

Joseph Needham: 20th Century Renaissance Man. Profile. By Maurice Goldsmith, UNESCO Publishing, 1996.

Joseph Needham was an unusually talented 'polymath' scientist who combined scientific curiosity with Christian humanism. He was gifted with poetic romanticism mingled with political radicalism. In the first half of the 20th century, Noel Joseph Terence Montgomery Needham belonged to the radical intellectual movement and was part of an 'invisible college'.

President and master of Gonville and Caius College, Cambridge, and OM, FRS, and FBA, Needham was the recipient of innumerable national and international honours. It is of historical interest to know that he was also responsible for the inclusion of 'S' for Science in UNESCO.

And at the end of the World War II, when Julian Huxley was invited to organize the UNESCO, he asked Needham to assist him in the gigantic task of planning and executing the first global organization of its kind under the Charter of the United Nations. Needham was the author of many scientific works – books and articles – concerning morphology and biochemistry that created synergism of science and religion, and of political activism with academic social responsibility. In his search for scientific universalism he became the historian of Chinese science and technology. He produced and edited voluminous investigative and interpretative studies of scientific principles belonging to the mysterious land of the Orient.

But Needham was also a man of spiritual commitment who endeavoured to create the Kingdom of God on this Earth and in his entire awakened years (1900–1995) he loved divinity in humankind beyond consideration of nation, race, gender and religion. He was, however, a Christian by faith but his respect for religion was more philosophical and less theological. He was a regular visitor to the Thaxted Church where he often delivered Sermons. Topics of his lecture from the pulpit included Ethics of Economics and Science, Against 'Holy War', Ideas of the 'Just War', Religion and Superstition, and Shintoism, Japanese Confucianism and the Cosmic Christ. He spoke about the 'Place of Women in the Church' long before we

learnt about the LIB and political correctness. Needham was also concerned with the eternal struggle of poverty and often spoke about 'Greed and Capitalism'. He spoke about the need to create an 'International Language and Science'. He worked to liberate Christianity from its age-old blind faith and make the Church and Faith the vector of Scientific Knowledge (Truth). But to achieve a modern scientific civilization, Needham recognized social justice as the prime condition and for this he committed himself and his colleagues to social responsibility.

Maurice Goldsmith has described Needham as 'the bridge builder', and truly Joseph as a scientist observed similarities and dissimilarities and tried to perceive Unity in Diversities. He recognized many interested scientific principles of chemistry and physics in the ancient writings of China. And even if we cannot say why the technological-industrial revolution took place in Europe in the 17th century, there is no scientific reason to believe that any race or people could be devoid of scientific acumen. The historical studies of Chinese science discovered, translated and published by Joseph Needham contributed immensely in creating awareness about the historical contribution to world civilization by China.

In search of scientific universality Needham travelled across the oceans and flew over the fighting forces of East and West, and drudged through the marshes and backwaters of China. He crossed the traditional racial and linguistics borders to befriend with his Chinese colleagues and students; and learned the language of distant people and after the death of his first wife Dorothy, eventually married the Chinese scientist, Dr Lu Gwei-Djen, in 1989, who became Needham's collaborator–editor of the voluminous *History of Chinese Science, Civilization and Society*.

The book provides interesting details of this historic association of the aristocratic-turned Christian socialist scientist and his scientific collaborative work with the Chinese scientist, Gwei-Djen whom Needham came to know for the first time in 1937, when the young Chinese student worked under Dr (Mrs) Dorothy Needham. In the pursuit of science, the three were united as in a common cause. The three were attracted to each other with scientific-spiritual devo-

tion without causing acrimonous damage to each other or to scientific research. Bound by love and respect for each other they proved the model of social harmony. Joseph had remained married to Dorothy for sixty-three years (1924–87), but his second wife died within two years of their marriage.

The book under review describes the foundational influence of Joseph's bourgeois class-conscious English father who was a medicalman by profession. During his younger years, Joseph often attended surgical operation theatre where the senior Needham was an anaesthetist at large military hospitals in London. But surgery held no lasting intellectual interest for Joseph Needham. The author describes his father's influence in some detail but in this age of politically correctness he has ignored the role of his mother. In fact the two main female characters – Needham's mother and his first wife – receive no due consideration in this otherwise extremely interesting and informative study.

This Profile of Needham volume contains a chapter entitled 'Egg and Embryo' in which the author discusses Needham's scientific contribution to pure research in early embryology. In the 1930s, he was seriously involved in developing the technique of embryological micro-operations in the laboratory of Albert Brachet in Brussels. Along with Waddington and his first wife Dorothy, he worked at the Institute of Otto Mangold in Berlin, and the research done during this period was from a theoretical point of view of historical significance for regions of biology even outside embryology, wherever stimulus-response reactions were concerned.

In *Biochemistry and Morphogenesis*, (published in 1942) Needham, Waddington and others explained that a non-living substance can act as an organizer for the embryonic differentiation of a nervous system. Needham in the study claimed that a piece of boiled mouse heart placed among the living cells of a human embryo induced the formation of a secondary or 'extra' brain. This was evidently of philosophical significance, as it demonstrated that there was a physico-chemical explanation for what had been for centuries believed to be the work of an all-knowing Divinity. (page 40).

Needham's associations with eminent Church leaders influenced him in his sci-

entific-philosophical orientation, and his research findings made him realize that while natural sciences themselves were wonderful achievement of human mind, study of the past achievements of ancient civilizations is also of significance for history of science developed through the ages, and even if from small beginnings the contribution of the ancient people to science is not of less importance.

Julian Huxley commenting on Needham's embryonic research stated that this marks another milestone on the road that biology was taking in its transformation from a statistic to a dynamic science. 'Biologists are under a very real debt to Dr Needham for his wide reading, his critical and constructive facility, and his patient industry which has issued in his fine work'. (*Nature*, 6 February 1932, quoted by Goldsmith, page 39).

The author of this Profile of the 20th Century Renaissance Man, is the master craftman of the scientific Profile of another Renaissance Man – J. D. Bernal. But, then, Maurice Goldsmith himself is a Renaissance Man who at the end of

World War-II pioneered the study of Science and Public Policies, and introduced the concepts of Popularization of Science and the Science Critics. Closely involved in the development of UNESCO, Goldsmith was appropriately equipped to prepare this Profile of Needham which reads like a poet even though it is full of information of academic interest and historical importance. Needham's China visit in search of scientific classics provides fascinating reading, but more significant are the details of his journey through the backward countryside of China, and his meetings with his Chinese hosts who were exemplary of cooperation with scientific information and warm oriental hospitality.

Maurice Goldsmith's treatment of his Needham Profile is unusually distinct as it is attractively unconventional. The volume opens with an address to Joseph Needham from the author. But it has to end in Obituary to Needham, in P.S.:

'Since I wrote the above, I have experienced the sadness of your death on the evening of Friday, 24 March 1995. What has intrigued me is the extensive space which the broadsheet

dailies, in particular, have devoted to your obituary...'

The *Profile* of Joseph Needham is a masterpiece work on a life of the colossal man of science and philosophy in whom were united conflicting forces of Faith and Reason, and whose life offered synergism of knowledge and action. He commanded love and affection and high honour of the academic establishment.

Even though to avoid confrontation with conservative establishment of the Royal Society, Needham used a pseudonym when writing radical political articles, his contribution to contemporary critical science movements has been most appropriately placed in historical perspective by Maurice Goldsmith. The author deserves felicitations for this valuable gift to general readers and to the academic and scientific community at large.

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