Joseph Needham, a biochemist from the University of Cambridge, became fascinated with Chinese culture. His major work, *Science and Civilisation in China*, documents Chinese achievements in science, mathematics, technology, and medicine. Denounced in the West for supporting claims of Americans’ use of biological weapons in Manchuria, his continued work on *Science and Civilisation* brought renewed respect.

N oel Joseph Terence Montgomery Needham, known as Joseph Needham (Li Yuēsè in Chinese) was born 9 December 1900 in London, the son of a doctor father and a music-teacher mother. He was educated at the University of Cambridge in England, receiving a bachelor’s degree in 1921, a master’s degree in January 1925 and a doctorate in October 1925. After graduation, he specialized in biochemistry at Gonville and Caius College, Cambridge. By 1937, when three Chinese scholars, Lu Guizhen, who became his mistress and lifelong companion, Wang Ying Lai, and Chen Shi Chang arrived in England to study with Needham, he was a distinguished embryologist.

**Needham in China**

Needham’s interest in China was piqued by the three visiting scholars, so he started learning Mandarin Chinese from one of the young women, Lu Guizhen, who became his mistress and lifelong companion. During World War II, Needham was sent to China to work with Chinese scientists escaping the Japanese invasion. The scholars were attempting to re-establish their universities away from the invading forces, and Needham arrived to aid in their escape and to help preserve archives and artifacts that belonged to the universities. Needham traveled on eleven expeditions throughout China and had many remarkable adventures along the way. During his first stay in China, Needham was a fellow of both the Royal Society and British Academy, and the director of the Sino-British Science Cooperation Office in Chongqing (1942–1946). During this time he wrote his first publication, *Chinese Science*, which combined the two subjects which engrossed him throughout his life: Chinese civilization and science.

In 1946 Needham left China and took up a position as the chair of the Natural Sciences division at the United Nations Educational, Scientific, and Cultural Organization (UNESCO)—a division that had not previously existed, but with Needham’s insistence was initiated in Paris that same year. After two years in this position he returned to England to teach and begin work on his *Science and Civilisation in China*, one of the most ambitious historical projects of the twentieth century. It was to be a complete exploration of China’s scientific and technological past. At first, Needham thought that his survey might be no more than eight hundred pages long, but he later expanded the work to seven volumes embracing all aspects of Chinese physics, mathematics, chemistry, astronomy, agriculture, and engineering. As he investigated each tradition, Needham uncovered more and more evidence.
of Chinese contributions in these fields. Joined in his effort by many leading Chinese, European, and American experts, Science and Civilisation in China includes seventeen volumes with an additional dozen in preparation under the supervision of the Publications Board of the Needham Research Institute. Other important works by Needham and his collaborators include The Grand Titration (1969), which explores the reasons why the Chinese, whose achievements in science and technology were the most advanced the world from the first through the fifteen centuries, were overtaken by Europeans in the Renaissance, and Heavenly Clockwork (1960), a detailed and fully illustrated account of astronomical and mechanical clocks in medieval China.

Needham’s Grand Question

The encyclopedic scale of Science and Civilisation in China is explained by the scale of the central question Needham sought to address in his work: why, despite China’s early scientific and technological sophistication, the scientific and industrial revolutions were experienced first in Europe, and not in China. Needham’s answer was to look at the imperial bureaucracy. This official elite, he believed, might have initially supported technological innovation, but later stifled curiosity and prevented the widespread application of new ideas and techniques in areas outside of elite interests.

Needham’s Worldview

Needham’s reputation is marred by criticisms of his politics and his work. He supported the Chinese revolution in the late 1940s, and after 1949 became sympathetic to the Communist government. During the Korean War, he supported Chinese claims that Americans used biological warfare against the Communists, a claim that has never been proven. He was blacklisted by the United States government until the 1970s.

Outside Cambridge, Joseph Needham’s interest in the history of Chinese science also stimulated many Asian scholars’ exploration and documentation of their own scientific past. The founding of many prominent research institutes and museums in China, Japan, and Korea devoted to Asian science, technology, and medicine are in part due to Needham’s enthusiasm and encouragement.

Joseph Needham died at the age of ninety-four at his home in Cambridge. In 2008, the University of
Cambridge chair of Chinese was renamed the Joseph Needham Professorship of Chinese History, Science, and Civilisation.

Terence RUSSELL

Further Reading


