

Imperial technoscience: Transnational histories of magnetic resonance imaging in the United States, Britain, and India

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What questions do we generally ask when we want to know about the history of technological innovation? The usual route is to look at who invented it, presumably, by finding out the Nobel Prize winner for the invention and then tracing the history forward from invention to industrial development to marketing and diffusion. In this process, the imaginary, which more than often emerges is that of a technological innovation *first in Europe/West and then elsewhere*. This route, as Prasad establishes through this book, reinforces the linear model of innovation and dualist distinctions of West and non-West, centre and periphery and periphery, developed and developing. These categories, on one hand, are problematic, hierarchical, and exclusionary toward the multifaceted, transnationally entangled and multilayered histories of technoscience. On the other hand, they are parasitic to its emergent, future imaginaries, and practices. This study stands distinct from earlier attempts to critically reformulate the center-periphery thesis and its associated categories,^[1,2] as they had failed to challenge the universality and idealized characteristic of science. The author thus, wishes to add the growing literature of Science, Technology and Society (STS) studies which had radically transformed the understanding of transnational technoscience by focusing on the technoscientific practices.^[3,4]

The main aim of the book is to highlight the entanglements, which lies below these dualistic distinctions constituting

a “reality” in which hierarchies, linearity, and exclusions seem logical and “natural” as they shape the analysis and practices of technosciences. The author does so by first deconstructing the dualistic distinctions and then reconstructing transnational histories of magnetic resonance imaging (MRI) by analyzing connected and disconnected trails in research, development, and marketing. MRI is a map of magnetic properties of biological compounds inside the body and offers advanced diagnostics possibilities. The book is divided into 5 main chapters (and an introduction and conclusion) along with the lines of commonly accepted facets of transnational technoscience (which the author empirically deconstructs) that is the invention, industrial development, marketing, history in non-Western context and cultures of MRI. The extended and detailed endnotes serve as the “icing on the cake” with information about scholarly readings to follow-up and methodological and empirical insights.

The first chapter titled “invention” of MRI: Priority dispute, contested identities, and authorship regime problematizes a particular historiography of invention which constitutes them as originary “events” that mark the birth of a technology through phrases such as “proverbial lightning bolt” and “leap of creative genius.” The author, through the example of three prominent scientists Paul Lauterbur and Raymond Damadian (both USA scientists) and Peter Mansfield (UK), demonstrates how the retrospective construction of the proverbial “eureka moment” in the association with the awarding of Nobel Prize in 2003 to Lauterbur and Mansfield, pushed asides the tensions and priority disputes over the authorship and established the kinship of the inventor and the invention.

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This process, he argues, not only obscures the role of the social but also hides the impact of the authorship regimes that emerged in Europe, and that tend to facilitate the dualist and exclusionary representation of an invention. An alternate way of looking at invention would be to see it as a constitution, which resulted from temporally emergent, discursive, cognitive, and other technosocial entanglements. The connectedness of the research trails of the above three scientists along with their entanglements with the distributive cognition of some other different actors (industry, biomedicine market) eventually resulted in the emergence of MRI.

In chapter two, titled translating a dream into reality: Birth of MRI and genesis of “big science” focuses on the development of MRI which, as he argues, was not simply a result of implementation of certain ideas and techniques. Contrary to the often invoked “diffusion of innovations” model (Rogers 1995),^[5] in the case of MRI the different stages of the development and diffusion of the technology are messy, muddled, and folded into each other. This being the case, the translation of MRI research into a market reality relied on various connected trails of techniques and materials (magnets, computers), clinical and business interests, regulatory concerns (health issues). Through the chapter, it is interesting to observe that in 1970s UK was a pioneer in MRI research due to the culture of interdisciplinary research, which was backed by major funding bodies in the country. This edge was lost when MRI research got entangled with biomedical imaging and industrial interests transforming it to “big science.” This hierarchical and exclusionary entanglement made it impossible for solely university-based groups to compete. This led to the establishment of USA as the center, where new combinations of industry-academia complexes began to emerge.

In chapter three, marketing medicine’s “sport car”: The United States becomes the “center,” the author uses the concept of “markets as collective devices”^[6] and “biomedical technoservices complex, Inc.”^[7] to analyse the almost symbiotic rise of USA as the center of MRI industrial development and the celebratory embrace of high-tech medicine (tied to American exceptionalism, healthcare regulations and services, industry-university/clinic collaborations, and the visual regime of computer assisted medical technologies).

In chapter four titled, recovering “peripheral” history: Genealogy of MRI research in India, the author tries

to re-orient and reassemble the historiography of MRI in India, away from the Eurocentric, center-periphery constructions of “lag” and “lack.” Not only this, the author urges us to reconsider the articulation of “West” as a homogeneous entity. He explains it through the example of Sweden, which despite being a western country, in the field of MRI research and development in 1970s and 1980s, might not be much different from India. In Similar to the categories of technology transfer are generally misleading about the historiography of technoscientific development. The analysis of technoscientific trails of MRI research in India suggests that the “lag” or “lack,” as appears through Euro/West centric genealogies was never the case for MRI research in India and many of the pioneers in that field drew inspirations and references from the researches that were being done in India. It was the constraints of location, big science stature of MRI development, almost absent industry-academia collaboration that led to disconnecting of MRI development in India from the “center.”

The final chapter, three cultures of MRI: Local practices and global designs focuses on the dominant technocultural imaginaries in three local cultures of technoscience that is, USA, UK, and India. The author highlights that despite the entanglements of technoscientific practices and shifting transnational geographies of technoscience, the dominant imaginaries link stories, desires, reasons, and material worlds in ways that highlight the role of national and transnational networks of power and administration. Here, the imaginary of USA is collective of American technological sublime, big science, and American exceptionalism. For Britain, the imaginary of “good in inventing and bad in developing” was supplemented with the entangled cultural practices of considering industry collaboration as “bad,” discomfort with associating with American big science culture, lack of venture capital, and conservative politics of Thatcher government leading to fund cuts for universities. In India, the technocultural imaginary of “lack” was invoked with its entangled broader colonial history (influencing scientific structures, bureaucratic hurdles in funding, hierarchies) and the transformations in the culture of MRI research (lack of collaboration among Indians, publication oriented research).

The mammoth task of critically engaging with the almost-next-to-truth Euro/West centric notions that the author has undertaken is absolutely commendable. However, sometimes, it appears from the reading, that the influence of powerful dualistic distinctions in the historiography of technoscience has resulted in rendering

the “other” absolutely powerless and everything within the periphery results from this hegemonic historiography. It would have been more useful, if the technocultural imaginary of “lack” and “lag” in India was juxtaposed with the respondents’ narratives of “rising,” “shining,” and “superpower” India, which is one of the other dominant imaginaries. On the whole, the book is an engaging weave of theoretical and empirical strands which present a very different, interesting and fresh picture of transnational technoscience and innovations, which stands away from the dual distinctions and hegemonic influences of regular categories.

This book is another fascinating addition to the most appreciated inside technology series of books edited by Wiebe E. Bijker, W. Bernard Carlson, and Trevor Pinch, by MIT Press. It is an enriching reading for the scholars who wish to reflexively broaden their horizon of thinking about innovation, patent analysis, and scientometrics. I will strongly recommend it as a must read for STS and postcolonial studies scholars.

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