

Kapil Raj. *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*. New York: Palgrave Macmillan, 2007. Pp. 285. Paper \$29.00.

Kapil Raj teaches at the École des Hautes Études en Sciences Sociales, Paris, focusing on the construction of science and knowledge during intercultural encounters. In *Relocating Modern Science*, he explains scientific thought as a union of discourses that occurred when seventeenth-century South Asian and Imperial British intellectuals and administrators shared practical and unique information in what he describes as a contact zone. His analysis gives agency and intellectual power to both the profit driven East India Company employees and the indigenous scientists. By critiquing historians who see the production of knowledge as a unique result of Western enterprise, Raj shows that with differing tools and scientific backgrounds, science is produced in the colonial periphery as a consequence of scientific interaction that benefited both communities. To reach this conclusion he analyzes early natural scientific collaborations, the emergence of modern mapping and surveying, the production of legal knowledge that relied on the native cultures, and the establishment of colleges in the eighteenth century that trained Indians in the grammar of science and industrialization.

Knowledge was not stolen from South Asia, nor was it returned to the metropole to be refined by learned European men; instead, it was practiced and applied in the field where shared knowledge produced results. This is evident in his examples of geographic surveying where the practical application of South Asian knowledge and tools aided the English in their desire to map borders and administrative zones. Science in the contact zone benefited both parties and was created on a more equal footing than expressed by historians who have attempted to show either European hegemony over scientific reasoning or indigenous preeminence over science's historical progress.

Raj places science outside the individualistic European metropole and shows how it was created and functioned when two cultures encountered paradigm shifting intellectual exchanges at the point of contact. Career seeking men left England and arrived in South Asia, where bureaucracy and science were well established in the Mughal Empire. The exchange of information required indigenous participants with specialized knowledge of botany, surveying, and medicine. For example, the Indian tradition of botanical artistic representations benefited European natural scientists seeking to document and describe exotic foliage.

Contact zone scientific trade occurred when local cartographers and surveyors were employed to map British interests in Asia. Indian maps relied on precise measurements and natural science observations that exceeded European skills. Mughal instruments of astronomy and navigation aided the Europeans in their quest for accuracy with travelers and Indian employees mapping disputed and dangerous Central Asian territories where outsiders often faced torture or death. Raj describes the use of native agents who succeeded in applying indigenous knowledge with European demands

for precision. These men with a degree of agency, accomplished memorable treks across hostile territories and constitute an example of local knowledge being refashioned as a result of colonial contact and applied to the practical skills required in cartography.

Raj relies on Imperial British documents, travelogues, and Royal Geographical Society reports, as well as secondary literature about the history of science to counter the prevailing discourse about knowledge exchange or appropriation. Raj's political and cultural analysis of the contact zone describes how exchange occurred between colonizer and colonized and shows moments of mutual benefits. He examines the debate among the English about the importance of indigenous customs and finds that the colonial administration in its attempt to subjugate the native population had to acknowledge past traditions and incorporate them into governance. This was accomplished in India where numerous universities were founded that trained the Indian bureaucracy and introduced students to specifically British ideals concerning the industrial revolution. Students of the history of science will benefit from Raj's analysis, which places science in the context of exchange and the subsequent creation of practical science by European and indigenous men within the contact zones. His analysis and evidence of mutual agency, are essential to our understanding of how scientific progress occurred in colonial South East Asia when practitioners were open to the practical applications of spontaneous interactions. He redefines where and how knowledge was created and his analysis deserves careful consideration when discussing the history of science and knowledge production.

Braxton North

