

## Joseph Needham (1900–1995)



Joseph Needham was born on December 9, 1900, in London England. He was the only child of a Harley Street physician and a mother who was musically talented; both were of Scottish origin. After attending Oundle School, he studied at Gonville and Caius College, Cambridge, where he received his bachelor's degree in biochemistry in June 1921. In 1924 he was awarded the Ph.D. in biochemistry. In that same year, he became a fellow of Caius College, which was to remain his academic home for the rest of his life. He was appointed University Demonstrator in Biochemistry in 1928, Sir William Dunn Reader in Biochemistry in 1933, and was named Master at Caius College, in 1966, a post he held for a decade.

“For most of the first half of his life Needham was engaged in establishing himself as a chemical embryologist (1).” “When he studied medicine and biochemistry at Cambridge, he combined this scientific training with an unflagging interest in religion, philosophy and humanist scholarship. He pursued his biochemical research at F. Gowland Hopkins' laboratory. In 1931 he published his three-volume *Chemical Embryology*, with an extensive introduction on the history of embryology—his first contribution to the history of science (2).” This was followed by *History of Embryology* (1934); and *Biology and Morphogenesis* (1942).

“His interest in Chinese culture was initiated in 1937, at age 37, by an encounter with three visiting Chinese scientists at Cambridge. One of them was ... Lu Gwei-Djen, the daughter of a pharmacist.... She was deeply interested in traditional Chinese science. This time was a turning point in Needham's life. In their conversations, she wondered how it was that China, although quite good in the past in scientific matters, had been so much overtaken by the West during the last centuries. This would become Joseph Needham's Grand Question. In the same time, Needham fell in love with China. He read about Chinese culture and philosophy, he started in 1938 to learn Chinese.... By about 1939, he and his Chinese friends had conceived the project to write a large compendium of the history of Chinese science, technology and medicine” which became the Science and Civilization in China project (SCC) (3).

“The decisive phase in his scholarly career covered the years 1942–1946 which he spent in China as director of the Sino-British Science Cooperation Office, that had been set up to encourage industrial and scientific activities in China during the war. He traveled all over the unoccupied parts of China, had close contacts with many leading Chinese intellectuals, and acquired an extensive and many-sided knowledge of the land and the people (2).”

“He learned about Chinese culture and scientific history. It became clear to him that movable type printing, the magnetic compass, and gunpowder weapons had been invented there before appearing in Europe. He published with his wife [Dorothy Moyle] a first book about these topics in 1945, entitled *Chinese Science*. During this stay, he met the historian Wang Ling, who was to become one of his closest collaborators on the SCC project (3).”

“After the war the scientist-turned-sinophile spent some years at UNESCO which still was in its formative stage; in fact, it was Needham who with great perseverance (pleading his cause in Washington, Moscow, and elsewhere) persuaded the authorities to include science in the assignment of the new organization. After having been instrumental in putting science into

UNESCO, it was only fitting that he became the first head of the UNESCO Science Division, located in Paris, France. But at the same time he was already busy collecting the materials for, and writing the first volume of, his *Science and Civilization in China* (2)."

After returning to Cambridge in 1948, he devoted his whole energy to the history of Chinese science, although he still taught biochemistry. Needham embarked in earnest on the SCC project in 1954. Lu Gwei-Djen joined him in 1957 and became his closest collaborator. Needham was freed of his obligations to teach biochemistry in 1966, when he became Master of Caius College.

"His huge SCC project turned out volume after volume, the enterprise growing in size and complexity as ever new topics were encountered. Seven volumes had been planned, but SCC IV already had to be split up and published in three large volumes. Working in cramped quarters filled with an ever increasing mass of materials, with Lu Gwei-Djen and Wang Ling, and for the later volumes with outstanding specialists called in from outside, Needham deployed his remarkable talents as a 'science manager,' methodically working his way through one of the most complex projects ever undertaken in Chinese studies. SCC has been universally acclaimed as a work of momentous importance, providing, for the first time, a reliable and detailed inventory of largely unexplored dimensions of Chinese civilization. As a mine of factual information, SCC will undoubtedly be of lasting value (2)."

During his career, Needham published over 200 scientific papers and wrote or edited more than 40 books, including: *Order and Life* (1968); *The Grand Titration, Science and Society in East and West* (1969); *Science, Religion, and Reality* (1970); *La Science Chinoise et l'Occident* (1977); *Within the Four Seas: The Dialogue of East and West* (1979); *Celestial Lancets: A History and Rationale of Acupuncture and Moxa* (with Lu Gwei-Djen) (1980); *Science in Traditional China* (1982); *The Genius of China: 3,000 Years of Science, Discovery and Invention* (with Robert K. G. Temple) (1986); *The Hall of Heavenly Records : Korean Astronomical Instruments and Clocks, 1380-1780* (with Lu Gwei-Djen, John H. Combridge, and John S. Major) (1986); and *Wissenschaftlicher Universalismus* (with Tilman Spengler) (1993). The first volume of his masterpiece, *Science and Civilization in China*, was published in 1954 and by 1990 sixteen volumes had appeared. As of 2005, twenty-three volumes have been published, and five more are still in progress. Most of the earlier volumes of *Science and Civilization in China* were written in their entirety by Needham himself.

"In recent years the SCC project has finally acquired a suitable institutional basis and independent status through the establishment of the Needham Institute at Cambridge. It must have been a source of satisfaction to Joseph Needham that, at last, facilities were created for carrying on the work and for housing the splendid library; it may also have reconciled him to the prospect that he would not live to see the completion of the work that he started more than forty years ago. His passing has left a gap that cannot be filled, for he was a phenomenon that does not repeat itself. The combination of terms that figure in the title of his *magnum opus* may well serve to characterize the man himself: Joseph Needham was, in the highest and truest sense of the words, a man of Science and a man of Civilization (2)."

Needham received numerous distinctions, including the George Sarton Medal of the History of Science Society in 1968, and the Bernal Prize of the Society for the Social Studies of Science in 1984. In 1979 Joseph Needham received the Dexter Award for his lifetime of contributions to the history of science and in particular for his multi-volume masterpiece *Science and Civilization in China*.

Suffering increasingly from Parkinson's disease, Joseph Needham passed peacefully at his home in Cambridge on March 24 1995 at the age of ninety-four.

## Sources

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3. Anonymous, "Joseph Needham (1900-1995)," <http://www.riseofthewest.net/thinkers/needham02.htm>.

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