

# Translating History of Science Books into Chinese: Why? Which Ones? How?

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**Abstract:** To understand the qualities of Western civilization and its modernity, to think about the future of humanity, and to understand how modern science was gestated in Western civilization: in the author's view, these are the most important reasons to do history of science research in China. Study of the history of Western science in China is in its infancy, and there are great deficiencies leading to its lagging behind the international world of scholarship. In this situation, the most urgent task is to translate as soon as possible a batch of high quality and classic books in the field, to establish a basic academic platform for research in the history of science, and, once that foundation has been laid, to deepen our researches further. Given these considerations, this essay discusses why the author translates works on the history of science, how he chooses books for translation, and his experiences as a translator.

## WHY I TRANSLATE WORKS ON THE HISTORY OF SCIENCE

The rise of modern science is the most important development in the modern history of the world, and it plays a critical role in shaping human civilization. Modern people's emotions and ideas, and various social phenomena in modern society, are directly related to the development of science. Everyone has been part of the torrent of modernization, though sometimes without being aware of it. There is no doubt that science and technology have played a key role in shaping modern civilization and modernity in general. In the history of Western thought, the births of many new ideas have a direct or parallel relationship with changes in science. It is fair to say that all the humanities and social sciences established in later ages have two basic motives: either to support science or to defy science. In many people's eyes, science has become the central axis of history, the unique and most important human achievement—even the only embodiment of human progress. Without a thorough understanding of the development of science and its ideological background, it is difficult to recognize the motivating force behind the development of human thought and to understand the roots of modernity.

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The Chinese equivalent for the word “science” was coined by the Japanese scholar Nishi Amane in 1874 to translate the French word “science” and was gradually adopted by Chinese at a time of learning from the West. In the context of modern Chinese, it refers mainly to natural science. For China, therefore, “science” is something foreign, rooted at the core of Western cultural traditions. The introduction of modern science was also at the core of China’s unprecedented change at the time. It disrupted the basic framework of Chinese academic traditions and completely changed the appearance of Chinese ideology and culture, as well as delivering a massive shock to its political, economic, cultural, and social life, leading to the complete reconstruction of Chinese civilization. Nowadays, science, as a new kind of “ideology” and “world-view,” has been integrated into the mainstream of Chinese culture.

In the course of China’s modernization, the evaluation of traditional Chinese culture has always been a very important issue. The enlightenment thinkers of the early twentieth century generally believed that traditional culture was useless, that it hindered the development of modern civilization and thus should be completely abandoned. They thought traditional culture was useless mainly because there was no scientific spirit in it. In the 1930s, the British biochemist Joseph Needham put forward the question of why modern science did not develop in China—given that ancient China had advanced science and technology. The question suited the taste of some Chinese patriots, suggesting as it did that China had indeed developed science—which then later declined, for a variety of reasons. In the 1990s, a new generation of historians and philosophers of science began to question Needham’s presuppositions, particularly as to whether there was science in ancient China, and started heated debates. Some thought that the “Needham question” was in a sense a pseudo-question; after all, science in the modern Western sense didn’t appear in other early civilizations either, so it was entirely normal that it wasn’t born in China. In their view, we need to ask “Why?” only when things are abnormal. Thus it makes more sense to ask why modern science was born in Western civilization, and especially how it was able to maintain a stable and sustained development, without showing signs of decline, ever after. When it comes to understanding, the Chinese people’s biggest problem is a misconception: they don’t entirely realize the uniqueness of science. We often think of science as a universal human capacity—a technological capacity or a developed intelligence. If we fail to recognize the uniqueness of science, it is easy to believe—wrongly—that ancient China had science too. Since ancient Chinese people were humans like all of us, this thinking goes, of course they had technology and intelligence, and so of course they had science, too. This mistaken view of science prevents us from reflecting on our own culture.

Tracing things back to their sources is the basic task of historical research, and studying the origin of modern Western science is the basic task of studying the history of Western science. In my opinion, to understand the qualities of Western civilization and its modernity, to think about the future of humanity, and to understand how modern science was gestated in Western civilization is the urgent need of contemporary China—and also the most significant reason to do history of science research in China. For a long time, we have lacked a deep understanding of science as an integral part of Western culture, and our views of science are too simple. For example, we are still unaware of the role of Christian theology in furthering the rise of modern science; we mistakenly assume that the aim of science from the start was to look for objective “natural law”; and so on. In addition, the history of science is a subdiscipline of the “nature sciences” in China’s disciplinary classification system, and this makes it difficult for our discipline to play the role of linking science with the humanities.

In recent decades, a foundation has been laid within Chinese academic circles for reflection in a modern sense on Western politics, society, culture, and ethics, but reflection from the perspective of Western science is seriously lagging. A trend of learning from the West began toward the end of the Ming dynasty, and Western scientific and technological works began to

be translated into Chinese. Since the 1980s, a number of Western traditional scientific and philosophical works have been translated into Chinese. However, in this process, a key link has been lost—namely, in-depth understanding of and reflection on the origin of Western science. Chinese scholars did not begin to investigate the gestation and development of science in the context of Western civilization with conscious attention until the end of the twentieth century. Then they started to translate works on the history of Western scientific thought, which were already abundant. However, study of the history of Western science in China has only just started, and there are great deficiencies, both inborn and acquired, leading to its lagging behind from an international perspective.

In any age, the revival of an ideological field begins with the introduction and, if necessary, the translation of classic works. Given that academic research on the history of science has been undertaken in the West for more than a hundred years, our best approach is to sit down and learn what it has to offer. In the Chinese book market, original research and translated works on the history of Western science are very scarce indeed, and excellent ones are rarer still. This stands in strong contrast to the abundance of literature on the history of Western science available worldwide. Given this situation, the most urgent task is to translate a batch of high quality and classic books in the field as quickly as possible, to expand our horizon as much as we can, to establish a basic academic platform for research in the history of science, and, once that foundation has been laid, to deepen our researches further.

My efforts in translating works in the history of science serve this cause; we might say that they participate in a deepening and continuation of the movement of learning from the West, which has gone on for several centuries now but is far from over. As far as the history of Western science is concerned, it can be said that the vision and level of research that most domestic scholars are likely to achieve depend largely on the level of Chinese translation. Talent in history of science translation is very scarce, and one reason is the interdisciplinary character of the field. The translator needs to have some background in science, philosophy, religion, and history, and the work of translation also involves facility in Greek, Latin, German, French, Italian, and other languages—all of which requires the investment of a lot of time and energy. Another reason is that academic translation is not only poorly paid; such work is not regarded as an important academic contribution in Chinese universities and research institutions and is not helpful for professional promotion. So translators have to work out of their own passion and their own dedication.

#### MY SELECTION OF BOOKS FOR TRANSLATION

My translations of books on the history of science have been from English, or on occasion from German, into Chinese, and they have mainly covered the relationship between science, philosophy, and religion, focusing especially on the scientific revolution and the origin of modern science. So far I have independently edited and translated works for three series: the “Origins and Development of Science” series for Hunan Publishing House of Science and Technology; and the “History of Science” and the “World Classic Popular Science” series for Commercial Press in Beijing. Based on my understanding of the value of the history of science, as specified above, my selection of translated works focuses on the following aspects (which are to be regarded not as mutually exclusive but as interconnected).

1. Books that put scientific phenomena in the context of Western civilization and that explore, from the perspective of the history of thought and ideas, changes in worldview and the way in which those changes reflected the relationship between humans, God, and nature, thus revealing the philosophical, religious, cultural, and other ideological roots of science.

Books that I have translated in this category include Eduard Jan Dijksterhuis, *The Mechanization of the World Picture: From Pythagoras to Newton*; Alexandre Koyré, *From the Closed*

*World to the Infinite Universe*; Koyré, *Newtonian Studies*; Edward Grant, *The Foundations of Modern Science in the Middle Ages*; I. Bernard Cohen, *The Birth of a New Physics*; I. B. Cohen, *Interactions: Some Contacts between the Natural Sciences and the Social Sciences*; H. Floris Cohen, *The Scientific Revolution: A Historiographical Inquiry*; H. F. Cohen, *The Rise of Modern Science Explained: A Comparative History*; David Lindberg, *The Beginnings of Western Science*; Herbert Butterfield, *The Origins of Modern Science*; Lawrence M. Principe, *The Scientific Revolution: A Very Short Introduction*; Michael Allen Gillespie, *The Theological Origins of Modernity*; Edwin Arthur Burt, *The Metaphysical Foundations of Modern Physical Science*; Richard S. Westfall, *The Construction of Modern Science*; Margaret J. Osler, *Reconfiguring the World: Nature, God, and Human Understanding from the Middle Ages to Early Modern Europe*; David L. Wagner, ed., *The Seven Liberal Arts in the Middle Ages*; and Jacob Klein, *Lectures and Essays*.

2. Books that focus on the relationship between science and the ultimate meaning and moral values of human beings. In premodern times, thinking about the meaning and value of life was usually related to thinking about the nature of the universe. Later, however, the scientific domain gradually separated from the moral and religious domains. Research on how the separation process took place will certainly inspire thinking on various problems in our modern times.

Books that I have translated in this category include Peter Harrison, *The Territories of Science and Religion*; and Harrison, *The Bible, Protestantism, and the Rise of Natural Science*.

3. Books that focus on introspection regarding and criticism of science and technology and modern industrial civilization. In Western history, science and technology were not only admired and promoted; understanding of and caution with regard to their defects have been present throughout the development of Western thought. In China, however, people have been mostly ignorant of this long tradition. Consequently, these books have great value for Chinese readers.

Books that I have translated in this category include Pierre Hadot, *The Veil of Isis*; and Karsten Harries, *Infinity and Perspective*.

4. Books that focus on the esoteric tradition. This field, complicated as it is, is generally similar to the Chinese art of divination or mysticism, which includes magic, witchcraft, alchemy, astrology, gnosticism, the hermetic tradition, and much more. Its specifics are nevertheless very alien to Chinese. As a matter of fact, the tradition of esotericism is as important as the traditions of “reason” and “faith” in Western ideology and culture, and it is closely related to the tradition of science and technology. Without understanding this tradition, it is impossible for us really to understand Western science, technology, religion, literature, and art.

Books that I have translated in this category include Wouter Hanegraaff, *Western Esotericism: A Guide for the Perplexed*; Lawrence M. Principe, *The Secrets of Alchemy*; and Aldous Huxley, *The Perennial Philosophy*.

5. Books that promote understanding of and reflection on Chinese culture through the study of the history of Western science. From a certain point of view, the study of the history of scientific thought in China has just begun, and the thought and philosophy behind science and technology themselves in China deserve further attention. In what sense we can talk about, and use, concepts like “science,” “technology,” “religion,” and “nature,” which were borrowed from the West, in the Chinese context needs further discussion and definition. Only by referring to each other can Eastern and Western culture see their respective advantages and disadvantages more clearly. Only by comparing Chinese and Western science and technology, as well as the civilizations to which they belong, by means of the principle of “seeking for differences while preserving similarities” rather than that of “seeking for similarities while preserving differences” can we learn to understand the respective characteristics of China and Western countries more completely.

Books that I have translated in this category include Joseph Needham, *The Grand Titration*; and Carl G. Jung and Richard Wilhelm, *Das Geheimnis der goldenen Blüte*. For me, the ulti-

mate purpose of studying the West is to understand Chinese culture better. By comparing the two civilizations, I hope to unravel the threads of the Chinese traditional cultural inheritance that have lasted for millennia and thus to identify the “core principles” or “firm foundations” for me and for the Chinese people.

6. Some classic scientific books.

Books of this sort that I have translated include Nicolaus Copernicus, *On the Revolutions of the Heavenly Spheres*; Johannes Kepler, *Harmonies of the World*; and Albert Einstein, *Über spezielle und allgemeine Relativitätstheorie*.

7. In addition, I have also translated some popular works.

Books in this category include Albert Einstein and Leopold Infeld, *Evolution of Physics*; Einstein, *Mein Weltbild*; Erwin Schrödinger, *What Is Life?*; Schrödinger, “*Nature and the Greeks*” and “*Science and Humanism*”; George Gamow, *One Two Three . . . Infinity*; Walter Isaacson, *Einstein, His Life and Universe*; Martin Davis, *Engines of Logic*; New Scientist, *The Origin of (Almost) Everything*; John Losee, *A Historical Introduction to the Philosophy of Science*; Thomas Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False*; Andrew Robinson, *Einstein: A Hundred Years of Relativity*; Frederic M. Wheelock, *Wheelock’s Latin*; and Robert C. Solomon, *The Big Questions: A Short Introduction to Philosophy*. The last of these books is still regarded as one of the best introductions to philosophy and is used as the textbook or the source of reference material for the examination for admission to master’s programs by many universities in China.

#### MY EXPERIENCES AS A TRANSLATOR

I shall now sum up my personal experiences as a translator in three points:

1. The most important thing in translation is to be earnest, careful, and responsible. Look up in dictionaries and on the Internet terminology that you do not understand, or ask the author or other experts, and do your best to understand and represent the original meaning as accurately as possible, all the while creating new expressions when necessary. For example, when translating *The Territories of Science and Religion*, *The Foundations of Modern Science in the Middle Ages*, and several other works, I discussed whole series of questions through nearly two hundred email exchanges with the authors—and sometimes even found some mistakes in the original books. I am very grateful that, despite their busy schedules, all these authors patiently answered my questions.
2. For a good piece of translation in the history of science, making full use of the expressive capacity of modern Chinese is as important as your professional knowledge. In my case, the time spent on proofreading and on polishing the draft version usually accounts for at least half the time spent on a book. For any given passage, there may be many people who can almost understand it, but there are not many who can express it in fluent and accurate Chinese. I believe in simplicity. Clarity, simplicity, and fluency are the most important criteria for translation of works in the history of science.
3. There are no shortcuts in translation. Every minute spent is reflected in the final translation. So I have had to race against time and sacrifice my other interests. When you feel unable to translate any more, you still have to tell yourself to stick to it. But the fun part is that translating a book not only teaches you a lot; a good translation also resonates with readers. When I see the reader benefiting from my translation, I feel that my hard work is rewarded.

The first book that I translated was *Newtonian Studies* by Alexandre Koyré (1892–1964), published in Chinese in 2003. Since then, I have been determined to pursue translation in the history of scientific thought as a career. As a representative scholar in the history of scientific thought, Koyré emphasized the key role of what he called the “mathematization of nature” in the process of the scientific revolution. Later I translated another book of his, *From the Closed World to the Infinite Universe*, and masterpieces by two other important intellectual historians of science, Edwin Arthur Burt (1892–1989) and Eduard Jan Dijksterhuis (1892–1965), who specialized in the study of the origin of modern science in the twentieth century: *The Metaphysical Foundations of Modern Physical Science* and *The Mechanization of the World Picture*. All these works of intellectual history of science hold that the decisive feature of modern science is the naturalization of mathematics, and this idea has exerted a great influence on the study of the history of science in the twentieth century. Before the translation of these works, Chinese scholars knew only about positivist historians of science such as George Sarton and about sociologists of science such as Robert K. Merton; they were scarcely aware of the existence of intellectual historians of science.

My experience in translating Dijksterhuis’s classic work, *The Mechanization of the World Picture*, left a deep impression on me. This book, which presents the origin of the mechanistic view of the world and the mathematical description of nature as its main story line, discusses in detail the development of mathematical scientific thought from ancient Greece to Newton’s time, a range of more than two thousand years, and analyzes various ideological contexts for the origins of classic physical science in depth. The book features very concise language and a compact structure. This makes it “dry” to read, and every single sentence deserves to be read carefully. It is thick, the material is difficult, and there are many long sentences, all of which made it hard to translate. Dutch is very tolerant of long sentences. The Chinese translator must break them into shorter sentences as much as possible and polish them according to Chinese language habits. Since I have no direct knowledge of Dutch and could not translate the book directly from the original text, I had to work from its English and German versions. Fortunately, Dutch is similar to German, and I can understand it with the help of my “Dutch to English” and “Dutch to Chinese” dictionaries. My method was first to complete a draft translation from the English version and then compare it word by word with the German version. If there was a clear discrepancy between the English version and the German version (and there are so many of them!), it was necessary to judge which translation is more accurate in comparison with the Dutch original. Dijksterhuis corresponded a lot with the book’s English translator, and he had a high opinion of the translation. But in fact, both the English and the German versions are faulty in some places. (The English translator also made a lot of changes to the original Dutch text.) In these cases, I sometimes added explanatory footnotes, and I sometimes translated directly according to the version I found more reasonable. All this took me nearly twice as long as the usual translation work.

The discussion of Western European medieval natural philosophy is one of the most wonderful parts of *The Mechanization of the World Picture*. Before my translation of this book and of Edward Grant’s *The Foundations of Modern Science in the Middle Ages* came out, there was almost no study of medieval natural philosophy in China. Medieval natural philosophers, such as Thomas Bradwardine, William Heytesbury, Richard Swineshead, Jean Buridan, Albert of Saxony, and Nicole Oresme, as well as key science historians who studied medieval natural philosophy, such as Anneliese Maier, were barely known in Chinese academic circles. In addition, *The Mechanization of the World Picture* doesn’t shy away from some tough issues. Many concepts addressed in the book were very strange to Chinese academic readers, such as *forma fluens* and *fluxus formae*, which were used to discuss the nature of movement in natural philosophy in the Middle Ages. Likewise, *latitudines formarum*, a key concept used to discuss the quantification of quality, or the im-



portant concept of *species* in Roger Bacon's optics, had never entered the field of vision of Chinese academics. For these concepts, I had to create new terms that would express their original meanings as accurately as possible.

For some key concepts, established mistranslations had to be firmly modified. For example, my translation of Copernicus's *On the Revolutions of the Heavenly Spheres* was the second Chinese version of this classic work. One of the key changes I made was replacing the earlier Chinese version of the title, which had been in use for decades, with a more accurate one, since the "orbs" of which Copernicus spoke are not the celestial bodies we know today but, rather, the transparent "celestial spheres" imagined by ancient astronomers to propel those bodies. Today, we do not recognize such spheres as actually existing, so we are inclined to take the term "orb" for granted and translate it as "celestial body." This mistranslation was not first made by Chinese translators, however. In the German translation by Carl Ludolf Menzer that was published in 1879, Copernicus's title was rendered as *Über die Kreisbewegungen der Weltkörper* ("Weltkörper" means "heavenly bodies"). The English translation published in the twentieth century initially made the same mistake—and then corrected it. The first English translation, by Charles Glenn Wallis, which was published in 1939, initially translated the title as *On the Revolutions of the Celestial Spheres* and then (when it was included as Volume 16 of "The Great Books of the Western World") changed it to *On the Revolutions of the Heavenly Spheres*. In 1978, Edward Rosen used *On the Revolutions of the Heavenly Spheres* as the title for his English translation. The title of the new German version published in the same year was *Vom Umschwung der himmlischen Kugelschalen*, thus correcting the mistake made by Menzer. In fact, the seemingly slight difference between "celestial sphere" and "heavenly body" reflects our historical attitude toward the evaluation of scientific theories and the theoretical depth we can achieve when we reflect on modern science.

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The account given above renders my understanding of, and experiences with, translating the history of science. Translation, essentially, is sharing. I am naturally fond of sharing, and I am keen to introduce others to what I think is good. About the specifics of day-to-day translation, I do not have much to say. Pressed to elaborate, I can only say that translation is a process in which practice makes perfect and persistence is important. I didn't—and don't—set specific goals for myself. I just hope to have as much free time as possible and to keep translating, one book after another. Translation is like walking. Each step costs only a little, but you can reach faraway places when you keep going. I am willing to devote my whole life to making my due contribution to China's future research on the history of science, as well as its intellectual and cultural construction.