There is much interesting material in these discussions. Irving's methodological orientation within the history of political thought, however, does not lend itself to developing a full account of the mutually constitutive relation between colonization and the actual practices of the natural sciences. Instead, such tantalizing connections tend to remain in the form of suggestive contextualization. Both volumes considered here nevertheless attest to a deepening interest in the relations between science and empire, broadly understood, in late seventeenth-century English worlds, and it is to be hoped more will follow.

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James Delbourgo and Nicholas Dew (eds.), **Science and Empire in the Atlantic World**. New York: Routledge, 2008. Pp. xiv + 365. ISBN 978-0-415-96127-1. £18.99 (paperback).
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Maybe I should not read too much into titles, but *Science and Empire in the Atlantic World* caught my attention. At first glance, it seemed a strange choice of words, since 'science and empire' has become a common, almost clichéd, phrase in the history of science and science technology studies (STS). The phrase took hold in the 1970s when Marxist scholarship revealed the exploitative functions of imperial science and gained inspiration from other critiques such as Edward Said's *Orientalism* in 1978. By the 1980s, books and articles containing 'science' and 'empire' blossomed in the scholarly press. Yet the phrase has since witnessed a slow decline, as scholars have grown uneasy with portrayals of colonial science as a hegemonic expression of European power. Replacement terms tend to emphasize the reciprocal relationships in the production of science. Most notable among these is 'Atlantic world', a term that now races like a forest fire through history-of-science titles, probably due to Bernard Bailyn's influential Seminar in the History of the Atlantic World which he instituted at Harvard in 1995. Why, then, marry 'science and empire' with 'Atlantic world' together in one title?

The answer comes from the function of 'empire' within this edited collection. All twelve essays here challenge empire – or, more precisely, an imperial top-down model of science – in describing the Atlantic World. The 'empire' of the title, in other words, does not represent a historic process to be revealed but a historiographic concept to be critiqued – a goal that editors Nick Dew and James Delbourgo accomplish with devastating efficiency. By focusing on famous 'heroic narratives of discovery' (p. 5), Delbourgo and Dew argue, studies of imperial science have missed the day-to-day activities which shaped the study of nature in the Atlantic world. In other words, historians of science (including me) have grown too comfortable thinking of Atlantic science through the image of a sextant-wielding Baron von Humboldt. As *Science and Empire* demonstrates, knowledge of the Atlantic world depended upon the labours of far lesser-known figures: sailors, surgeon–barbers, Creole collectors and diasporic Africans, among others. Most essays go beyond describing the actions of these invisible networks, connecting them with better-known ones. Alison Sandman, for example, explains how pilots competed with learned cosmographers to control cartographic knowledge in early modern Spain. Júnia Ferreira Furtado's essay, focused on Brazil, shows how Dutch surgeon–barbers 'broke the monopoly of erudite knowledge enjoyed by doctors' (p. 132), giving tropical medicine a pronounced, empirical tilt. Even well-known figures are not what they appear. Joyce Chaplin revisits Benjamin Franklin, poster child of elite science, to show how he relied upon the reports of sailors and sea captains in describing the Atlantic 'Gulph Stream'.

Taken together, the essays portray Atlantic science differently than the influential centre–periphery model of science described by Bruno Latour in *Science in Action* (Milton Keynes, 1987). Within Latour's model, knowledge of the world starts and ends in the metropole, where men of science provide the questions and instruments needed to understand nature at the edges of empire.

While Latour's system works well in describing many aspects of state-sponsored expeditions, it fails to explain knowledge networks of other types. For one thing, Atlantic networks were unstable. As Neil Safier explains in tracing the work of French naturalist Joseph de Jussieu, acquiring and transmitting information was a precarious business. 'The successful circulation of information from one point in the Atlantic to another was often dependent on circumstances that could just as easily go wrong as right' (p. 219). The networks developed by Spanish botanical expeditions, as described by Daniela Bleichmar, were of sturdier stuff. Yet Bleichmar points out other weaknesses in the Latourian model, specifically how 'periphery' is a term ill-suited to describe botanical science in the Americas: 'Circulation [of information] did not resemble the flight of a boomerang, always returning to the center, but rather a more reciprocal paddle game. Every letter or shipment from one side provoked a reply from the other' (p. 239). While European 'centres' were important – no one disputes the asymmetries in power between mother country and colonies – they were dependent upon colonial peoples' cooperation. This was not merely a question of finding Indians and Africans to collect things. As Susan Scott Parrish and Ralph Bauer point out in essays on diasporic Africans and Native American magic respectively, Europeans adapted indigenous knowledge systems to make sense of an occult, magical nature. If London, Paris and Madrid operated as hubs of scientific calculation, they were centres shaped by the world wheeling around them.

With such a strong theme linking all the essays, *Science and Empire* does not really need section headings. I found the four offered – 'Networks of circulation', 'Writing an American Book of Nature', 'Itineraries of collection', and 'Contested powers' – too vague to be useful. There are fruitful subordinate themes that track across essays, such as the tension between theory and empiricism (Sandman, Bauer, Furtado, Barrera-Osorio) and environmental history and technology (Golinski, Dew, Delbourgo and Regourd). Still, this is a minor quibble. Dew and Delbourgo have managed to square the circle of edited collections: bringing together a diverse set of essays to target an important historiographical issue.

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PETER M. JONES, **Industrial Enlightenment: Science, Technology, and Culture in Birmingham and the West Midlands, 1760–1820**. Manchester and New York: Manchester University Press, 2008. Pp. xii + 260. ISBN 978-0-7190-7770-8. £55.00 (hardback).
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Nothing quite explains the staying power of the idealist and positivist vision of pure science and the scientist. While contemporary historians of science have largely abandoned it, this vision of science, utterly separate from technology or any particular utility, can still be found at work among some economic historians (see, for example, Robert C. Allen, *The British Industrial Revolution in Global Perspective*, Cambridge, 2009). But the tide is turning. Now economic proponents of the view that science had nothing to do with industrial development are forced to confront the scientific-culture argument head-on, and, unable to refute it, are left insisting, rather than proving, that inventiveness ultimately derived from the forces of demand and supply, and not from any distinctive intellectual and cultural context. Peter M. Jones adds his welcome voice to the chorus singing about scientific culture. He uncovers more evidence to augment the work done by Larry Stewart, Joel Mokyr, Jack Goldstone and myself. Indeed his title is lifted – with acknowledgement – from Joel Mokyr, who invented and popularized it to explain the distinctively British persona, visible by the second half of the eighteenth century, of the *savant–fabricant* who worked at the heart of the 'Industrial Enlightenment'.

Jones seems to have a weakness for other authors' phrases; he has also written an article entitled 'Living the Enlightenment', which is the title of a 1991 book of mine. But that is a small