CHAPTER 11

The Needham Question and Southeast Asia: Comparative and Connective Perspectives

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1 Needham’s Grand Question: Marginalizing Southeast Asia

There has been a renewed revival of interest in Needham’s Grand Question, “Why did modern science develop in Europe but not in civilization X?” where X is a marker for any one of the world’s historical civilizations. Part of the revival can be attributed to a new interest in connecting the Needham question with the Weber question “Why did the Industrial Revolution take place in Europe and not elsewhere?” Equally important are two recent attempts to answer the Needham question through a comparative study of civilizations – Floris Cohen’s *How Modern Science Came into the World: Four Civilizations, One 17th-Century Breakthrough* and Toby Huff’s *Intellectual Curiosity and the Scientific Revolution: A Global Perspective*. Both build upon and amplify earlier studies – Floris Cohen’s *The Scientific Revolution: A Historiographical Inquiry* and Toby Huff’s *The Rise of Early Modern Science: Islam, China and the West*. These studies can be seen as attempting to understand the rise of modern science in the West in the context of its failure to emerge in the most advanced civilizations that preceded it – especially the Chinese and the Islamic-Arabic. Nevertheless, the answers Cohen and Huff give are largely predicated on a comparative perspective that only marginally takes into account recent attempts to see the Scientific Revolution as shaped by a connective history in which the civilizations they compare to the West – the Chinese and Islamic – also played a role in contributing to the intellectual, technological and technical resources that made possible the rise of modern science in the West. This study examines how our responses to the Needham question get transformed when we address them in a connective perspective that does not necessarily exclude the comparative dimension.

The above studies by Cohen and Huff have mainly focused on comparisons, and sometimes connections, between the Chinese, Islamic, and to some extent Indian civilizations with that of the West to explain why modern science emerged in the latter. I would like to suggest that it would be illuminating to extend comparative studies to include cultures which have hitherto
been ignored because they were deemed to have no significant premodern traditions of science. Indeed, in his earlier study *The Scientific Revolution: A Historiographical Inquiry*, Floris Cohen does devote his whole penultimate chapter to attempting an answer to the Needham Question by including such less advanced cultures although he dismisses them precisely on these grounds as having no possibility of producing modern science.

Cohen divides civilizations into four categories – those without science, those with some science, those with advanced science, and the one civilization that produced modern science. As examples of civilizations without science he lists the Roman Empire and Southeast Asia; India he treats as a civilization with some science; China and the Arabic world had advanced science prior to the modern era; but only the West produced modern science. Turning to Needham’s question he sees it as unnecessary to ask why neither the Roman Empire nor Southeast Asia did not produce modern science – these cultures were simply not developed enough to do so.\(^1\) He considers even India to be only a civilization with some science but not one sufficiently advanced to merit asking the question, why modern science did not emerge there. Nevertheless, he is prepared to concede that new discoveries may make us rethink the issue. According to Cohen only the Islamic and Chinese worlds had scientific traditions that were sufficiently developed to compel us to seriously investigate why they did not produce modern science.\(^2\)

Cohen’s answers to the Needham question in these two cases may be summed up briefly as follows. Although he concedes that the philosophy of organic materialism, upon which Chinese science was constructed, did facilitate the Chinese to go beyond primitive thought and make more technological advances than Europe before the Scientific Revolution, he also thinks that it

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1 Interestingly, Said al-Andalusi in his 11th century text comparing the scientific contributions of various civilizations lists the Chinese as having made none, but the Romans as having made some. See especially Chapters 3 and 9, al-Andalusi (1991); also Low, Morris F. (ed.) (1999).

2 Cohen’s view is questionable. Although from the perspective of modern science India may not appear to have been at the cutting edge of science, the perspective was quite different when Said al-Andalusi wrote in the eleventh century from Europe:

To their credit, the Indians have made great strides in the study of numbers and of geometry. They have acquired immense information and reached the zenith in their knowledge of the movements of the stars [astronomy] and the secrets of the skies [astrology] as well as other mathematical studies. After all that, they have surpassed all other peoples in their knowledge of medical science and the strengths of various drugs, the characteristics of compounds, and the peculiarities of substances. (al-Andalusi 1991: 12)