

Ho Peng Yoke: A Personal Introduction

I have often wished that I knew Ho Peng Yoke for more than half his lifetime. It would have been interesting to see him growing up in Ipoh, a tin-producing town in Malaya—obviously not an easy childhood, and much harder when the Japanese occupation interrupted his education for six years. His biographer will no doubt find it challenging to reconstruct his scientific education in Singapore during that city-state's postwar period of dizzying change.

We met because I had decided to write a doctoral dissertation on Chinese alchemy, under the profound misapprehension that it was an early form of chemistry. My advisors at Harvard gladly cordially approved the topic, but were totally unprepared to advise me on it. Since in the early 1960's Americans of my generation had no hope of working in China, I was eager to find someone knowledgeable about alchemy in an accessible place; that led me promptly to Peng Yoke.

When he welcomed me to Singapore in 1962, he was Reader in the History of Science at what was then the University of Malaya in Singapore (where he had taken his Ph.D. and would later take a D.Sc.), and belonged to the Department of Physics. Although his colleagues esteemed his talent and industry as a historian, this was not a seamlessly happy place to be. The Professor of Physics, a distinguished atmospheric physicist of Indian descent, felt that he should run his department like an ashram, and expected his subordinates to spend the mornings in his office engaged in elevated conversation. This they did with good grace, but most of them were young and eager experimentalists whose Chinese backgrounds encompassed no such tradition of talking when one could be making progress in one's studies.

This led to a certain amount of chafing, but it did not interfere with the warmth of everyone's hospitality. It was a great luxury to have in Peng Yoke someone with whom to discuss problems in my sources. He even encouraged me to do some laboratory work that might elucidate what my Tang alchemist, Sun Simo (or Simiao 孫思邈, alive 673), aimed to do. I took advantage of his offer when I came across Scarlet Snow and Flowing Pearl Elixir, a formula that I could not explicate, but that was not too complicated for a go at carrying out the 1300-year-old preparation. The Tang source called for heating a mixture of realgar (arsenic sulfide), vinegar and salt, in two cast-iron crucibles sealed mouth to mouth, until the container maintains the same color as the fire. This would be ca. 900° C, but since there were no iron crucibles available in Singapore, I substituted nickel ones. After the stipulated twenty-four hours I cooled the electric furnace down and found that the contents had eaten right through the crucibles and had disappeared. Peng Yoke realized before I did that the only product that could possibly dissolve nickel was metallic arsenic, and that this preparation of it was by far the earliest known.

I was resolved to complete the preparation and see what the formula asserted was a strikingly beautiful product. I hit on the idea of sealing the ingredients in heavy-walled pyrex glass tubing. I had determined that the melting point of pyrex was well above 900° C, but I was too inexperienced to realize that it would soften enough at that temperature to respond to the pressure of the vapour inside. The sealing of the tubing was simple enough. We put the vessel in the furnace, started it up, and walked back to Peng Yoke's office. As we were sitting there, the phone rang. Peng Yoke answered it, and then uttered a sentence never before said, and probably never said again since: "Nathan, that was the chemistry lab calling to say that your elixir of immortality has just exploded in the electric furnace."

It was not long (1964) until Peng Yoke moved on to fill the Professorship of Chinese Studies at the University of Malaya in Kuala Lumpur. The city had become the political center of Malaysia, and its university was developing rapidly. He shortly (1966) published his first book, *The Astronomical Chapters of the Chin Shu*, a helpfully annotated translation of the Treatise on Astrology (A.D. 644). The preface to this still invaluable work acknowledged the help of Joseph Needham at every step from choosing the topic to suggesting improvements in what was originally a doctoral dissertation. The first joint paper by the two scholars (on ancient comets) had appeared in 1957. Peng Yoke became one of the small group of collaborators whose work made *Science and Civilisation in China* and many ancillary publications possible. The volumes of SCC on alchemy and military technology listed him as a collaborator, but he actually contributed research to just about every volume that Needham wrote from 1970 on.

I visited Peng Yoke only once in Kuala Lumpur, where he was making his mark on that rapidly modernizing city. But as the university increasingly demanded that Malay be the language of all instruction, including those courses on East Asian languages, it became difficult to attract Chinese Studies faculty and research students. This difficulty was one reason that he moved on in 1973 to Australia, where he became Foundation Professor and first Chairman of the new School of Modern Asian Studies at Griffith University. He remained there until his retirement in 1989, although he spent 1984-1987 on leave at the University of Hong Kong as Head of the Department of Chinese and Master of Robert Black College.

Despite the heavy administrative burden that he bore between 1964 and 1989—which made it possible to accomplish so much in institution-building—he published an average of nearly a book or monograph, and more than one several essays, per year. These were of several more or less distinct kinds: contributions to the SCC project; collaborations with research students and other scholars on diverse topics of shared interest; studies of primary sources that threw light on the history of divination and number (*shu* 數), which he explicated as an important qualitative as well as quantitative conception; and textbooks such as *Li, Qi, and Shu. An Introduction to Science and Civilisation in China* (1985), which combines Needham's general perspectives with Peng Yoke's own studies of number.

A look at his contributions makes it clear that a distinguishing feature of the best writing on Chinese science is still polymathy. This makes the field stand out in an academic world in which authors in most fields devote their lives to learning more and more about very little. For instance, his contributions to a recent encyclopedia include articles on astrology, astronomy, alchemy, mathematics, magic squares, gunpowder, and navigation, in addition to several biographies.

One can hardly speak of Peng Yoke's retirement in 1989, since he promptly accepted Needham's invitation to succeed him as Director of the Needham Research Institute. That entailed completing the Institute's transition from a scholar's own working collection to an institution that would serve investigators from all over the world. At the time, the library was housed in a building borrowed from Cambridge University Press. It had a couple of staff members paid for out of Needham's pocket, but everyone else was an unpaid volunteer—and so was Peng Yoke when he accepted the directorship.

Needham planned a building that would meet the collection's growing needs and at the same time be beautiful and pleasurable to work in. Peng Yoke knew that his main responsibility in taking over would be raising the funds to build the building, pay a staff, buy books, and establish an endowment that would make possible a full-time, paid director. In concentrating on these goals, he had the help of three charitable trusts, one each in Cambridge, Hong Kong, and New York, and a good many generous personal friends in Hong Kong, Southeast Asia, and elsewhere. It was not possible to give funding this priority and run the Institute at the same time, but Christopher Cullen made the on-the-spot, day-to-day decisions there as part-time Deputy Director in addition to his full-time appointment and program-building at London University; Sir Geoffrey Lloyd vitalized the U.K. Trust as its Chairman; and Peng Yoke's periodic stays in Cambridge kept him involved in the long-term planning.

To make a long story short, with a great deal of help and good will from the Trustees and others, by the time Peng Yoke retired from the Directorship late in 2002, he had attained all of these goals. The building, on the grounds of Robinson College, is a gem of Cambridge architecture, with a first-class collection, and it is already one of the most intellectually lively places in a lively academic town. Peng Yoke made it possible for the third Director to devote his full energies to guiding the evolution of the Institute.

But to think of Ho Peng Yoke as merely a researcher, author and administrator is to miss the deepest point. The personal generosity that I experienced, the warmth with which he has always welcomed people in need of a mentor or advisor, are engraved in the memories of a great many scholars the world over. This collection testifies to the esteem and gratitude that these qualities have elicited.

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