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Dhruv Raina, Needham's Indian Network: The Search for a Home for the History of Science in India (1950-1970) (New Delhi: Yoda Press, 2015)

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Volume 4, 2016

URI : https://id.erudit.org/iderudit/1116270ar
DOI : https://doi.org/10.18732/H2G592

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Éditeur(s)

University of Alberta Library

ISSN

2369-775X (numérique)

Découvrir la revue

Citer ce compte rendu

Bray, F. (2016). Compte rendu de [Dhruv Raina, Needham's Indian Network: The Search for a Home for the History of Science in India (1950-1970) (New Delhi: Yoda Press, 2015)]. *History of Science in South Asia*, *4*, R1–R6. https://doi.org/10.18732/H2G592

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MLA style citation form: Francesca Bray (2016), "Review of: Dhruv Raina, *Needham's Indian Network: The Search for a Home for the History of Science in India (1950-1970)* (New Delhi: Yoda Press, 2015)," *History of Science in South Asia* 4 (2016): R1–R6.

Online version available at: http://hssa-journal.org

HISTORY OF SCIENCE IN SOUTH ASIA
A journal for the history of all forms of scientific thought and action, ancient and modern, in all regions of South Asia, published online at http://hssa-journal.org

ISSN 2369-775X

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The electronic versions were generated from sources marked up in LaTeX in a computer running GNU/LINUX operating system. PDF was typeset using XeTeX from TeXLive. The base font used for Latin script and oldstyle numerals was TeX Gyre Pagella developed by GUST, the Polish TeX Users Group.

Dhruv Raina, *Needham's Indian Network: The Search for a Home for the History of Science in India (1950-1970)* (New Delhi: Yoda Press, 2015), 135 pp. ₹ 250. ISBN 93-82579-11-7.

Dhruv Raina's meticulous study of the fortunes and misfortunes of history of science in newly independent India will be of particular interest to the readership of *History of Science in South Asia* both for the challenging questions it raises about the conditions of possibility for history of science as a field and as a discipline, and for the detailed intellectual and political portraits Raina paints of such founding fathers as D. D. Kosambi, Debiprasad Chattopadhyaya, S. N. Sen, A. Rahman and Irfan Habib. Drawing on the rich notes and correspondence in the Needham archive, Raina's brief study is also a treasure-trove for all of us interested in Joseph Needham's complex intellectual and social contributions to building a post-imperial history of science.

There is no need to remind the readers of *History of Science in South Asia* just how iconoclastic Needham's views were considered at the time of India's independence. Until the 1930s most deemed it unthinkable that any non-Western society could lay claim to a history of science of its own. But in the course of the 1930s Needham and his Cambridge colleagues, notably J. D. Bernal, were among the influential practising scientists who began to argue, in eloquent and accessible works, that science was a universal human activity. It was thus the task of ethically responsible historians of science to pursue what in today's terms has been termed "cognitive justice," that is, to recover and acknowledge the scientific activities and contributions of all human societies, past and present. Modern science was not the product of intrinsically superior Western rationality, rather, it represented a confluence of ideas from different societies that over time had converged, like rivers flowing into the sea of what Needham labeled "oecumenical science." Countries that had been treated under colonial rule as blank slates of ignorance upon which Westerners generously inscribed their scientific knowledge could now re-imagine themselves as the proud possessors not only of a scientific history, but also of scientifically apt mindsets.

In the late 1940s, as the colonial powers at last conceded that independence could be granted to suitably evolved and deserving (or successfully resistant) territories, Needham was engaged in two great enterprises in this vein. The first was the UNESCO project of a world history of science (the *Scientific and Cultural History of Mankind*), in which, "European civilization should not be considered the model, neither in the past nor in the future, for all civilizations" (p. 12). The second was Needham's personal research project, *Science and Civilisation in China*, which drew upon pre-modern China's extraordinarily rich documentary

and material record to document a spectacular array of scientific and technological achievements. Although the first volume of *SCC* was not published until 1954, Needham was known to be hard at work on this enterprise even before he resigned from UNESCO in 1948.

To anti-colonialist statesmen, operating in a world where scientific achievement was the great civilisational validator, joining what was now more widely understood as an internationally open club of scientifically capable nations was a prime goal in the pursuit of development. Nehru argued the need for newly independent India to develop both "scientific expertise" and "the scientific temper." As Nehru put it (cited on p. 7):

> Science and technology know no frontiers. Nobody ought to talk about English science, French science, American science, Chinese science. Science is something that is bigger than countries. There ought to be no such thing as Indian science.

Yet, paradoxically perhaps, an Indian (or Chinese, English or French) history of science was a very helpful validating exercise, demonstrating that traditions of scientific rationality were not alien, modern superimpositions. For scientists in many new nations, the appeal of developing a national history of science was immediate, meshing closely with other nation-building tasks like the consolidation of national scientific research institutions, or curricula in science education.

It is no coincidence, then, that the International Union of the History of Science was formed in 1947, the year of Indian independence. As part of the policy to develop scientific literacy and "the scientific temper," S. N. Sen, a physicist and the registrar of the Indian Association for the Cultivation of Sciences, was sent to Paris in 1947 to work in the UNESCO Programme on the Social Implications and the Popularisation of Science. There he became close friends with Needham, who encouraged his interest in the history of science. Needham also became acquainted with A. Rahman, who urged him to visit India and to meet Pandit Nehru and various leading scientists, in order to persuade them that history of science in India should be integral to national policies of scientific development.

Raina traces Needham's critical impact on the development of history of science in India, as inspiration, friend, interlocutor, mediator, critic and institutional supporter. Thanks to the tremendous efforts of the individuals already mentioned, together with the engagement of a number of scientists with more enthusiasm than historical training, by the late 1950s history of science was established in India as a field of research. Ambitious projects for a multi-volume *Science and Civilisation in India* were drawn up. And yet the field was not a discipline: only a few members of the field were historiographically trained. Raina records an embarrassing occasion when Needham was invited to comment on a collection of colloquium papers, many of which he criticised for making quite

outrageous claims about periodisation and priority. Happy as Needham was to challenge Greece as the sole cradle of civilisation, he was not willing to accept wild assertions about ancient Indian anteriority, especially if based on myth rather than documentation. Needless to say, this critique did not endear Needham to all his Indian colleagues, but the true historians soldiered on. Raina details many of the outstanding works that they contributed to the field of pre-colonial as well as colonial history of science.

While the best of these works took a specific period and/or thematic as their subject, the totalising concept of a *Science and Civilisation in India* continued to cast a shadow on the field, and doubtless hindered the emergence of a discipline. As late as 1986 Chattopadhyaya published an edited volume, *History of Science and Technology in Ancient India: The Beginnings* with a foreword by Joseph Needham. The book received a scathing review from Kapil Raj, an Indian post-colonial historian of science working in France. Raj dismissed the volume as just the latest in a continuous stream of general histories whose lack of historiographical professionalism in pursuit of political agendas (Hindu versus Muslim, for instance) deprived the field of history of science in India of "much of its credibility."[1]

The tension between nationalistic "civilisational studies" and the historical realities of a complex, often politically fragmented and culturally fissured subcontinent is surely one factor in the failure of history of science in India to find a comfortable institutional home. As Raina notes, even today there are no university programmes in the history of science outside Delhi. Another obstacle to successful institutional integration is the tension between the universalist agenda of the original Needham programme and most professional history of science as it is practised today. Needham tended to select those aspects of pre-modern sciences or practices which can be retrospectively validated by modern scientific testing or explanation. Furthermore, Needham's concept of oecumenical science posits modern scientific materialist rationality as the logical historical outcome of intellectual progress. This teleology displaces attention from the organic composition of "scientific cultures," however alien their goals, presuppositions and knowledge-clusters may seem today, to the potentiality of old forms of knowledge to mutate into modern science.[2] France, Germany, Britain and the United States are sufficiently confident in their long traditions of scientific prowess to employ and give grants to researchers working on Newton's interests in astrology. In China (and no doubt in India), most funding bodies would still be reluct-

1 Raj, 1990: 152. See also Raj, 2016 on "rescuing science from civilisation."

2 See Rocha (2016), who notes for instance that when they were completing the manuscript of *Celestial Lancets* in the late 1970s Needham and his co-author Lu Gwei-Djen expressed their confidence that proper "scientific" proof of how acupuncture works would very soon be forthcoming, thus allowing acupuncture into the fold of valid scientific medical therapy.

ant to support investigations into a national hero's "superstitious" feet of clay.

In the 1950s "research into the history of science in India was seen as an effort towards the legitimation of science as cultural activity" (p. 43). Surprising as it may seem today, despite Nehru's drive to develop India as a scientific power, many Indian scientists immediately post-Independence felt themselves to be a beleaguered and alienated minority.

> This was not an alienation from the political – scientists had never had it so good as they did in the Nehruvian era. The alienation was a product of their ideological commitment to science that was ambushed by their infinitesimal numbers within Indian society at the time – clearly a question of cultures and values! (p. 93.)

One way to address this, proponents of history of science in India believed, was to produce an equivalent of *Science and Civilisation in China* to persuade the Indian public that "science is us" – and in the process to deliver a post-colonial cognitive justice. Yet in the longer term the *Science and Civilisation in India* project appears to have faltered if not failed. Today India is ackowledged as a world leader in many fields of scientific research, yet Raina argues that, in the current reign of technocratic values, real history of science, as opposed to nationalist–triumphalist versions, survives only "in the insterstices," while "scientists' history of science" predominates (p. 107).

Again, this may be a question of national self-confidence. It also reflects the amount of money and other resources that a society is prepared to invest in the humanities. The kind of research in history of science that seriously investigates pre-modern scientific cultures rather than promoting nationalist agendas typically requires bringing together a number of recondite specialist skills: philology, religious studies, anthropology, history of law or musicology, for instance, as well as specific natural sciences and philosophy. The majority of training centres and of rewarding jobs are still located in the United States or Western Europe – indeed many of the best historians of science in India today work outside India. Does it matter where they work? Well, perhaps more than we might imagine. One reason that Joseph Needham decided to study China and to work with Chinese collaborators was because of the differences, sometimes striking, sometimes subtle, from all that he was ruefully conscious of taking for granted in European ways of thinking or framing questions. We should not underestimate the power of the naturalised assumptions, explicit or implicit, that still underpin local schools of history of science, including those of the great metropoles of the United States, of Munich or Paris, even in our enlightened post-colonial era. Fifteen years ago a group of historians from Belgium, Denmark, Greece, Italy, Portugal, Spain and Turkey joined together to form a network called STEP: Science and Technology on the European Periphery. STEP flourishes because it

meets a need that is felt by many outside the charmed circle. As the STEP website explains (STEP, 2016):

> The historiographical canon of science, technology and medicine is still shaped by a central focus on French, British, German, and increasingly US national narratives ("the big four"). The shift to local studies experienced in the last decades in our discipline has not weakened this selective prioritizing of contexts. As a result, the canon is still biased toward French, British, German, and increasingly American actors. STEP seeks to revise this bias by expanding the spectrum of geographical and cultural contexts of research and proposing new questions, themes and tools of analysis.

Strong, original, critically confident history of science outside the Northern metropoles is essential to the future of the field. Whether in Latvia or India the challenge remains, however, how to build it an institutional and intellectual home.

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