute Eurocentrism or the centrism of Western culture (Zhang 2001). In their opinion, Joseph Needham (1900–1995) was an important ally in this regard.

The Professionalization and Institutionalization of Research on the History of Science

The professionalization and institutionalization of research on history of science was carried out by national scientific institutions throughout the 1950s. In 1952, entrusted by the president of the Chinese Academy of Sciences (CAS) Moruo Guo (1982–1978), Co-ching Chu called together some scientists to discuss research in the fields of history of science and technology (Xi 2002). In 1954, CAS set up

[2] Whitehead's original text, see Whitehead (1926).

the Research Committee for the History of Natural Sciences in China, which consisted of seventeen scholars, and a research group for the history of natural sciences at the Second Institute of History. In the same year, the Chinese Academy of Agricultural Sciences set up the Research Division of Chinese Agricultural Heritage. In February 1956, Co-ching Chu convened another meeting of scholars to discuss how to promote studies in the history of science. In July of the same year, the First Conference on the History of Science in China took place in Beijing, at which scholars discussed the national plan for research on history of science that belonged to the Long-Term Program for Developing Sciences and Technology Between 1956 and 1967, launched by the State Council. According to the Long-Term Program, CAS, Academy of the Traditional Chinese Medicine, Chinese Academy of Hydraulics, Chinese Academy of Building Research and a few universities established research institutions that conducted professional research on the history of science, technology and medicine.

In September 1956, Co-ching Chu led a three-member Chinese delegation to the eighth International Congress for the History of Science in Italy. On September 9, the People's Republic of China was accepted as a member of the International Union of History and Philosophy of Science. Through Chu's efforts, CAS established the Research Division of History of Chinese Natural Sciences on 1 January 1957, where Yan Li, Baocong Qian and their colleagues became professional historians of science and started to train graduate students. The Research Division, which was headed by Yan Li, produced the first issue of the journal Annual of History of Science in 1958. Unfortunately, research on the history of science all but stopped for a decade after 1966, during the Cultural Revolution. In 1975, the Research Division was renamed the Institute for the History of Natural Sciences (IHNS), and since then it has played a flagship role in the field of history of science in China (Xi 1997).

With the commencement of the policy of reform and opening up to the world in 1978, research on the history of science was quickly revived. The Chinese required an understanding not only of the pre-modern scientific traditions, but also the history of modern science and technology in the West. Historians of science from CAS were invited to give the leaders of the central government a lecture on the modern history of science and technology in 1980. The politicians were very interested in the key roles played by science and technology in economic and social modernization. In such an environment, many scholars and scientists were attracted to history and philosophy of science, resulting in the creation of the Chinese Society for the History of Science and Technology (CSHST) in 1980. Twenty-five years later, the IHNS and CSHST succeeded in hosting the 22nd International Congress of History of Science in 2005.

Since the 1990s, the institutionalization of teaching and research of the history of science has been developing quickly in Chinese universities. In 1999, for example, Shanghai Jiao Tong University established the Department of History and Philosophy of Science in collaboration with the IHNS, while the University of Science and Technology of China set up the Department for the History of Science and Scientific Archaeology. Not long afterwards, Inner Mongolia Normal University established the Department of the History of Science and Scientific Management.

Methodology in the Field of the History of Science in China

Qichao Liang (1873–1929), one of the most important Chinese scholars of early modern times, wrote in his article "The New History" (first published in 1902):

> History is the most extensive and essential branch of knowledge. It is the mirror to the citizen, and is the source of patriotism of a nation. Now, a half of the reason why nationalism is well developed in contemporary Europe and why European countries are making progress in civilization, belongs to the contribution of the study of history.
>
> If now we want to advocate nationalism and let our 400 million compatriots gain a strong standing on this world, in which the superior wins and the inferior loses, national history should be a subject everyone must pursue, no matter they be old or young, male or female, intelligent or unintelligent, worthy or unworthy. (Liang 1936)

In the same article, Liang says: "History is a branch of knowledge to narrate progressive development." Yan Li, the historian of science, expressed a similar social Darwinist opinion in 1930: "History is a branch of learning for research on the progressive evolution of people, and the history of mathematics is a branch of learning for research on the progressive evolution of mathematics" (Li 1931, 1).

The first generation of Chinese historians of science received a modern science and technology education, that is, they were trained in a discipline of science or technology. They approached the subject from the perspective of modern science, beginning their research on the history of the field with which they were familiar, in accordance with modern discipline criteria. They selected and analyzed historical sources and archaeological finds, and revealed scientific discoveries or technological inventions in order to construct the so-called history of ancient "disciplines." They spent a great deal of energy in solving the problem of what existed historically in the field of science and technology? They constructed a research

framework or criteria on the basis of Eurocentric modern sciences, yet they argued in favor of Chinese culture, reconstructing knowledge in ancient China to disprove Eurocentrism.

Some advocates hoped that historians would focus not simply on science and technology, but also their social context. In the foreword to the first issue of *Annual of History of Science*, Co-ching Chu writes: "The mission of historians of science is not only to record scientific achievements of a particular era, but also to point out the cause and effect, backdrop and the reasons why such an achievement appeared in some society during some era rather than others" (Chu 1958). In fact, the first generation of Chinese historians of science did not succeed in accomplishing this mission. Joseph Needham made comparatively more contributions in this aspect.

In the 1980s, Chinese scholars, and even the public, were very interested in the so-called "Needham Puzzle" of why modern science did not originate in China (or India) but only in Europe? This puzzle encouraged Chinese historians of science to make further studies of Chinese traditional science as well as the origins and development of modern science in the West. Western scholars' works on history of science and technology, philosophy of science and sociology of science began to be translated into Chinese.

The "scientific revolutionist" Thomas S. Kuhn (1922–1996) came to the attention of Chinese scholars in the 1980s (Wu 2012). *The Structure of Scientific Revolutions* was translated into Chinese and published in 1980. This book, as well as his *The Essential Tension*, quickly made Kuhn well known among Chinese scholars, resulting in keen discussions about the concept of scientific revolutions. Underlying this phenomenon lay the desire to achieve modernization through the development of science and technology, and the possible opportunity for a new scientific revolution. In 1998, CAS encouraged historians of science to start the study of science policy and strategy from historical perspectives. Some historians of science have also become interested in scientific culture or the relationship between science and humanities since the early twenty-first century.

Since the end of the 1990s, Chinese historians of science have been thinking about and testing how to break the research model of "achievement-identifying and -describing" and how to reconstruct the history of science in context in order to avoid destroying the original structure of pre-modern scientific knowledge, and to cast off the Eurocentrist framework (Zhang 2007). They place great importance on such questions as: How was scientific knowledge created and transmitted in the Chinese cultural context? How did Chinese knowledge interact with the scientific knowledge transmitted into China from other cultural traditions, such as from Europe? Chinese historians are also devising new questions about modern science. For example, some of them are making a study of the relationship

between scientific revolutions, industrial revolutions and the modernization of nations.

Conclusions

In the early twentieth century, the modern era of the history of science in China began, and Chinese scholars started to study the history of science under the influence of Western missionaries, Sinologists and pioneering historians of science, such as George Sarton. In the 1950s, promoted by Co-ching Chu and his allies, such national scientific institutions as the Chinese Academy of Sciences carried out the professionalization and institutionalization of research on the history of science. Influenced by government ideology, especially patriotism, Chinese historians followed the classifying framework of Eurocentric modern science to sift through and study China's scientific heritage. They emphasized its pre-modern, especially ancient, achievements to disprove Eurocentrism, so that a historiographical model of "achievement-describing" came into being. Since the 1980s, Chinese historians and the public became more and more interested in so-called "Scientific Revolutions" and their impact on modernization.

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